

QFI IRM Model Solutions

Spring 2015

1. Learning Objectives:

3. Understand and be able to apply different approaches to risk measurement.

Learning Outcomes:

- (3a) Evaluate a company's or a portfolio's exposures to various risks.
- (3b) Explain the advantages and limitations of different risk metrics including value at risk.

Sources:

QFII-106-14: Value-at-Risk: Evolution, Deficiencies and Alternatives

Managing Investment Portfolios, Maginn & Tuttle Ch.9 Risk Management, section 5

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Determine a 95% annual VaR using Variance-Covariance Method and interpret the result.

Commentary on Question:

Most candidates were able to calculate the VaR measure correctly. Some candidates did not provide an interpretation of the result. Some candidates failed to point out the time horizon of the VaR measure in the interpretation.

$$\mu_p = w_s \mu_s + w_b \mu_b = 0.75*0.1+0.25*0.05 = 0.0875$$

$$\begin{aligned}\sigma_p^2 &= w_s^2 \sigma_s^2 + w_b^2 \sigma_b^2 + 2\rho w_s \sigma_s w_b \sigma_b = \\ &= (0.75)^2(0.2)^2 + (0.25)^2(0.07)^2 + 2*0.15*0.75*0.2*0.25*0.07 = 0.02359375 \\ \sigma_p &= 15.4\%\end{aligned}$$

$$95\% \text{ annual VaR} = (\mu_p - 1.65 * \sigma_p) * 100\text{Million} = -0.166 * 100\text{Million} = -16.6\text{million}$$

There is a 5% probability that the portfolio will lose at least 16.6 million in a year.

1. Continued

- (b) Determine the one day 95% VaR using Historical Method and interpret the result.

Commentary on Question:

Most candidates were able to calculate the VaR measure correctly. Some candidates did not provide an interpretation of the result. Some candidates failed to point out the time horizon of the VaR measure in the interpretation.

$$240 * 5\% = 12$$

The 12th worst return is -2.13 %.

One day 95% VaR is 2.13% * \$100 Million = 2.13 Million.

There is a 5% probability that the portfolio will lose at least \$2.13 M on a single day.

- (c) Identify and explain the additional information on the VaR measure to validate CMO's assessment.

Commentary on Question:

Candidates generally did well on this question. To get full credits, candidates should explain why the additional information is important.

- The confidence levels for the VaR measures for portfolio A and B: The confidence level tells us the probability of the worst events happening. The use of 99% confidence level leads to a more conservative VaR estimate than the 95% confidence level.
- The time horizon for the VaR estimate: At the same confidence level and under the same return distribution, the longer the time horizon, the greater the VaR measure.
- The distribution of the portfolio returns: Portfolio A could have higher losses than portfolio B beyond the VaR confidence level due to different shape of their return distributions.

- (d) Recommend two approaches to complement VaR in measuring the tail risk.

Commentary on Question:

Candidates generally did well on this question. To get full credits, candidates need to name the alternative approach and provide explanations of why the approach complements the VaR measure.

1. Continued

- Conditional Tail Expectation (CTE) is the expected return given that the return falls in the worst x% of the distribution. It captures the tail risk beyond the VaR confidence level.
 - Stress Testing simulates portfolio returns under plausible extreme scenarios. It is able to capture the abnormal market circumstances and extreme events outside of the VaR confidence interval.
- (e) Calculate and explain the diversification effect.

Commentary on Question:

To get full credits, candidates should clearly calculate the diversification effect and explain why it exists in the context of the portfolio. Many candidates only demonstrated that the VaR of the portfolio is smaller than the sum of the VaR measures of stock and bond, without explicitly calculating the diversification effect.

Diversification effect = 2.13 (calculated from b) -2.75-1.9= -2.52Million

Total VaR of the portfolio is less than the sum of the individual VaR.
For portfolio A, under the same calculation method for the daily 95% VaR, the total portfolio is less risky than investing individually into stock and bond.

2. Learning Objectives:

2. The candidate will understand and be able to apply the components of an effective risk management system.

Learning Outcomes:

- (2b) Identify and describe the various kinds of risks, including market, credit, operational, etc.
- (2d) Explain the features of a best practices enterprise risk management system.
- (2e) Evaluate a company's risk management process.

