

---

# Possible unintended consequences of Basel III and Solvency II

---

## Abstract of the Edinburgh discussion

[Institute and Faculty of Actuaries, 21 January 2013]

### Contact

Malcolm Kemp, F.I.A., E-mail: malcolm.kemp@nematrian.com

This abstract relates to the following paper: Al-Darwish, A., Hafeman, M., Impavido, G., Kemp, M. and O'Malley, P. Possible Unintended Consequences of Basel III and Solvency II. *British Actuarial Journal*, doi: 10.1017/S1357321713000391

**Mr A. J. Clarkson, F.F.A. (Chairman):** I should like to ask Mr Kemp to introduce his paper. Mr Kemp has a first class honours degree from Cambridge. He has over 25 years' experience in the financial services industry. From 1996 to 2009 he was an Executive Director and head of quantitative research at Threadneedle Asset Management. He is currently managing director of Nematrian Limited, which specialises in developing intellectual property and providing consultancy services to the financial services sector. He is an Adjunct Professor at Imperial College Business School, where he teaches courses on Enterprise Risk Management (ERM). He is a Member of Council and a Member of the ERM Practice Executive.

**Mr M. H. D. Kemp, F.I.A. (introducing the paper):** I shall start by looking at some of the similarities and differences between banks and insurers and between Basel III and Solvency II. I will move on to address the main aim of the paper, which is to engage with the regulatory, actuarial and professional community on the topic of possible unintended implications of these two major regulatory changes coming down the track at roughly the same time.

I should stress at outset that the paper is not official IMF policy. The views expressed are those of the authors: they are not necessarily those of the IMF itself. I will also try to give you a flavour of some angles that people from outside the actuarial community may focus on in this type of debate. Most of the authors of the paper are not actuaries. Our involvement with this paper came about via the International Actuarial Association (IAA) (we are members of the IAA's Enterprise and Financial Risk Committee). The IMF approached the IAA for suggestions for individuals with knowledge of insurance and particularly Solvency II.

I should also note upfront that the paper focuses mainly on Pillar I aspects. This is primarily because Pillar II is a lot more complicated and it did not seem to us practical to do it justice in the time (and space) available.

Let me start by looking at similarities and differences between banks and insurers. One way of differentiating between banks and insurers is to consider the core roles that they undertake within an economy. Money arguably has two main uses in society, namely as a store of value and as a

means of exchange. Many insurance activities arguably focus mainly on its role as a store of value, i.e. on savings type activities, whereas banking, particularly retail banking, arguably focuses more on money as a medium of exchange, i.e. on the ability to use money to write cheques and buy goods and services from the local supermarket.

Of course we are not the only ones to have spotted this distinction. A core underlying issue in any regulatory comparison between banking and insurance is the perceived importance to the economy ascribed to the relevant industry by regulators (and supranational equivalents like the IMF) set against the perceived risk that they might prove a significant drain on the public purse if they fall into difficulties.

In essence, banks are viewed as more important than insurers in this respect: as more essential to what happens in society. If a hypothetical world could have one or the other, but not both, then the powers that be would generally ditch insurers before they ditched banks.

The differences can, however, be overstated. There are also some noteworthy overlaps or similarities and, of course, many companies have both banking and insurance subsidiaries. The paper provides some examples, mainly in the investment and savings area but also some on the product side (e.g. CDSs, with which both banks and insurers may be involved).

Another way in which banks and insurers typically differ is in their capital structure, and in who typically provides their capital base. Noteworthy is how banks are much more interconnected with each other, i.e. they invest more in each other's paper, than is the case with insurers. Of course, insurers do invest in each other's assets and liabilities, just not as much as banks do. For example, I provide advice to some insurers who use reinsurance fund links, which does involve some interconnectedness. An issue I will explore later is the extent to which interconnectedness may create systemic risk: most commentators view banks as more prone to systemic risk than insurers.

Banks and insurers also, typically, have different capital levels. Typically, insurers, particularly global reinsurers, appear to be better capitalised than banks. That being said, in an ideal world we would adjust in some way for the different level of risk potentially being run by each entity type.

Banks and insurers also differ in how their financial statements are drawn up. Banks tend to use somewhat more retrospective accounting bases (particularly in comparison with Solvency II). This means that, all other things being equal, their financial results ought to be more stable, at least in the short term, than those of insurers. The perceived extent of retrospectivity versus prospectivity in accounting statements is important to organisations like the IMF. This is because of its interaction with countercyclicality and whether and how we might want to include components within regulatory frameworks that aim to mitigate countercyclicality.

Another, perhaps more subtle, difference relevant to the paper is the extent to which banks and insurers tend to focus on Pillar 1 versus Pillar 2. I said the paper focused on Pillar 1 because in practice it was too difficult to focus on Pillar 2 as well. However, some of those who have read the paper have expressed the view to me that insurers maybe pay more attention, relatively speaking, to Pillar 2 than banks do when determining the amount of capital that they should hold. Maybe insurers typically aim to be less capital constrained on a Pillar 1 basis than banks. Conversely, banks seem to have more scope to get bailed out by their central banker if they get into trouble, as we saw in the recent credit crisis.

