THE INTERNATIONAL MONETARY SYSTEM: CONTAGION AND SPILLOVERS

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PAUL TUCKER, HARVARD KENNEDY SCHOOL AND BUSINESS SCHOOL

The global financial and economic crisis exposed huge flaws and fault lines in the international monetary and economic order. Fragility in advanced-economy financial systems, large imbalances in the global pattern of investment and saving (and so consumption), a ballooning of flighty international capital flows, and badly inadequate crisis-management capabilities --- all this left the world economy horribly vulnerable to a turn in the credit cycle. When the turn came, it was violent, widespread and prolonged. Countries here in Asia were swept up in problems not of your making. With myopic hubris, the West (North America and Europe) had failed to learn lessons for itself from the medicine it had prescribed not so many years before for the Latin American and Asian crises of the 1980s and 90s.

Five years ago, at the London and Pittsburgh Summits, G20 Leaders put in train a large and obviously overdue overhaul of the international economic system that had proved so fatally frail. The official sector set up two programmes. One, entrusted to the Financial Stability Board[1], was to rewrite the rules of the game for the financial system itself. That enterprise is international insofar as the aim has been to apply a common framework to countries' regulatory systems -- in particular, for banking --- so that they cater for internationally active firms and global markets. The other programme was to reform the International Monetary System (IMS) itself, whose flaws had accommodated the unsustainable global macroeconomic imbalances. In the real world, the two sets of problems were linked. The drivers of current account imbalances also led to a compression of global real interest rates, influencing asset values and credit conditions. And when the US subprime bubble burst, contagious infection via banking systems and capital markets spread the damage globally, irrespective of current account positions.

Notwithstanding those linkages, the two reform programmes proceeded largely in parallel universes, and with rather different results. The collective reforms of the financial system have made good progress[2], while the top-down efforts on the IMS struggled. That is partly because G20 officials got stuck on how to codify a regime requiring more symmetric adjustment to cumulative current account deficits. Guess what, the surplus countries didn't want to play ball. But, separately, reforms to IMF governance and resources also stalled.

My purpose this evening is to suggest that some of the most egregious faultlines in the IMS can, nevertheless, be mitigated by adapting the financial-reform programme to international macro-stability

[1] The previous Financial Stability Forum was put on a slightly more formal footing to pursue this work.
[2] See Tucker, "Financial reform, stability and central banking", Brookings 2014a.

ends. My themes will, accordingly, differ from those characteristic of most IMS discussions. Typical headings are exchange rates, global liquidity, reserve currencies, the SDR, and IMF governance[3]. Instead, my headings will be: the risk channel of monetary policy, national balance sheet monitoring and management, macro-prudential policy, planning for controlled spillovers via bank-resolution regimes, and lender-of-last-resort cooperation. What I will set out would not (directly) address macroeconomic imbalances in the pattern of saving and investment, or the misallocation of resources entailed. But it should be possible to reduce the most extreme costs of contagion and spillovers that in recent decades have characterized the international monetary and financial system. In that sense, this is about Policy with a capital 'p': it is intended to implementable, as well as being based on clear ideas. It is a policy agenda that can be pursued largely by central banks and regulators even if finance ministry negotiations on the grander architectural issues prove sclerotic. This isn't a matter of central banks substituting for elected governments, but rather of ensuring that international spillovers from domestic monetary and regulatory policies are factored into their own policy regimes. In particular, they can do much to mitigate problems from excessive short-term external liabilities, from the failure of cross-border banks, and from uncertainties about multi-currency lender of last resort (LOLR) operations.

I shall begin with spillovers from monetary policy, via the carry trade and other investment strategies. That is intimately related to vulnerabilities in national balance sheets and to the potential role of the new discipline of *macro-prudential policy* in crisis prevention. Prevention will not always work, so I move on to how better regimes for crisis management can reduce and/or control contagion. I will conclude by summarizing how this adds up to providing an agenda for the IMF, the key steward of the international monetary system.

Monetary policy spillovers, the carry trade and hot money

Over recent years there has been increasing recognition that monetary policy affects risk premia and risk appetite. I am not referring only to so-called unconventional monetary policy operations, such as quantitative easing, that were designed with the intention of influencing risk premia. Nor am I limiting this to the familiar process via which monetary easing raises asset values and so relaxes collateral and credit constraints; nor, even more generally, to monetary policy's effects on default and other premia via reduced volatility in output and employment. I mean also to include the very important finding that persistently easy conventional monetary policy can lead to a reduction in term premia[4]. This might be driven by a search for yield along a yield curve which, although not proven, could be related to firms and asset managers having nominal yield targets and/or relative performance objectives.

[3] That list is based on the chapter headings of the report of the Palais-Royal Initiative on Reform of the international monetary system (2011).

[4] See Stein J and S Hanson (2012), "Monetary Policy and Long-Term Real Rates". The result was replicated for the sterling yield curve, as reported in Tucker (2012), "National balance sheets and macro policy."

While that work has been focused on the transmission of monetary policy *within* domestic-currency asset markets, there are plainly international market analogues: notably, the cross-border, cross-currency carry trade. Casual empiricism has long suggested that traders put on lots of carry trades; run like fury at signs of trouble; and move, albeit less abruptly, when a larger spread becomes available elsewhere. Now, contrary to some earlier scepticism in official circles, recent research has confirmed that the returns on a diversified portfolio of carry trades are uncorrelated with (the main) equity markets, are not significantly skewed, but do have (smallish) fat tails; and that the returns partly reflect high aversion to losses in very low probability circumstances[5]. This should, I trust, help to remove some of the doctrinal obstacles that have impoverished debates about the IMS.

