

**Response to IOSCO Consultation
on the
Functioning and Oversight
of the
Price Reporting Agencies**



**Consilience Energy Advisory
Group Limited**

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In addition to providing business advisory services, Liz Bossley acts regularly as an expert witness in international trading litigation. Her published material includes “The Hole in the Barrel” (for CERA), “Trading Natural Gas (for the Oxford Institute for Energy Studies), “Bossley’s Guide to Energy Conversions” (for the Petroleum Economist), “Emissions Trading and The City of London”, “UK Emissions Policy Options” and “Delivering Copenhagen” (for the City of London), “BFO The Future Market”, “Project Finance using the Forward Oil Curve and Climate Change” and “Emission Trading: What Every Business Needs to Know” (for Consilience).

In October 2011 Liz Bossley of Consilience and Dr John Gault, at the request of IOSCO, the IEF, the IEA and OPEC, prepared a report for submission to the G20. The subject of the report was the activities of price reporting agencies in the oil market.

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Question for Comment

Q1. Are you or your company currently subscribers to the services of PRA(s)? If so, how would you rate the overall quality of the work being carried out by the PRA(s)?

Consilience does not subscribe directly to PRA services, however I work for a number of clients who are PRA subscribers and I am exposed to PRA data in my work for them. I have personally been involved in the oil price assessments process over a period of more than 30 years.

I will confine my remarks to Platts, Argus and ICIS as the three main publications of concern to the oil market.

All three publications in my opinion set high standards for themselves and by and large appear to uphold those standards. Any problems that may exist are not with the quality of the work of the PRAs, but with the scope of that work. I would identify three issues, all of which relate primarily to Platts:

- The concept of the Platts window, whereby only deals done in a particular way at a particular time are included in the assessment database;
- The decision by Platts to exclude deals done by particular companies for a period of time as a reprimand for not following through on deals indicated "in the window" or because Platts considers that deals done by that company are not eligible for inclusion in the database because the credit status of the company may make its deals unrepresentative of general market levels;
- The assumption by Platts of responsibility for the shaping of benchmark contracts in future years.

Platts, arguably, has too much power for a PRA and is using that power to determine the contractual framework in which trades take place, rather than simply reporting trades. This is an anomalous situation in the energy commodity price reporting sector. Platts only has this power because the industry has let it fill the vacuum left by the absence of an industry forum where contractual housekeeping matters can be discussed openly.

No such forum exists because oil companies are nervous about convening joint meetings to discuss contracts for fear of accusations of price collusion. It seems likely that a properly authorised and chaperoned forum could be constructed and overseen by a regulator to allay any fears of price collusion.

In my opinion the reason that the large industry players have let Platts take the lead is because in some cases the custom and practice that Platts has put in place has been manageable by those players who might otherwise be expected to provide leadership.

Platts' latest initiative – changing the 21-Day BFOE forward contract to a 25-Day contract, as a stepping stone to a 30-Day contract – is potentially unmanageable by the industry, in particular by the large companies who operate the North Sea terminals. Compliance with Platts' new procedure requires the amendment of a large number of upstream contracts to which a myriad of small players are signatory. These small companies have no incentive to comply because they are not participants in the forward market. These now have the power to block the changes needed by the terminal operators to cope with the move initiated by Platts unless the terminal operators give these small companies something in return.

- Q2. Please provide information on the impact of PRAs on physical oil and oil derivatives markets. Please support your comments with data on the volume and value of the related physical oil and oil derivatives business you are aware of, which is dependent on PRA benchmark prices (where possible broken down into the following categories: OTC; OTC cleared; or exchange-traded).

It is unlikely that this question will provide meaningful figures that will give IOSCO a clear idea of the volume and value of contracts that use PRA benchmark prices. Unless companies are obliged by law to report this data there is no incentive to do so.

It is my belief that the vast majority of physical oil production moves under contracts that use PRA benchmarks as a reference point. Forward and futures contracts provide the flat prices that make sense of the rest of the market that trades using differentials to flat-priced benchmarks. I would estimate that perhaps ~60-70% of OTC swaps and options are priced or cash-settled by reference to PRA quotes. The balance, I believe, are priced or cash-settled by reference to exchange traded contracts. However a significant proportion of exchange traded instruments themselves use PRA prices for cash settlement at expiry. The remaining open positions at expiry are settled by physical delivery.