Let me now turn to some of the similarities and differences between Basel III and Solvency II. Basel III has arguably been created mainly by the regulators themselves (i.e. the Basel Committee), whereas Solvency II has arguably been more driven by politicians and civil servants (i.e. the EU Commission and other central EU bodies). There is a danger of overstating this distinction. There is, for example, the Capital Requirements Directive (which implements the Basel Accords in the EU) which perhaps in the EU banking world plays a similar politician driven role to the Solvency II Directive. The differentiation between regulator-driven and politician-driven is therefore not always clear-cut.

However, several implications still follow from this difference. For example, Basel III only covers the globally active banks. If you are a small bank in Mali, you will not necessarily have to maintain or follow the Basel III rules. In contrast, Solvency II is supposed to be more all-embracing (at least within the EU). Basel III, you could argue, is more a response to problems that were perceived to exist in Basel II, whereas the underlying driver behind Solvency II is a desire for more harmonisation across Europe. As I see it, Solvency II is effectively part of a wider European journey, most of which (e.g. the drive towards an EU “single market” in different goods and services) is not to do with insurance. It is perhaps interesting that progress on Solvency II has tripped up a little of late just as some other parts of this wider European journey have also tripped up (e.g. the current troubles with the Eurozone). This political dimension can have many unexpected consequences. For example, one interaction between Basel III and Solvency II that is perhaps not immediately obvious is the extent to which both of them require political impetus and enthusiasm to progress. In a sense, Basel III seems to have helped crowd out the political will to complete Solvency II. Regulators and politicians seem to have prioritised sorting out banking regulation over sorting out insurance regulation. Is this another sign of the relative importance (to the wider economy) that the political class assigns to banks versus insurers?

The two regulatory frameworks do, however, have some similarities. They embed relatively similar ways of thinking about capital and its different purposes, as epitomised by the logic behind capital tiering. That being said, there are some differences here. Some are relatively easy to justify given the different business models involved (e.g. treatment of ancillary own funds). Others are somewhat less easy to justify. For example, Basel III has ditched the idea of Tier 3 but Solvency II has not yet done so, although this may not be a big issue as most insurers do not make much use of Tier 3 paper.

The actual implications of the capital requirements of the two different regulatory regimes are heavily influenced by their underlying rationales. We all know that Basel III has several different objectives but a really core one is to get banks to increase the amount of capital that they hold so that they are less likely to be a drain on the public purse. Basel III involves quite substantial increases in the amount of capital that banks are going to need to hold, and in its quality.

In terms of the way that capital requirements are calculated, both Basel III and Solvency II use risk-based approaches. When different commentators compare the two approaches there is scope for language misunderstandings to arise. Each industry sometimes views what the other industry does as rather incomprehensible or unsound even though, at a very high level, both have a risk-based focus.

Basel III uses the same broad methodology as Basel II. There are some elements that insurance actuaries might tend to think are missing. For example, there is no *explicit* probabilistic basis like the 1 in 200 year event in Solvency II, but that does not mean that it is not *implicit* in the way in which risk-weighting is taken into account. Under the bonnet, both regimes have many similarities, albeit the language used may be different and may sometimes obscure these underlying similarities.

An aspect of capital requirements that is changing in both industries is the focus given to systemic risk and to the notion of systemically important financial institutions. This is not part of Solvency II as such, but has been gaining increasing focus of late so is covered in the paper.

Around 30 banks are deemed to be too big globally to fail. They will be subject to additional capital requirements. However, exactly how onerous these capital requirements will prove to be in practice, for them, is not clear. The extra cost of servicing the additional required capital may be partly offset by such banks not needing to pay as much to service their capital base. The logic here is that if the bank is deemed “too big to fail” and if it does then run into problems then it is potentially more likely to be bailed out by the government, perhaps reducing the loss that providers of such capital might otherwise suffer on default and therefore the return they might otherwise demand from such paper.

Once you unwrap the language, many banking risk-based capital requirements also appear in different guises in Solvency II albeit perhaps with a more explicit probabilistic basis and maybe with somewhat greater focus on the Pillar 2 requirements (e.g. the ORSA, etc).

One area, however, where there is a potential divergence of opinion relates to the topic of systemically important financial institutions. It is very clear from the recent credit crisis that some banks are systemically important and governments sometimes need to bail them out to avoid wider damage to the economy. But do insurers create the same sort of risks, and are any of them globally “systemically important”? Views on this topic differ quite considerably. A number of insurance trade bodies have come out pretty strongly with the view that insurers do not present systemic risks. The regulatory community (including supranational analogues such as the IMF) does seem willing to listen to some of these arguments but also seems to be more cautious in terms of reaching a conclusion on this topic.