Sources:

Sweeting Ch. 7- whole chapter

Sweeting Ch.8- pg108-111

Marginn & Tuttle; Managing Investment Portfolios section 1-4,6, pg585-596

Integrated Risk Management Ch. 7- pg 214-218

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Identify ABC's risk exposures.

Commentary on Question:

Candidates generally did well on this question. Candidates can get credits for listing other risks such as operational risk, business continuity risk, regulatory risk, tax risk accounting risk, technology risk, people risk and model risk

- Interest rate risk
- Credit risk
- Liquidity risk
- Foreign exchange risk

- (b) Explain how the company is exposed to the risks in (a).

Commentary on Question:

Many candidates were able to give a generic explanation of the type of risk, but failed to explain how the company is exposed to the risk based on the company's particular characteristics. Full credits will only be awarded if the explanation relates to the specific liability and asset profiles of the company as described in the stem. Explanations of other potentially relevant risks in addition to the ones listed below can earn credits.

2. Continued

- Interest rate risk: Investing in long-term bonds to back up SPDA liability exposes the Company to interest rate risk as SPDA customers may withdraw money when interest rates rise leading to realized loss on the bond holdings.
- Credit risk: The Company has substantial investments in high yield bonds which have higher risk of default or credit spread widening.
- Liquidity risk: SPIAs are required to make periodic payments and SPDAs allow clients to withdraw money at any time. Sufficient liquidity must be present, but the firm is making large investments into illiquid assets like private placements. Need to ensure liquidity is sufficient under different stress scenarios.
- Foreign exchange risk: The annuities are written in the US. Investments in foreign bonds subjects the firm to foreign exchange risk

(c) Describe the risk identification techniques to identify the emerging risks.

Commentary on Question:

Most candidates earn some credits for listing the techniques. Some candidates are able to provide correct descriptions to earn full credits.

- Brainstorming- Unstructured group discussion among employees from a range of backgrounds
- Independent Group Analysis- Have employees write down emerging risks then a facilitator aggregates them and leads a discussion
- Gap Analysis- A type of survey involving asking two types of questions, to identify both the desired and actual levels of risk exposure

(d) Recommend one of the above compensation packages.

Commentary on Question:

Candidates should clearly state their recommendation. Some candidates only evaluated three packages without a clear recommendation. Candidates need to evaluate all three packages to get full credits. Some candidates only critiqued the two packages they did not recommend, but offered no comments on the benefit of the package they recommended.

- 80% of Flat Salary + Performance-Driven is the best option for incenting managers to hedge risk and should be recommended.
- Offering incentive compensation that is directly related to company earnings per the recommendation would encourage hedging as managers will reduce their own risk and secure any efficiency gains from the hedge.
- Offering 100% Flat Salary may still allow for hedging, but the incentive on the manager's part is weaker as the earnings volatility is not directly tied to the compensation.

2. Continued

- Offering stock options provides a disincentive for managers to hedge as hedging reduces volatility and consequently the value of the options.
- (e) Assess the junior actuary's statement based on the following:
- (i) Asset Liability Management
 - (ii) Modeling Assumptions

Commentary on Question:

(e-i) Candidates should assess the statement by relating equity to the liability features of SPIA and SPDA. Candidates can get full credits if they say that statement (i) is incorrect as long as they make a sound argument. Mostly candidates earned partial credits for stating that the statement is incorrect and proving generic explanations, but failed to discuss the merit of the statement with regard to SPIA and SPDA liabilities.

(e-ii) Most candidates made the correct assessment that the statement is incorrect and pointed out the higher volatility of equity returns as a reason for their assessment. Only some candidates are able to make the correct assessment about the term to maturity part of the statement.

- (i) Nancy's assessment of the ALM is only partially correct. The liability duration of SPIAs tend to be very long, which may suggest that there is an ALM case for using equities to back the long dated liability cash flows of SPIA. The liability duration on SPDAs are generally short and the cash flows should generally be matched using appropriate fixed income assets. Equities make less sense here.
- (ii) Nancy's suggestion for the modeling assumptions of equities is not appropriate. Modeling equities like fixed income with a higher return is overly simplistic and fails to capture some of the key risks associated with equities (e.g. volatility, large sudden losses). Term to maturity is a fixed income property and it may not be appropriate to directly apply this to the modeling of equities which don't have a pre-defined term.

3. Learning Objectives:

1. The candidate will understand the needs and methods of governing investments.
2. The candidate will understand and be able to apply the components of an effective risk management system.