I would find it impossible to quantify my response any further than this and the answers I have given are only rough estimates based on my own experience.

- Q3. What are the impacts of PRA processes on oil trading markets, physical and/or derivatives? In your answer please comment on the quality of PRA processes, their strengths, as well as the potential impacts of any perceived weaknesses.

The sheer volume of information that has to be considered and sifted by the PRAs is daunting and frequently opaque. Although there is a fair amount of standardisation of contracts the actual price or price differential reported to PRAs can vary substantially when delivery dates, price calculation dates, payment dates, cargo sizes etc. differ between

two apparently identical deals. It is necessary for the PRAs to exercise tenacity and judgement when deciding if prices have really changed since the last deal was reported or if there are hidden terms that they need to uncover that render the prices non-comparable.

It is unsurprising therefore that Platts attempted to improve the quality of its assessments by including only deals done in a standardised way at a restricted period of time during the day, i.e. in “the window”.

As discussed in response to Question 9 below some large market actors may be unconcerned about whether Platts prices are strictly accurate or not on any given day: if physical sales and the derivative hedges of these physical sales are all based on Platts prices then any inaccuracies that do arise are arguably of limited concern because they are cancelled out in long and short positions held by any individual large company.

However, a line may have been crossed when Platts persisted in introducing 25-Day BFOE earlier this year despite an open letter from Stasco advising against the move at that time for solid industry operational reasons.

In my opinion Platts is sincere in its objective of introducing changes that will improve the working of the market. But IOSCO and the industry may wish to question whether it is appropriate for a PRA to take on this role, particularly if it becomes the ultimate arbiter of whether or not its own changes are what the market wants.

Other voices with alternative ideas do not have a forum to present and debate those ideas. The “industry” is allowing this to happen because the large companies that have the power to challenge Platts have decided not to do so and the smaller players and other stakeholders, such as fiscal authorities, have no voice.

Q4. Do you consider PRAs to have potential systemic impact on the financial system? Please give reasons for your answers.

In my opinion it is unlikely that PRAs could realistically represent any such threat. If any individual PRA were to fail, contracts generally have a provision using fall-back reference pricing based on the assessments of an alternative PRA.

I believe that PRA prices do not have the capability of presenting a systemic threat to the financial system. Broadly speaking if any particular PRA were to set out maliciously to skew reported oil prices up or down, the maximum impact they could have would be measured in cents/barrel, rather than dollars/barrel. Given that the natural volatility of oil prices is measured in multiples of dollars it is difficult to envisage circumstances where a systemic financial failure could be laid at the door of a single

PRA, or even a number of PRAs acting in criminal collusion. Such collusion would in any event be very far-fetched.

- Q5. What are your views regarding PRA price methodologies, including your ability to identify methodological errors? Do you consider that mechanisms or procedures exist to address any such concerns and are they adequate? Have PRAs demonstrated responsiveness in updating their methodologies to reflect market development?

In theory the PRA price methodologies are transparent and should be auditable for methodological errors. However, in reality the amount of data produced on a daily basis and the exercise of subjective judgement by the PRAs when there is insufficient data makes this impractical.

What is not auditable is the reality of any deals done in the Platts window solely for the purpose of controlling the published prices. The PRAs can examine deals very closely and exclude deals that are questionable. In the case of Platts it can exclude companies that do not stand by deals that are concluded in its window. However, if two or more companies were to collude, PRA assessments could be manipulated. The short duration of the window, the small volume of eligible trade and the fact that there may be offsetting deals that are carried out, but which are not reported, leaves all the PRAs open to abuse.

In theory the fact that there are at least three PRAs testing reported deals for credibility places a limit on the impact of spurious deals. However, because all the PRAs timestamp their quotations at the same time of day, any collusion to influence one PRA would similarly influence the others thereby negating the moderating effect of comparison amongst PRAs.

A significant proportion of PRA assessments begin by assessing the flat price of 25-Day BFOE, or Dubai, or US Light Sweet oil at a particular time of day. In my opinion the reliability of assessments would be enhanced if these key benchmark assessments, or benchmark components, were to be lifted from a regulated futures exchange at a defined time.