As I have said, both Basel III and Solvency II aim to be risk-based. However, one possible difference in this respect, at least at a very high level, appears to be the treatment of diversification benefits. Not all risks are likely to come home to roost at the same time. Should you be allowed to take this into account in your capital computations? Basel III does not, in the main, explicitly take risk diversification into account, but it is possible to do so (and in practice is done by supervisors to some extent). In contrast, Solvency II is more explicit in its recognition of risk diversification (as those of you familiar with the correlation matrix approach in the standard formula SCR computation will appreciate).

I hope what you have heard shows that there are noticeable differences between banks and insurers, particularly in the roles that they fulfil. But I hope that you can also see that there are also some similarities, particularly as far as regulators and international bodies like the IMF are concerned.

I now want to look at some of the consequences that might arise from having both Basel III and Solvency II likely to be implemented at roughly the same time. Perhaps we will discuss at length later exactly when Solvency II might turn up, as it does seem to be a relatively moveable feast right now. The premise of this paper is that it will eventually be implemented.

The first point to note is that the two regulatory frameworks have been largely created independently of each other. There has been some degree of interaction. Some regulators, for example the FSA here in the UK, regulate both banks and insurers and thus naturally focus in a more holistic way on regulatory developments across both industries. However, this is not universally the case.

When my co-authors and I thought about this topic, we identified the following areas where there might be unintended consequences:

- (a) Cost of capital (i.e. cost of servicing the capital needed by different financial institutions);
- (b) Where and how this capital will be sourced;
- (c) The potential for risks to move around the financial system in unexpected ways; and
- (d) Other potential consequences that might arise due to arbitrage between the two frameworks.

It would have been nice to have been able to quantify each of these possible effects and to be able to say which was the most important. However doing so was again beyond the scope of this paper. If you have views on these topics or have already done the necessary quantification then please share your insights with us during the discussion.

Let us first turn to cost of capital. One interesting insight I gained from my involvement with this paper was to better appreciate the extent to which the IMF might focus on economic theory when tackling this sort of question. In particular, the Modigliani-Miller theorem posits that the capital structure of an organisation should not affect the ultimate cost of servicing that capital. The greater the capital an organisation has, the lower its risk, and therefore the less costly it ought to be to service that capital. In reality, the IMF's focus was on how the theory does not fully apply in practice. There are several ways in which this particular theory may not apply. For example, debt capital typically benefits from a more favourable tax treatment than equity capital. This should logically affect banks more than insurers because banks rely more on debt financing.

Another way in which Modigliani-Miller can break down is where a third party is providing a risk underpin for the organisation. This takes us into the area of "Too Big To Fail", systemically important financial institutions (SIFIs) and the deposit protection underpin from which the banks are typically seen to benefit. This should again affect (large) banks more than insurers if Basel III is successful at reducing the systemic risk that they pose (and therefore reducing the likelihood of these deposit protection underpins being triggered).

The general consensus, when you follow through this type of logic, is that banks will be harder hit than insurers, i.e. that their cost of capital is likely to rise more than for insurers. However there are some possible countervailing arguments. For example, Solvency II might be viewed as a more fundamental change (versus Solvency I) than Basel III (versus Basel II or II.5) and therefore might have a greater impact on insurers' capital costs.

The topic that, perhaps, has garnered the most attention is the extent to which banks and insurers interact and interconnect with each other. Here the main perceived issue is that Solvency II is placing more onerous capital requirements on insurers if they hold bank debt (particularly longer-term bank debt) at just the same sort of time as banks need to issue more such debt to meet more onerous capital requirements. The worry is that the banks will want to raise capital just as insurers become less interested in contributing this capital.

We did look at this topic in a fair amount of detail. We agreed with many other commentators that this is likely to be an issue, but we thought that there were some mitigating factors that might not make it as important as it might appear at first sight.

Firstly, what banks mean by "long-term" when issuing paper is not necessarily "long-term" as far as insurers are concerned.

Secondly, the idea that insurers might, in effect, institute a buyers' strike for bank paper fails to note that a lot of insurer demand for bank debt is driven by liability requirements. Demand driven by unit linked (or even some participating business) might not necessarily go away merely because of Solvency II changes to insurer capital requirements. In any case, if banks find it more difficult to find buyers for their paper but still need to raise capital then presumably they will need to increase the return that they are willing to offer on that capital. So in a sense this point is linked back to the earlier point about cost of capital. Basel III is also prompting issuance of new types of bank capital that may be closer to equity, e.g. some of the bail-in type proposals.

Insurers are a noticeable proportion of the investor base but not the overwhelming proportion that you might otherwise have expected.

One possibility we hit upon was that interconnectedness might not manifest itself by insurers stopping buying bank debt but might instead involve both insurers and banks going after a third type of capital. A potential contender here is sovereign debt. This type of paper is viewed favourably in Pillar 1 by both Basel III and Solvency II. However, there may be some mitigating factors. For example, maybe insurer internal models could reduce insurer enthusiasm to buy the debt of less well-rated EU sovereigns. It seemed to us that this sort of "indirect" interconnectedness was worthy of further analysis.