Learning Outcomes:

- (1a) Compare the interest of key stakeholders.
- (1f) Explain how governance may be structured to gain competitive advantages and efficiencies.
- (2e) Evaluate a company's risk management process.
- (2f) Examine examples of risk management failure.

Sources:

Financial Enterprise Risk Management, Sweeting, Chapter 20: Case Studies

QFII-101-14: Chapter 11 of Strategic Management: An Integrated Approach, Hill & Jones

Commentary on Question:

Commentary listed underneath question component.

Solution:

- (a) Critique the above Board structure.

Commentary on Question:

Credit was awarded for critiquing (good vs. not good, with justification) each bullet describing the Board's structure.

"Composed of both internal and external directors" – this is a good structure, though internal directors often dominate external directors, so it is important that the mix is appropriate.

"The internal directors are employees of the company." – it is important to have internal directors as they provide the Board with info about the company's activities without which they cannot perform adequately. The typical internal director is subordinate to the CEO.

"External directors are not full-time employees, but many of them are executives who serve on the boards of XYZ's competitors." – it is important to have external directors as they bring objectivity to the monitoring and evaluation processes. There may be conflicts of interest if the external directors are also serving on the board of XYZ's competitors.

3. Continued

“Most of the directors are appointed by the CEO.” - Board should not be dominated by the CEO and the directors should not be handpicked by the CEO, especially as the Board has the authority to hire & fire the CEO.

“The CEO is the Chairperson of the Board.” - Concentration of so much power with one single individual, the CEO, is not good. There should be separation between roles of the CEO & the chairperson of the Board – the chairperson going to an external director.

- (b) Assess the above organizational structure and strategies.

Commentary on Question:

A full credit for this part was expected to cover agreeable as well as problematic parts of the structure and strategies. Most candidates failed to identify the agreeable elements.

Agreeable elements:

“The CEO argued that these strategies will help XYZ be more competitive.”
Barring any adverse economic scenarios, the CEO’s strategies could lead the company to be more competitive, provide higher dividends to its with-profit policyholders and more accurately distribute profits between different generations of policyholders.

Problematic elements:

“minimum guaranteed annuity payout rates, which are locked in at issue for all future contributions. There is no limitation on the amount of future contributions.”

These are open-ended embedded options that could erode capital under certain adverse conditions (e.g. a fall in interest rates).

Failure to model accurately (and hedge adequately, if the company follows a hedging strategy) the extent of options of the guaranteed annuity rates and their open-ended applicability to all future contributions could pose serious risks to financial well-being of the company.

“The CEO, who is also the Appointed Actuary” - Concentration of power in a single individual. This problem is exacerbated if the CEO/Appointed Actuary is isolated and out-of-touch with the company’s risk exposures. Appointed actuary could be subject to peer review. There should be additional controls and distribution of oversight. The role of CEO and appointed actuary should be done by two different people.

3. Continued

“a strategy of distributing as much free assets as possible to the policyholder. The distribution incorporates no smoothing between generations.” - Could lead to insufficient capital (limited free assets) available to the company as a cushion for adverse events. A degree of inter-generational transfer provides security against adverse conditions.

- (c) Explain how the following economic environment could pose serious risks to XYZ.
- (i) Sustained low interest rates
 - (ii) Sharp spike in interest rates

Commentary on Question:

Many candidates gave the effect of the given economic environments generally, but did not relate it to the specific situation of XYZ. Thus, only partial credit could be given to these candidates.

- (i) A sustained fall in interest rates will make the guaranteed annuity rates more attractive i.e. the option against XYZ will become deeply in-the-money. It will be further exaggerated if there are no (or inadequate) hedges. This will be further extended due to the open-ended nature of the policies for all future contributions.
 - (ii) A sharp spike in interest rates will make guaranteed annuity rates and the open-endedness of future contributions less attractive, i.e., the option would become deeply out of the money. The policies would become less attractive/competitive to potential policyholders, resulting in loss of business for the company. Company would be unable to offset this through bonuses to its policyholders due to its policy of no smoothing between generations and possible legal complications.
- (d) Recommend solutions to mitigate XYZ’s interest rate risk exposure.

Commentary on Question:

Given below are sample recommended solutions. Candidates who presented other good points were credited appropriately.