For example, ICIS assesses the 25-Day BFOE price from which it builds a large number of other grade assessments as the ICE one minute marker at 4.30 p.m. London time. This means that the flat price benchmark, which varies in dollars/bbl, is set by a competitive, liquid and regulated market and it is only the EFP and grade differentials to the benchmark, which typically vary in cents/bbl, that have to be assessed by ICIS. The 4.30 p.m. 25-Day BFOE assessments carried out by Argus and Platts re-invent an ICE wheel that already operates very well in a regulated market. The actual 25-Day BFOE assessments of Argus and Platts can vary wildly from each other and from the comparable ICE one minute marker by more than the EFP differential.

Similar contracts exist on CME NYMEX and DME for other benchmark grades and these too could produce one minute markers that could be picked up as flat price components of benchmark grades by the PRAs.

The PRAs are very responsive to market developments in updating their methodologies. However, as mentioned above Platts does not just respond to market developments, but leads trading custom and practice in the market, albeit with good intentions.

- Q6. Does the voluntary reporting of transactions used in certain PRA assessments pose risks to the price assessment process? If so, how should these risks be mitigated? Would it be beneficial if reporting of transactions to PRAs were mandated (contractually or by legislation)?

In my opinion, selective reporting of deals leaves the price reporting system wide open to abuse, particularly when non-arm's length deals could be reported to the PRAs or transacted on the Platts e-window software as if they were arm's length.

I would suggest that a contractual or legal obligation to report all deals to PRAs would add more problems than it would solve. A deluge of data would swamp the PRAs and it is unlikely that all of it could be analysed to produce a timely set of quotations each day. It would also require an intelligent audit of when and why deals were done at any and all points during the day.

Large oil companies and trading companies transact hundreds of physical deals each day and hedge these using a wide range of OTC and exchange-traded instruments. In some cases it is not obvious which hedges relate to which physical position. For example, it may not be obvious that a long gas oil contract is hedging a short jet fuel position, but that may be the best, though imperfect, hedge available.

In some cases the same company may hedge by going long of one instrument to hedge one deal and short of the same instrument to hedge a different deal. The physical cargoes that are being hedged may be undertaken by two different offices, whereas the hedges may be conducted by a third office. The third office may net off the long and short hedges and therefore take no reportable action at all in the market.

Reconstructing motivation from the observation of reported action taken is not as easy as it may at first appear. It would be easy to suspect conspiracies and wrong-doing when all that is happening is that the industry is going about its normal, if complex, business.

I would suggest that the analysis of all trading data, if it could be done at all, could not produce a result on a daily basis in time to inform the price assessments published each day by the PRAs.

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- Q7. Do low numbers of transactions used in certain PRA assessments pose risks to the price assessment process? If so, what crude grades and markets do you see affected by this? What is considered to be a 'low' number? How should any such risks be mitigated?

In the physical market, except in the case of pipeline transfers, oil tends to trade in cargo lots. In the case of crude oil these are large, indivisible lumps of oil and, by necessity, the number of data points generated by the cargo trade is limited. When it is considered that, in the case of Platts, some of this limited number of trades is eliminated by non-compliance with Platts reporting guidelines or by the exclusion of certain companies, the paucity of data that informs price assessments is acute.

Even if this situation is not currently being abused, the potential for abuse is obvious.

- Q8. Taking account of existing PRA procedures to obtain information on which to base their assessment when no transactions have been submitted, are there any other approaches that may produce their benchmark prices in the absence of liquidity?

As discussed above, the use of regulated exchange prices to set the flat price benchmark at a series of given points in the day would do much to solve this problem. The PRAs could then exercise their fact-finding skills to assess differentials to the benchmarks, rather than using devices, such as the Platts window, to recreate a questionable substitute for what already exists, i.e. a transparent, freely traded, regulated benchmark price.

- Q9. Are there any issues regarding PRAs that concern you from a public accountability perspective?

No comment.

- Q10. Do you consider the function performed by PRAs to require a form of public oversight of PRAs? If so, which PRA activities should be subject to a form of public oversight and why?

If it were not for the dominant position of Platts and the fact that it acts as a leader of custom and practice rather than as a follower of industry action, my answer to this question would be no.

I am unclear about the nature of the Platts e-window. The matching of buyers and sellers on an electronic platform shares a lot of characteristics with electronic markets such as ICE, DME and CME, which are required to be regulated. If a broker is in the business of

matching buyers and sellers in the OTC market the broker is subject to mandatory regulatory oversight. But Platts is not.