The third possible type of unintended consequence we thought of was that we might see product and risk transfers between different parts of the financial sector. Here the focus of other commentators has primarily focused on situations where banks and insurers compete against each other, on the basis that there might then be substitution between these two entity types. We did identify a few situations where this might arise but again (applying lateral thought) what we thought might be more likely was risk transfer away from both industries to somewhere else. An illustration of this sort of possibility is the shift from DB to DC in the pension world. This effectively involves a transfer of (investment) risk from one part of the economy (here the DB pension fund industry and implicitly therefore businesses more generally) to another (here the members themselves, i.e. to individuals). It seemed to us that Basel II and Solvency II in tandem could easily encourage a transfer of risk away from organisations quite incentivised by these regulations to be risk aware (i.e. banks and insurers) towards other people or organisations who maybe had a less risk-aware focus. The latter group might include policyholders or customers more generally, or might involve transfer of risk away from regulated sectors towards shadow banking or other less formal components of the financial sector.

This type of unintended consequence is bread and butter to the likes of the IMF because of its wider policy ramifications. How do we ensure that risk sensitive organisations do not just offload all of their risks to people or organisations who are less well positioned to carry these risks?

There are several related policy considerations of which we need to be aware. These include the importance of enhanced communication between insurance and banking regulators, and the particular need to worry about the possibility that risks would morph away from both of these sectors simultaneously. A related policy issue particular to Solvency II is the topic of how to define and police "equivalence" between Solvency II and different regulatory frameworks outside the EU.

Also included for consideration is a topic which may be less relevant to the insurance world. Banks seem to be reacting to Basel III by issuing more covered bonds. These, in effect, ring-fence available

capital in a way that enhances the security provided to the covered bond holders. However, a corollary may be reduced security for other (non-covered) bond holders and customers. This arguably is another possible example of an unintended consequence involving transfer of risk between different parties within the financial system.

To summarise, there has been substantially independent development of two big regulatory frameworks. Their largely coincident implementation is likely to throw up some unintended consequences. Ones we focused on in the paper included potential changes to the cost of capital (although you might argue that this is an intended consequence). Two other issues that we also explored in depth, that are perhaps less intended, involved implications relating to funding patterns and the possibility that risk might move around the financial sector or go to places where it may not be well-captured and monitored by existing regulatory frameworks.

**Dr B. T. Porteous, F.F.A. (opening the discussion):** We are going through a period of massive change in financial services at the moment. The paper was published in August 2011, so inevitably some things have moved on. I am thinking, for example, of the Basel III liquidity changes. Both Basel III and Solvency II are massively complex. Neither seems anywhere near final. I think Basel III is a little bit closer to the finishing line. Although they have been developed independently of each other, I think that we can say that Basel III definitely has had an impact on Solvency II as it has been developed: there are interactions.

We have had a lot of other changes going on. The economic situation is fairly dire: with both Basel III and Solvency II, politics is never far away. Any conclusions that we draw from this piece of work must therefore, inevitably, be a little bit speculative and caveated. These are hugely important topics that we must understand and debate.

I thought it might be useful to step back and look at how we have reached where we are now, looking back a few years. Just to set the background in context, we have had a couple of crises. The banking crisis in 2008, from where Basel III emanated, definitely had an impact on the Solvency II development process. It kicked that process a little bit sideways. Supervisors introduced a lot of extra conservatism into Solvency II which we have been spending the last few years unpicking.

People are also beginning to get worried about the implications of Basel III and Solvency II. Banks may not lend because they are not sure how much capital they are going to have to hold against the lending, and insurance companies may not invest in infrastructure projects because they do not know whether or not they can take credit for an illiquidity premium. At least, at the moment, in Europe, growth is the most important thing. The decision-makers are politicians and for them getting the Euro-zone economies growing again is much more important than getting the technicalities of Solvency II or Basel III correct.

I have an example of that. The EC is going to put out a Green paper on long-term investment quite soon and it is expected to recalibrate Solvency II to make it easier for insurance companies to invest in long-term investment.

We have also had the Euro-zone crisis in 2011. We have had sovereign bailouts, high government bond yields, potential defaults and the realisation that sovereign debt is not risk-free. That is a new insight for many of us. This is depressing our asset market values and economic balance sheets and has led, in Solvency II, to the call for the counter cyclical premium that you may know about.

On the other hand, we have also had record low government bond yields in certain markets: Germany, the USA and Canada. This has put enormous pressure on high guarantee insurance markets and has made the design of savings products very, very difficult. Again, under Solvency II, that has led to the call for a matching adjustment (the new name for the illiquidity premium). There is also the realisation that low interest rates are probably a bad thing *per se* but, at least for banks, it reduces their cost of funding. So they, at least, are getting something out of it.

The next element of background and context is regulatory. There is a huge amount of change going on at the moment. We have Basel III, which is a global banking initiative. Within insurance, Solvency II is an EU or, some might say, a regional initiative. Sitting alongside is the IAIS Comframe work which is most definitely global. There is also an attempt to push Solvency II into defined benefit pensions in Europe.