Risk exposure could be mitigated by reducing the bonuses to policyholders at time of annuitization (i.e. reduce the richness of the benefits), but this may not be contractual and may well be illegal due to the company’s history of no smoothing between generations.

3. Continued

Adequately hedging the risks associated with the embedded options, though this might be expensive.

- (e) Critique the above operation, indicating the factors that could cause catastrophic losses within the Futures Trading Desk.

Commentary on Question:

Candidates generally did well on this part. Candidates who called out the specific factors and showed how they could lead to catastrophic losses for the firm got the maximum credit.

Factors:

“Trading and accounting done by the head-trader of the futures desk, reporting to the CEO quarterly”

- Trading and accounting should be done by different teams otherwise there is no independent oversight to ensure compliance with investment objective and opportunities for committing fraud are open, which could bring down the entire firm.
- Periodically reporting to the CEO is fine, but the CEO should not simply accept good results at face value. Good results, like poor results, should be questioned as it might be indicating fraudulent activity or erroneous reporting, which could both have disastrous outcomes for the firm. For example, the results should be compared to amount of profit expected for a low-risk arbitrage strategy.

“A substantial part of the earnings of the head-trader is made up of bonuses linked to profits of the trading desk.”

- Compensation structure encourages Trader to take more risk to earn higher profits. Instead of just arbitrage profit, the head trader could try to enhance the returns by holding net long or short positions. Excessive risk taking could be catastrophic for the firm.
- This risk taking would be further exacerbated if there is nobody to monitor the trader’s activities.

- (f) Recommend changes that could help prevent such losses.

Commentary on Question:

Candidates generally did well on this part. Given below are sample recommended changes. Candidates who presented other possible solutions were credited accordingly.

3. Continued

- Internal & external auditors should carry out their jobs more rigorously.
- There should be separate parties responsible for trading and back office functions.
- More robust analysis of consistency of profits being made vs. the strategy being undertaken – arbitrage strategies are low risk low return.
- Compensation strategy should be reviewed to ensure appropriate risk taking.

4. Learning Objectives:

3. Understand and be able to apply different approaches to risk measurement.

Learning Outcomes:

- (3a) Evaluate a company's or a portfolio's exposures to various risks.
- (3b) Explain the advantages and limitations of different risk metrics including value at risk.

Sources:

Chapter 5: Risk Management: A Review

Commentary on Question:

Question 4 tested the candidates understanding of various risk metrics. Candidates were expected to identify characteristics the metrics, perform calculations using each metric and identify the suitability of each metric to a series of potential applications

Solution:

- (a) Describe the Convex Risk Measure.

Commentary on Question:

To receive full credit on this part students were expected to provide a clear qualitative description that could be supplemented by a formula description.

Most students were able to provide a formula description of a convex measure, but, many did not provide a qualitative description

$$\text{Satisfys } \rho(\lambda x + (1-\lambda)y) \leq \rho(\lambda x) + \rho(1-\lambda y)$$

Where a linear combination of risk factors is less than the linear combination of those risk factors.

- (b) Identify the risk metrics above that can be classified as Convex Risk Measure.

Commentary on Question:

Most candidates generally well on this question

Convex and Coherent measures are Convex Risk Measures while Monetary and Spectral Measures are not.

- (c) Calculate each of the four risk metrics at the 99th percentile for ABC Life. Use the primary stochastic analysis for each metric, and the two additional stochastic analyses only when needed.

4. Continued

Commentary on Question:

Candidates generally fell into three groups: i) A group that did not do well, ii) a group that did well on calculating values associated with the Value at Risk, Worst Case Expectation and Conditional Value at Risk metrics but that did not get full points on the Spectral Measure and iii) the smallest group who did well on all calculations.

$$\text{VAR} = \$1,450\text{M} - \$390\text{M} = \$1,060\text{M}$$

$$\text{CVAR} = \$1,450\text{M} - 1/10 \times (123\text{M} + 156\text{M} \dots + 380\text{M} + 390\text{M}) = \$1173\text{M}$$

$$\text{WCE} = \text{Max} \{ \$1173\text{M}, \$1200\text{M}, \$950\text{M} \} = \$1200$$

Omega:

$$\text{Numerator} = (0.99) * ((2,200\text{M} - 1450\text{M}) - (-\text{VAR})) = 1,791.9\text{M}$$

$$\text{Denominator} = (.01) * (-\text{VAR} - -\text{CVAR}) = (.01) * (-\$1060\text{M} - -\$1173\text{M}) = 1.13$$

$$\text{Omega} = 1,791.9\text{M} / 1.13 = 1,585.8\text{M}$$

- (d) Assess the suitability of each of the four risk metrics to measure the potential risks described above.