I would suggest that this issue needs to be examined in detail to establish if either the Platts e-window needs to be regulated, or, alternatively if ICE needs to take responsibility for what happens in the e-window, if it does not already do so.

Q11. Please detail any concerns you may have about current ownership of PRAs in particular with regard to possible conflicts of interest.

I have no current concerns, but would be uneasy if any large entity of any kind whose fortunes vary with the oil price were to take a significant ownership stake in a PRA.

Q12. Do you have any concerns regarding the current corporate governance standards of PRAs? If so, what are the improvements that you believe are needed?

No comment.

Q13. Do PRAs need to be subject to standards of corporate governance that are equivalent to the standards to which regulated financial entities are subject? Please elaborate.

If PRAs do what their title suggests, i.e. report the prices they observe, then I personally do not have a problem with continuing with the existing standards of corporate governance. However, if a PRA undertakes a different line of business, as I believe Platts may do, then the standards that should apply should be those appropriate to that new line of business.

Q14. Do you have any concerns as to the robustness of the systems and controls in place at PRAs as they relate to the integrity of the processes used to construct price series or indices? Please explain.

The reduction of "the market" to a half hour period in the day when a very limited volume is transacted and from which some key companies may be excluded gives me considerable cause for concern.

Q15. Which authority, if any, should establish a set of principles for the appropriate level of systems and controls within a PRA and in particular as they relate to PRA benchmark methodologies? Would this sufficiently address any concerns you may have and, if so, how?

In response to Question 18 below I will be suggesting that an expert panel, subject to oversight by IOSCO, be convened to deal with contractual trading housekeeping issues in the oil market. I would

propose that this panel be involved in establishing a set of principles, systems and controls to be applied by PRAs when implementing or changing their methodologies.

The PRAs are commercial, independent companies who have, in my opinion, the right to offer price assessments based on whatever methodologies they deem appropriate. I suggest they should also have the right to offer varied methodologies in order to differentiate themselves from their competition.

So long as the methodologies are transparent and are adhered to by the PRA offering them, with the right of appeal to the expert panel if a stakeholder believes that they are not, I would suggest that this would be sufficient to address any reasonable concerns.

- Q16. Should PRAs as a general matter be subject to a specified external audit of individual operations or processes, the result of which could be published demonstrating standards of compliance with relevant rules? Would PRAs need to be held to account for such an audit and, if so, which organisations would be best placed to carry out such an audit? What are the benefits and risks?

I believe what I would call a technical audit would be helpful in ensuring or demonstrating standards of compliance with PRAs' own processes. To conduct such a technical audit would require the ability to analyse detailed market data and comprehend the methodologies of the PRAs and what they purport to achieve. I believe that such audits might be carried out by trading specialists that might usefully be accredited for the purpose by IOSCO. These specialists might report to the expert panel referred to in Question 15 above and Question 18 below.

I would suggest that the failure to satisfy such a technical audit should be made public and that the PRA concerned might be fined or that a regulatory "stamp of approval" might be withdrawn until any problems identified are addressed. I think it would provide considerable comfort to small companies who are not themselves active in the market but who rely on PRA prices in their contracts to be able to see a regulatory stamp of approval, equivalent to a kite market, attached to the PRA on which they rely. I think this would also provide a powerful signal to NOCs and fiscal authorities about the robustness of the assessments of their PRA of choice.

A regulator may not be able to control what PRAs do and arguably should not seek to constrain their chosen methodologies, but the ability to reward PRAs that are transparent, who follow their own methodologies and who adhere to an industry code of practice for handling complaints would be a welcome development.

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- Q17. Should PRAs be required to incorporate into their rules, if absent, a formal complaints procedure. If so, please explain what would be your preference in terms of procedure or process?

At the moment PRAs are self-policing. If a PRA reports price assessments that market players do not believe are a fair reflection of the market they can complain to the PRA in question, each of which has some form of complaints procedure. However there is no third party to whom a subscriber or stakeholder can appeal if it remains unsatisfied. This is particularly frustrating for companies whose deals are excluded from the price information database by Platts.

- Q18. Should disputes be resolved by an appropriate third party as a matter of course? Please explain the benefits and risks.