As Mr. Kemp mentioned, financial stability is a big topic. We have systemically important global banks, and that approach is also going to come through, probably, for insurers as well, through the IAIS. They are going to publish a list of systemically important global insurers in the spring of this year.

Resolution is another hot topic with the Bank of England, Treasury and Commission putting out papers on this topic. That is not to mention all the other things that have been going on: Retail Distribution Review (RDR), Markets in Financial Instruments Directive (MIFID) and Packaged Retail investment Products (PRIIPS), for example. The regulatory environment is one of massive future change and flux.

We also have supervisory change going on at the same time. Within the Euro-zone, it looks like we will have a new single Euro-zone banking supervisor this year, sitting underneath the ECB; and EIOPA, which is the European insurance supervisor, is wondering what this means for it. Will it one day be subsumed into the ECB? Euro-zone insurers may be supervised, in due course, by a central bank.

As I mentioned earlier, we have this little bit of friction between the IAIS and the European Commission on international insurance supervision. Each is pushing its own ideas and thinking onto the global supervisory stage.

Finally, within the UK, we have the FSA which is being replaced by the PRA and the FCA, under the Bank of England. On the supervisory front there is an enormous amount of change happening.

The final matter on background context is political. This may be an area where the paper could have said more. Certainly within Europe (and this is based on Solvency II observations) you have the three institutions: the Commission; the Parliament; and the Council. The actions and interactions between these three institutions may help explain why Solvency II is proving so difficult to land.

Within the Commission we have seen a fairly inflexible approach, I think, on big topics like equivalence and contract boundaries. You might go further on equivalence and say that the EC has taken a fairly high-handed and possibly even arrogant approach in assuming that all third country regimes outside of Europe are weaker and not as good as Solvency II. That comes through a little bit in the paper as well.

Then, we have the Parliament, the ultimate decision-makers, a collection of individuals who really struggle with the technicalities and do not really know who to believe, quite reasonably.



Finally we have the Council, which is composed of the finance ministries within Europe. It is typified by weak presidencies. We have just finished with Cyprus, and Ireland are now in charge for the next six months (I am not suggesting that the Irish presidency will be weak). Then we have Lithuania and, following that, Greece in the first six months of next year. These are the presidencies which are trying to push through change when there is not a huge amount of consensus among some of the big member state Finance Ministries. We have a bit of a France versus Germany situation going on here on the matching adjustment, for example.

Finally, to complete the background, on internal models the Bank of England is a key influencer. They clearly do not trust banking internal models. They want to manage banks' and insurers' internal models using simple early warning indicators or the leverage ratio in banking and that is of real concern because we might end up having to hold more capital than our models say we do. It also compromises internal models and devalues the use test.

In terms of where we are, it is quite a complicated environment. There are a lot of issues that are affecting both Basel III and Solvency II.

I just wonder whether with these two regimes we are comparing apples and pears, for the following reasons. Solvency II is very much a market consistent valuation of assets and liabilities. Capital is defined with decent rigour, and it includes future profits. The capital requirements themselves are reasonably holistic and risk-based. The whole thing is quite close to an economic capital approach and is reasonably logically coherent. It is also very ambitious and some would argue maybe it is too ambitious and that is why we are having such difficulty in landing it.

On the Basel III side, I think that we have a mix of market and book values to value assets and liabilities. I think that is quite a bad starting point. Capital, again, is defined with good rigour but it does not include future profits as Solvency II does.

Risk-based capital requirements are partially risk-based because Basel III only picks up credit, market and operational risks. It is not holistic across the spectrum. It is a little bit piecemeal. As Mr Kemp said, it does not allow for diversification benefits within the capital requirements. I think Basel III is not as close to being an economic capital approach as is Solvency II and maybe it is less logically coherent. Perhaps that is understandable because it has been developed by reacting to events that have been happening in the banking world.

I take the view that risk is risk and capital is capital. If you look at both of these institutions, I think, in principle, they are very, very similar. There are some differences. Banking assets tend to be longer than their liabilities, which introduces liquidity risk. Banks may be more connected because they fund each other. But, on the other hand, insurers invest in each other. Insurer assets are generally shorter than their liabilities which can introduce reinvestment risk.

I just wonder, apart from these differences, whether the differences that are highlighted in the paper (paragraphs 12 and 32, for example) really are genuine if you take an economic capital approach to risk and capital.

Moving on to the unintended consequences that Mr Kemp spoke about, I would like to add in a few points that are not covered in the paper because they are fairly recent developments. On the banking side we have heard about LIBOR fixing, money-laundering and IT failures. On resolution, it looks

like the Bank of England is going to require banks' sub-debt at the level of a group to be genuinely loss absorbent, which it did not seem to be in the last banking crisis. For some banks, no matter how much capital we pump in, they seem to need more. So these three aspects seem to point towards an increasing cost of capital for banks.

On the other hand, the banks are shrinking and are trying to de-risk. That might point to their costs of capital reducing.