Commentary on Question:

Most candidates generally did poorly on this section. Some candidates only identified the best approach for each risk rather than all qualifying approaches, other candidates misidentified which risk measures were appropriate for the various risks

Value at Risk:

VAR is not sub additive and may not capture the diversification effects across risks.

- i) VAR is not appropriate for the influenza risk because it may not capture the tail.
- ii) VAR has translation invariance and will appropriately handle the lawsuit risk.
- iii) VAR is adequate for the hurricane risk as it does not appear in the tail.

Worst Case Expectation:

- i) WCE will handle the distribution uncertainty of the influenza risk well because it considers several distributions.
 - ii) WCE is appropriate for the influenza risk because it takes an average of the tail.
 - iii) WCE is unnecessarily complex for the hurricane risk.
- WCE has translation invariance and will thus handle the lawsuit appropriately.

4. Continued

Conditional Value at Risk:

i) CVAR is appropriate for the influenza risk because it takes an average of the tail.

ii) CVAR is unnecessarily complex for the hurricane risk.

iii) CVAR has translation invariance and will handle the lawsuit appropriately.

Overall, CVAR is a coherent risk metric which is a desirable feature. (pg 96 – 103).

Omega:

Either

not appropriate for influenza

not appropriate for hurricane

Not appropriate for lawsuit

or

Omega is not appropriate given the nature of the analysis. Omega considers the positive side of the distribution which is not required for Bob's capital analysis for the influenza or hurricane risk. Omega is a ratio and thus does not have the translation invariance property and will not handle the lawsuit risk appropriately.

5. Learning Objectives:

2. The candidate will understand and be able to apply the components of an effective risk management system.

Learning Outcomes:

- (2a) Explain the importance of risk culture in an investment firm.
- (2d) Explain the features of a best practices enterprise risk management system.
- (2e) Evaluate a company's risk management process.

Sources:

Financial Enterprise Risk Management by Paul Sweeting Ch 1,

Managing Investment Portfolios, Chapter 9, section 1-4 by Marginn & Tuttle

Advances in Risk Management and Risk Governance by Rahl

Commentary on Question:

Candidate generally got some but not all points on this question. See the individual parts for a detail analysis.

Solution:

- (a) List the common steps of an ERM framework.

Commentary on Question:

Most candidates were able to list the common steps of an ERM framework. No explanation was needed, only a list of the steps.

One of any of the following two lists were acceptable

List A

1. Assess the context in which the framework is operating.
 - Understand the internal risk management environment of an organization
 - Understand the nature of the organization
 - Understand the interests of various stakeholders
 - Understand the external environment
2. Create a consistent risk taxonomy.
 - Facilitates discussions on risk for organization-wide understanding
 - Avoid excessive jargon so that the framework can be externally validated
3. Identify risks to which the organization is exposed.
 - Divide risks into those that are quantifiable and those that are not
 - Assess risks.
 - Compare assessments to target levels of risk
 - Decide how to deal with risks beyond targets

5. Continued

4. Implementation
 - Take agreed upon measures to manage risk.

List B

1. Identify each risk factor to which the company is exposed.
2. Quantify each exposure's size in money terms.
3. Map these inputs into a risk estimation calculation.
4. Identify overall risk exposures as well as the contribution to overall risk deriving from each risk factor.
5. Set up a process to report on these risks periodically to senior management who will set up a committee of division heads and executives to determine capital allocations, risk limits, and risk management policies.
6. Monitor compliance with policies and risk limits.

(b)

- (i) Describe this model and explain any shortcomings associated with it.
- (ii) Recommend an alternative risk management model to address its shortcomings.

Commentary on Question:

Candidates were generally able to describe the model but only partially identify its shortcomings. Many candidates recommend a correct alternative model but few were able to address how their recommendations were able to address the shortcomings of the offense and defense model.

Description of the model

- The first-line business units try to take as much risk as possible to maximize returns. The central risk function tries to reduce risk as much as possible to minimize losses. The two lines are set up in opposition.