In my opinion, this would not be appropriate. I expect that a fair number of complaints are actually misunderstandings that can be resolved easily and cheaply by a quick phone call to the PRA concerned. I believe that only once the PRAs' own complaints procedures have been exhausted and have proved unable to resolve a significant dispute that a third party would be required to be called upon to intervene.

I would suggest that such third party be a group supervised by a regulatory authority such as IOSCO. The issues that are likely to be the subject of a complaint are technical and detailed in nature. It is perhaps outside the scope of IOSCO or any other regulatory authority to deal with such complaints itself. However I would suggest that a panel of industry experts might be convened to handle such complaints as cannot be resolved by the PRAs themselves. I will provide further details of this suggestion in response to Question 24.

- Q19. Should such a formal complaints procedure necessitate greater transparency in the handing and resolution of complaints by PRAs, for example by requiring transparency of the complaints process and publication of decisions and the rationale for them?

I would recommend that complaints that are escalated to a third party for resolution might be publicised in advance in order that any company with an interest in the issue has the opportunity to join, or challenge, the complaint. The outcome of the complaints procedure should be similarly published and referred to by the PRA in question in its subsequent editions.

- Q20. Please describe concerns you may have relating to potential conflicts of interests affecting PRAs arising from revenue generation, media reporting, internal staff management or any other source. Has this had any impact on the price reporting function of PRAs and if so how?

No comment.

- Q21. Are there any undue obstacles that prevent market participants from adopting different sources for price references? Please explain.

It is undoubtedly the case that there is rigidity in the system that prevents companies switching PRAs easily. The economic incentive to manage price risk means that companies endeavour to use PRA price reference sources for physical deals that mirror the availability and liquidity of risk management tools. In the crude oil market swaps and options tend to use either regulated futures exchange prices or Platts prices. The CFD “dated-to-paper” swaps market is a specialised risk management tool that uses only Platts’ quotations for cash settlement. To use a Platts’ risk management tool to hedge an Argus or ICIS based physical contract would be to introduce significant basis risk into a hedge.

There is a “chicken and egg” issue. If physical traders used Argus or ICIS as a price reference source regularly for wet, physical contracts then the CFD market makers would quote CFDs based on Argus and ICIS prices. The same would apply for other swap and option hedging tools. But because physical traders use Platts for their contracts, swaps and options providers offer Platts-based risk management tools.

This is no-one’s fault, but it is a fact of life.

- Q22. If so, does this constitute a competitive concern for either individual PRA benchmarks or the PRA sector as a whole? Where appropriate, please refer to specific benchmarks.

A situation where some big companies are critical of Platts but continue to use it as a price reference source has persisted over a number of years. I believe this reflects the fact that these large players are not so unhappy with Platts’ services that they would be prepared to take on basis risk to avoid using Platts.

It may also reflect the fact that the large players that are most vociferous in their condemnation of Platts are broadly neutral to the impact of those short-comings of the Platts services of which they complain: their physical contracts and their hedge contracts all use Platts so any price assessments they do not like are cancelled out.

The concern, if there is one, is where this leaves small companies, NOCs and fiscal authorities that have no influence on prices and who have a short or long exposure to prices of which some large companies are critical.

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- Q23. If you have concerns about competition relating either to individual PRAs or to the PRA sector or around individual benchmarks, please comment on how you think these could be addressed.

As mentioned above where a regulated futures market exists the flat prices they generate for benchmark grades are the best source of price information for that benchmark.

- Q24. Is there a need for structural reforms that would provide a process or mechanism for increased stakeholder representation or input of views? Given the use of PRAs by the oil industry, what mechanism would be needed to alleviate concerns of collusion?

As indicated in response to Question 18, I believe the PRA reporting and assessment process would benefit from oversight by a regulator, possibly IOSCO, using a panel of experts as its operative arm. The meetings of such an expert panel ought in my opinion to be hosted and overseen by a regulator.

The panel might be populated by traders on secondment from the industry and/or by retired traders and/or by trading consultants. I would suggest that ability to serve of such a panel might be subject to accreditation by a regulator such as IOSCO and might be open to representatives of any entities that have trading expertise and a knowledge of, or a stake in, trading and oil prices.

This panel might include representative of major and independent producing/ refining/ trading companies, regulated exchanges, NOCs, OPEC and fiscal authorities. I believe that the PRAs should also be represented on the panel. ISDA may also have some relevant input that it may be prepared to share.