On the insurance side, will supervisors allow the diversification benefits that internal models say are there? Based on some of the ICAS+ conversations with the non-life companies, it looks as if the FSA is going to take a hard line and not give full benefit for diversification. We have the high guarantee markets with risk-insensitive regulations in Germany, for example, where it looks as if there will be problems in the near future unless bond yields increase fairly soon and German insurers overhaul their business models.

It looks as if there could be some issues in these markets which would be bad for the industry and potentially increase insurers' cost of capital. We have talked about equivalence. Mr Kemp talked about leakage of risks into regimes which are not as strong as Solvency II. I think ultimately the equivalence decisions will be driven by politics and competition arguments. It is very important for EU insurers that we can compete on a level playing field in third countries, and that needs an equivalence assumption.

Also, the equivalence discussions are going to be part of a much bigger trade package conversation. You cannot isolate the insurance equivalence debate from the wider trade debate.

Moving on to funding patterns, I think the argument is made in the paper that both banks and insurers will increasingly invest in government debt because it obtains a favourable treatment under both Basel III and Solvency II. That will increase banks' and insurers' interconnectedness. It begs the question: is government debt risk-free? Under Solvency II, the standard SCR says yes it is – you do not have to hold capital against government debt. But we all know that is not the case. The problem the Commission has is, if they change the Standard SCR to require capital for Greek debt, for example, you could end up putting a lot of Greek insurers out of business and make them insolvent. Ultimately it is, I think, going to be a political decision on how government debt is treated under Solvency II.

I think the paper makes the argument that shorter and higher rated debt will become more popular for insurance companies. I think the argument is based on Standard SCR calibrations and ignores any risk return analysis. Moreover, typically, the big firms are going to have their own internal model calibrations which it is hoped will pick up the right risks through their own calibrations. We also have the possibility of the EC recalibrating Solvency II to make it easier for insurance companies to invest in long-term investment.

The other new dimension is the matching adjustment which is obviously a fairly recent development and is being tested at the moment. I think that it is, potentially, a game changer in terms of where insurance companies are going to invest in the fixed income asset space. A lot depends, however, on where the matching adjustment debate lands.

For banks there is the same issue around government debt. We know it is not really risk-free, but will this be recognised under Basel III? Will government debt attract a capital charge or not? On the

positive side, the matching adjustment creates big opportunities for banks. If they can construct debt in a way that is attractive and works for the insurance industry under the matching adjustment technology, it is going to increase the demand for that type of debt. There is a good opportunity for banks here. It would be a form of longer term funding and debt capital and would, categorically, increase the interconnectedness of the banking and insurance industries.

I want to end by mentioning some other topics. The paper is huge and it is dealing with complicated issues. There are some other issues that are probably worthy of study and discussion. Pension risk: Solvency II includes the market risks within a staff pension scheme within its capital requirements as if the market risks in respect of that scheme are on balance sheet, whereas Basel III does not do that. That is a difference.

Typically Solvency II assumes that within a corporate structure there is one group entity and all of the other entities are what are called solo entities. The treatment of these group and solo entities under Solvency II is really quite different. For Basel III, a group is recognised at each level within the corporate structure. This is another difference.

Finally, financial conglomerates. There are issues, for example, for insurers that are owned by banks. In the USA, a leverage ratio is applied to an insurer that is owned by a bank, even though this is completely inappropriate. It is something that is happening. For banks owned by insurers, I am just wondering, once we do have a single Euro-zone banking supervisor, will this supervisor remain content just supervising the bank within that structure, or will they try to expand their scope and supervise the insurance company also? This is a highly complex area.

**Mr P. O. J. Kelliher, F.I.A.:** From my own experience, I think we have some unintended consequences already hitting us in respect of Basel III – or should I say Basel 2.5? The change in trading capital requirements has led to a substantial increase in the capital that investment banks need to hold for their market making operations. I think that is impacting us as we speak in terms of liquidity in the corporate bond market.

I noticed in the *Financial Times* (FT) that the inventories of US market makers of corporate bond stock held to create a market, has fallen by around about 75% between 2007 and now. I suspect that we are already seeing the impact of that in terms of reduced liquidity in the corporate bond market. There has been a bit of a rally in recent years which might be disguising some of that reduced liquidity, but it is something we should be aware of as one of the unintended consequences.

Going forward, another area that I feel would give rise to unintended consequences would be to push, under the whole Basel regime, towards central clearing and standardisation of derivative contracts. There are two issues I can see in this area. First of all, it will be much more difficult to get bespoke over the counter options to match particularly complex liabilities. Secondly, I noted the FT making the point that there is a limited amount of high-grade collateral that would meet CCP requirements.

Finally, I should like to get the panel's opinion on the situation of Tier 1 and Tier 2 securities that life insurers have on their books. Banks are no longer going to derive any capital benefit from them in due course. One concern that I have about these bonds is that they have a lot of options which banks have, in the past, not chosen to exercise. They have generally tended to redeem them at the first call date. They have not opted to defer them, even though they have the right to do so.