Shortcomings

- No incentive for first-line units to consider risk since they regard this as the role of the central risk function.
- The central risk function has an incentive to stifle risk taking altogether instead of managing risk to obtain a return.
- **The “Three Lines of Defense” Model:** The first line of defense is carried out as part of the day-to-day management of an organization. Their work is overseen on an ongoing basis, with a greater or lesser degree of intervention, by an independent second tier of risk management carried out by the CRF. Both of these areas are overseen on a less frequent basis by a third tier, audit. This model explains divisions of responsibilities well.

5. Continued

- **The Policy and Policing Model:** The CRF sets risk management policies and then monitors the extent to which those policies are complied with. This avoids the outright confrontation that can arise with the offense and defense model. To be effective, it is essential that the CRF is heavily involved in the way in which business is carried out.
- **The Partnership Model:** The central risk function (CRF) and the first-line business units work together to maximize returns subject to an acceptable level of risk. Risk professionals are embedded in the first-line teams to ensure there is constant dialog between the teams and the CRF.

(c) Evaluate each bullet point above.

Commentary on Question:

Candidates generally were able to get some but not all of the points in this question.

“The CRO will lead the Risk Management Committee and will be responsible for policing risk at the firm.”

- Policing role: CRO should not only be responsible for policing risk. It is best practice to give the CRO a strategic function as well. A good CRO adds value in both the policing component of risk as well as the decision-making component of risk.

“The CRO will be a senior-level position reporting to the CEO.”

- It is considered best practice for the CRO to be a senior level position, reporting to the CEO or chairman and providing regular updates to the Board.

“The CRO will assess the risk to the business by focusing on actual historical scenarios”

- Use of historical risk scenarios should be one of several considerations in evaluating risk. Individual assumptions should also be stressed (e.g., interest rates rising/falling, narrowing credit spreads, etc.) and future expectations and trends should be considered. “Management nightmares” can be considered, which is where stress tests are developed by asking the senior management team what kinds of things worry them based on what is happening in the world.

“The CRO will be given veto power over any business decisions to ensure that the company does not exceed a reasonable level of risk.”

- Veto power: Agreeing with the veto power may be acceptable if justified. Generally, according to the reading materials, “although some organizations give their CROs ultimate veto power, I do not believe a CRO should have veto power. If a CRO disagrees with a portfolio manager or the chief investment officer (CIO), the issue should be escalated to the next level of management.”

5. Continued

“The CRO will be responsible for providing an annual risk report to senior management.”

- Report to Senior Management: The CRO should deliver such reports more often than annually.

“The CRO’s incentive compensation is linked to the company’s profits over the past two years.”

Pay: Short-term incentives such as those promised the CRO should be a part of a compensation package, but do not alone promote a risk-conscious culture.

Compensation should be adjusted for risk. When employees are rewarded based only on profits, little regard is paid to risk awareness.

- (d) Evaluate each bullet above

Commentary on Question:

Candidates seemed to run out of steam on this question. Although part D was worth more points than part C, candidates generally wrote far less for this part and thus did not perform well on part D.

“The contents of each Board meeting are kept secret to avoid disseminating potentially sensitive information.”

- The secrecy is described as a poor feature in the reading. Good governance implies transparency in dealings with stakeholders. This means sharing information as openly as possible, including the minutes of board meetings.

“XYZ’s directors receive continuing education training periodically to help them perform their roles.”

- This is a good practice. Directors should receive training and continuing education to help them perform their roles.

“Board members' performance is appraised annually against a series of goals that the chairman and each member has agreed on. The chairman assesses his own performance to ensure consistency.”

- Some good elements here. So that appraisals are effective, it is important to set out exactly what is expected of the directors. This means that the chairman should agree on a series of goals with each director on appointment and at regular intervals.
- Also some bad elements. The chairman's performance should be assessed by other members of the board.

5. Continued

“Board members are required to own shares in XYZ. Board members are compensated based on the performance of XYZ’s stock over the past year to ensure that their performance will be aligned with the interests of shareholders.”

- Again some good elements here. Board members can be incentivized by being encouraged or obliged to buy shares of the firm on which they sit.
- Also some poor practices: Compensation should be linked not only to performance of the firm as a whole, but also to the individual performance of the director. Performance of the firm as a whole should be averaged over several periods to reduce the risk of short-termism.