- Q25. What should be included in the terms of reference or objectives of any such process? What are the benefits and risks?

I would suggest that the terms of reference of such a panel would be to host regular (quarterly/ half yearly?) industry meetings at which issues of relevance to oil trading contracts might be discussed. These might include declining volumes of key benchmarks, quality issues, logistical problems etc. that might require a concerted contractual amendment by stakeholders or a change in reporting methodologies of the PRAs.

This panel could also convene on an ad hoc basis to handle complaints against PRAs. I would suggest that in the case of unresolved complaints against PRAs the parties involved in each such complaint should bear the cost of convening an expert panel meeting. The PRA and the complainant involved in any given dispute could be excluded from serving on the ad hoc panel considering the dispute.

It is impractical to convene ad hoc meetings at short notice and expect all members of an expert panel to be available to attend. I would suggest that the expert panel should have a large number of members who could be called upon and that a minimum of three panel members, excluding those entities directly involved, would be required to resolve each dispute.

Inevitably panel members who are stakeholders could have a vested interest in the outcome of any regular industry meeting or ad hoc complaints resolution meeting. I would suggest that the terms of accreditation of individual panel members should oblige them to act in a neutral and objective manner. The terms of reference of expert witnesses in legal disputes might provide a useful model for drafting such terms of reference.

I would also suggest that the panel voting procedure should be constructed to preclude the possibility that the panel may come out with a tied or hung vote. I believe the panel would require a strong, independent chairperson with a casting vote. Such chairperson may be a member of staff of the regulator.

Q26. Who, if any one, should provide any oversight for such a process?

This has been answered in my responses to Questions 24 and 25.

Q27. If required, what would be appropriate models for oversight of PRAs, covering the options described above and potentially others you may consider appropriate? What are the potential benefits and risks, if any? What economic impact, if any, would there be?

This has been largely answered in my responses to Questions 24 and 25.

It is difficult to quantify the economic impact, but my sense is that it could be significant. For example if the impact were only 1 cent per day on an estimated 66% of world crude oil production that is priced by reference to Brent the annual impact would be over \$190 million per year. This vastly under-estimates the impact because it does not attempt to quantify the effect of a 1 cent improvement on price quotations relevant to the considerably larger quantity of OTC forward and derivative contracts priced by reference to PRA quotations.

Given the wide variations between the PRAs' forward flat price benchmark assessments, which are the first building block in assessing the price of other grades, the modest 1 cent example can on occasions be greater than \$1/bbl. This is why I have recommended in response to Question 5 that flat forward price assessments be lifted from regulated trading exchanges wherever possible.

The value at risk is significant, but is difficult to quantify precisely.

- Q28. Do you believe that a self-regulated PRA Code of Conduct could appropriately mitigate any risks or concerns you have about PRA governance? Please explain any concerns or identified risks and give reasons for your answer.

As discussed my concerns are not so much with PRA governance but with the power given by the industry to one PRA in particular, namely Platts. A PRA Code of Conduct would be of little use in addressing this situation. However it could serve the purpose of informing the terms of reference for an expert panel.

- Q29. Would your view of the application of a Code of Conduct change if the PRAs were held to account for its application by a public authority? Please explain and, if appropriate, state which authority or authorities would be best placed to hold the PRAs to account. What, if any, are the potential benefits and risks?

See answer the Question 28.

- Q30. Should greater attention be focussed by all market authorities, namely exchanges, their governmental regulators and relevant SROs, on the reliability of price series and indexes that are constructed by oil PRAs? If "yes", please comment on the objectives of and mechanisms for such greater involvement by these market authorities. If possible, please provide examples of financial instruments that raise price series/index reliability concerns.

If a regulated exchange relies upon PRA data for cash-settlement at expiry, I believe the exchange should have a duty of care to ensure that the assessments used are truly representative of the market price and are not subject to manipulation.

- Q31. Should IOSCO and any other relevant authorities develop for regulated markets and other trading facilities which use PRA benchmark prices in their derivatives contracts a set of specific criteria against which the suitability of PRA benchmarks should be assessed? If so, which criteria do you think should be included?

Yes I do. I would suggest that the relevant criteria would be those that would entitle the PRA to obtain the stamp of approval referred to in response to Question 16 above.