One of my concerns is that there could be a change in attitude. Banks could say that they are not going to get any capital benefit from these, they need long-term funding to meet the liquidity requirements and, depending on the step up in these bonds, banks may choose systematically not to redeem at the first call date and instead treat them as long-term sources of funding.

**Dr G. T. Smith, A.F.A.:** It was good to see that the authors had picked up on some of the more arcane things that are real problems in the banking sector, such as the incurred loss approach to credit loss provisioning, and so on. That has been recognised by the Basel committee, and I hope that the accounting standards people will take on board some of those criticisms.

Probably one of my more interesting areas in banking has been around liquidity and treasury risk management where you have a much shorter duration of assets and liabilities. One of the areas I thought was a potential systemic link between life insurers and banks is really around money market funds and sterling liquidity funds, and so on, which are marketed to individual investors by life insurers. Some of this money finds its way into funding banks by buying up short dated instruments issued by the banks and so on.

We saw in the crisis that can be a problem – the famous term that some of these money market funds “broke the buck”. Indeed, I believe that some of the major life insurers had to top up the unit value of these funds.

There is, quite rightly, a lot of focus in the paper on the links at capital level and longer-dated instruments but there is also a great deal of importance in short-term liquidity and funding level. There are probably more areas to explore there.

**Mr W. D. B. Anderson, F.I.A.:** There are lots of good technical nuggets in the paper and it made me think, too, about the boundaries between banking and insurance work.

Increasingly, the boundaries look pretty blurred to me. There seem to be lots of banks doing risk protection type products which look increasingly like insurance. Equally, in reverse, there seem to be lots of insurance activities that look a bit like lending money to people. One might take, for example, equity release mortgages as a good example. Most of the providers in the UK that are offering equity release mortgages are life insurance companies who find that these things fit more easily with their long-dated illiquid assets that they hold.

I was thinking about the markets as a Venn diagram, if you like, and thinking that the insurance world and the banking world increasingly overlap. The intersections get bigger. I also think that there is an increasing number of shadowy bodies that look a bit like insurers and banks as well, and possibly outside the regulated regime.

I think that the peer to peer lenders, for example, are a particularly interesting activity. If you are financially astute and you have a good credit rating, you would be barking mad to go to a conventional bank these days to borrow some money.

The same is true in currency transactions. If you are financially astute, you would not go to a bank these days, you would go to a peer to peer lender. One of the unintended consequences is this kind of detailed regulatory focus on the traditional providers, if you like. But the interesting things that are going on are really outside the regulatory regime. So I would encourage people

to look broader than just looking at the detail of the regulatory activities within Solvency II and Basel III.

**Mrs I. M. Paterson, F.F.A.:** I wonder whether the panel supports the idea that the Actuarial Profession, be that at UK level or IAA level, should be asking for a review of the unintended consequences, so that we can understand if they need to be addressed? Indeed is that not what the European Commission is there for? Should it not be asking the regulators why there may be such effects to determine if we have the right framework?

I also suggest we do not need a detailed answer to examine all potential unintended consequences. Rather we can focus on what we consider the most worrying unintended consequences. For example, you made a very important point regarding risk transfer. You thought that a possible unintended consequence was that you might see some product and risk transfers between different participants within the financial community. Is there then a need to have more investigation into the impact of this potential risk transfer to try to understand that before both sets of regulations are fully introduced?

**Dr D. J. P. Hare, F.I.A.:** A lot of regulation now seems to be aimed at achieving consistency across insurance and banking organisations. Having something that teases out the subtle differences between banks and insurance companies might be helpful in ensuring appropriate regulatory environments.

The second thing that I thought about is some work that perhaps the Actuarial Profession could do, or whether the IMF have already done it, into quantifying the impact of what is going on in regulatory regime developments. That could be particularly important.

I am struck by a comment that I think Mrs Pryor (formerly of the Board of Actuarial Standards) said, which is that “all models are wrong but some models are useful”. We have debated the benefits of the pros and cons of two different approaches to liability and supervisory management. Essentially, we are talking about different models. One thing we can be really sure about is that all the models will be wrong in some way and will be proven to be inadequate in some crisis. It is incumbent upon us as actuaries to think about the uncertainty and to highlight where the models break down and what that could mean for society and for economies.

I wonder whether there is something that we could do to tease out some of the differences between the two models and what that means in terms of almost artificial incentives created for people to do certain things, which I think is what Mr Kemp was trying to highlight in some of his comments and in the paper as well. Whatever the rules are, there are a lot of clever people in financial institutions, whether they are banks or insurance companies, and they will find some way to optimise the set of rules that the regulator puts down.

I wonder whether what we are going to see in Solvency II is that a lot of it is going to come in sooner rather than later. I do not know whether people have seen what came out from the EIOPA in December: an intention that from 2014 a lot of the regulatory aspects of governance and ORSA requirements would come in. I do not know the status of that paper, but it was issued to the Groupe Consultatif for a conference call just today. It looked like a paper coming out from EIOPA in December of last year which essentially is paving the way for a lot of Pillar II and Pillar III coming in sooner rather than later. Then, depending on what comes out of the long-term guarantee assessment when it starts at the end of this month, that might help pave the way for Pillar I.

I come back to the point that no matter what political choices are made about the calibration of Solvency II, what political choices have been made about the calibration of some risks and others to be left out of Basel III, there will be consequences from that. Maybe that is what we as the Actuarial Profession should be seeking to highlight. We do not want to meddle in the political decisions. Those are judgements for others to make. We can highlight the implications of that which I think would be good for our economy.

**Professor R. S. Clarkson, F.F.A.:** When I saw the title of the paper, it occurred to me that the vital question was: how should actuaries respond to Basel III? My view, as an investment actuary, is that we should throw it out and return to traditional actuarial principles.

In March 1993, a debate was held at the Institute of Actuaries in Staple Inn Hall to discuss the motion that actuaries should adopt some of the methods of financial economics. In that debate, I was the seconder to Terry Arthur, a pensions' actuary, who was speaking against the motion.

Basel I was 30 pages. Basel II was 600 pages. Basel III will soon be 3,000 pages, but the methods of financial economics that led to Basel III are precisely the same methodologies that led to the recent catastrophes.

In the debate on whether to follow traditional actuarial mathematics or financial economics, the kernel of my case against the motion was that financial economists were guilty of promoting a narrow minded Stone Age methodology which had no relevance to the financial world in which we lived.

This, I admit, is not scientific language. However, I was trying to explain in commonsense terms what the dangers were, and I broke my case up into three main charges.

My first charge was that the promotion of theories involving linearity, normal distributions and capital market efficiency was little short of fraudulent.

My second charge was that financial economists were unscientific in the extreme in ignoring the investment research of actuaries.

My third charge was that financial economists, even then, had caused far higher levels of financial suffering than need be caused in our modern society. I talked of three particular dangers, but I do not have time to go into these. I have subsequently drawn attention to these dangers, in the actuarial literature and at meetings in places such as this, which I think have been borne out as having caused more concern than should have been needed.

I believe very sincerely that we should go back to our actuarial principles and look at what we as actuaries and, in particular, as investment actuaries, can contribute to a better understanding of our financial world.

**Mr Kemp (replying):** As always with these types of discussion, there are lots more ideas thrown into the melting pot than you initially thought might be the case. I do not have time to answer all of them.

I will however pick up on Mr Smith's comment about money market funds and liquidity risk. He asked whether this was on people's radar. The EU, in one of their recent consultative papers, did review shadow banking, into which money market funds fit. They also included within the scope of

that analysis some insurance activities that they thought fell close to, or within, the definition of shadow banking. In this context it is also interesting that we have discussed the topic of peer to peer lending and how it blurs boundaries between different parts of the financial industry.

Mr Hare was very keen that we teased out the intrinsic differences between banking and insurance. I agree with this goal. However, I can see some tensions arising regarding what exactly you do when boundaries are blurred which other speakers did seem to think would inevitably sometimes be the case.

For example, we heard of a few interactions that were not particularly Solvency II-driven from Mr Kelliher regarding the impact of central counterparty requirements. This, it seems to me, reminds us that we are all part of the same overall financial community. While we can obviously see differences between banking and insurance (and I agree that there is a danger here of an apples versus pears comparison), there seems to be some sharing of DNA between them. Likewise, the two regulatory frameworks we have discussed share some common ground and will each affect both sides of what is inevitably a somewhat amorphous fence.

**Mr J. R. Crispin, F.F.A. (closing the discussion):** The different regimes are likely to have significant changes on the future management of insurance business. For example the Solvency II regulations will drive new approaches to matching annuities which will change the prices paid by consumers. At the same time, while Basel III may increase the potential supply of suitable assets for matching annuities for insurers as the banks pull out of longer term investments there is a real likelihood that insurers may also find these assets unattractive depending on the final position of Solvency II which could have consequences for future borrowing by companies or governments.

As some speakers mentioned, the final rules are more likely to be driven by political rather than economic arguments and could have significant unintended consequences.

Another potential concern for insurers, as Mr Kelliher mentions, is that with the changing capital requirements for banks under Basel III there is a real risk that banks pull back from offering the hedging solutions that insurers look for and that may be needed more frequently under Solvency II. This, combined with the increased capital requirements, could restrict the range of products offered in future.

The assumptions of normality and independence in financial modelling have been factors in the past in terms of underestimating the potential scale of market movements. However one of the key focuses on Solvency II is to ensure that the distributions and the interdependency of risk factors reflect the underlying risks and in particular, reflect the non linearity and tail dependence that exists in the real world.

As Dr Hare highlighted, one of the key areas that needs to be remembered is that these capital calculations are all based on models and it is probably more important to understand the limitations of the models and, in particular, where the models may break before taking decisions based on model output than it is to understand the output from the model.

**The Chairman:** It remains for me to express my personal thanks, and I am sure the thanks of all of us, to the authors, the opener and the closer and all those who participated in the conversation.

Thank you.