I say that because the simplest cross-currency carry trades are obviously fuelled by relative monetary conditions, especially when policy in a globally traded currency is easy and is expected to remain easy for a while. That exactly characterizes US monetary policy since late 2008. And with the borrowed-leg of the carry trade denominated in the world's premier reserve currency rather than, as a decade ago, in the yen or Swiss franc, the phenomenon might have reached a new intensity at times in recent years.

Of course, this isn't the only cross-border trading strategy, and not all entail borrowing short-term. Research is needed on international spillovers from the broader 'search for yield' phenomenon. That can see *long-only* asset managers purchasing overseas securities in the expectation of short-term gain when headline (ie, risk-unadjusted) yields at home are cyclically low, most obviously on account of easy monetary conditions.

Nor are monetary conditions the only element of official policy settings that influences the pattern of global capital flows. Prudential and other regulatory regimes are potent too, as illustrated by the flows of short-term capital from US money funds into and out of the euro area banking system. That example highlights that for the IMS there can be problematic flaws in the prudential regimes of both the recipient country *and* the lending country.

The market dynamics I have been summarizing mean that changes in monetary and credit conditions of large economies are liable to have a more pronounced effect on exchange rates and recipient-country asset prices, and so on local credit conditions, than standard macroeconomic models suggest. In some circumstances, a local credit boom can be ignited, or at least fuelled. These spillovers to local financial conditions are not limited to countries that have chosen to have an exchange-rate peg, which by design imports a foreign monetary policy. And while the build-up of inflows can be gradual, the exit is often abrupt and disruptive.

The trials in Asia in the 1990s and in the euro area (EA) more recently are examples of capital flight exacerbating *home-grown* problems. But capital does not flee solely due to crisis in recipient countries. The problems might begin in the providing country(ies), with capital pulled back home to help sort out

[5] For a summary, see Craig Burnside, M Eichenbaum and S Rebelo, "Understanding the profitability of currency-trading strategies", NBER Reporter 2012, Number 3: Research Summary; and "Carry trade and momentum in currency markets", 2011. Brunnermeier M, S Nagel and L Pedersen (2009), "Carry trades and currency crashes" make the connection to macro conditions. Earlier research on the 'forward-premium puzzle' attracted less interest in macroeconomic policy circles.

difficulties there or simply to reduce activity away from a lender's core-franchise markets. This resumption of 'home bias' has been a potent channel of contagion during the recent crisis, as for example when Euro Area banks abruptly pulled out of trade finance in this region in 2011/12.

Perhaps most frustrating, the initial flight of capital needn't be prompted by a crisis anywhere at all. It might simply be a 'rotation' of short-term capital from one set of opportunities to others elsewhere: game over, move on. That has come to the fore over the past few years as short-term capital first poured in to a number of emerging market economies (EMEs) — pushing up exchange rates and asset values, and loosening internal credit conditions; then withdrew, returned, and leaked away again as sentiment fluctuated with expectations of the pace and principles of the Fed 'taper'. Who knows what lies ahead, but it would be sensible for recipient-country authorities to do what they can while there is time to reduce identifiable vulnerabilities. Sometimes small shifts in resilience can make all the difference to averting disaster.

National balance-sheet management

The common thread is a vulnerable, fragile liability structure in part of economy. In the 1990s' Asian crisis, the sectors under pressure varied according to who had borrowed foreign currencies short term in external markets. In Thailand, it was the government; in Korea, the banks; but in Indonesia, the non-financial corporate sector. The rapid withdrawal of hot money triggered combined liquidity and exchange-rate-regime crises. Lessons included the importance of developing domestic capital markets, so that local savers and borrowers could meet without the currency transformation entailed by international-market intermediation; the virtues of floating exchange rates; and, crucially for my argument this evening, the importance of monitoring and managing national balance sheet vulnerabilities[6].

That last lesson was emphatically not just for EMEs; it was intended to apply to so-called advanced economies too. If its importance needed demonstration, the crises amongst euro-area countries have surely put it beyond doubt. But, tragically, national balance sheet risk-assessment was largely neglected, both by countries themselves and in IMF surveillance. Time and again policymakers have had to be reminded that the composition of *gross* capital flows matters a lot.

[6] See the 2000 Report of the Financial Stability Forum Working Group on Capital Flows, which was presented to G7 and G20 Ministers. The working group was chaired by Mario Draghi. I served on it. Looking back, it seems to have been relatively neglected even at the time, barely being mentioned in IMF documents or speeches. It was, though, taken up in Larry Summer's Ely Lecture, "International financial crises; causes, prevention, and cures'. And for a few years the Bank of England produced an annual review of the UK's national balance sheet.

This is not remotely to say that a country's net external position does not matter[7]. For example, a country with an external surplus should be better protected, provided that it can mobilize its collective national savings to weather an external run on a particular sector, with resources redistributed smoothly within the economy by private markets (or, in last resort, the central bank). In the early stages of the current crisis, Euro Area (EA) central banks borrowed dollars from the Fed to on-lend to needy local banks, against a broadly balanced current account position for the currency-area as a whole.

In summary, two points stand out. First, a flawed external liability structure combined with a fragile or overextended financial system leaves countries vulnerable to shifts in sentiment as hot money runs for the door. Second, the course taken by hot money is strongly influenced by relative monetary conditions and prudential policies, and can itself create the balance-sheet vulnerabilities from which it later flees. This is not to say that the major central banks should switch to weighing factors other than the medium-term outlook for domestic inflation in their monetary settings. But policymakers *do* need to be alert to *boomerang* effects: outward spillovers ricocheting back home.

For example, it was in the interests of the US for the Fed to lend dollars to the euro area in 2007/08 as otherwise the vulnerabilities in Europe would have flowed back even more violently to the US; just as the US subprime crisis had spilled over to Europe in the first place. The balance-sheet weaknesses of the US and the EA were closely intertwined.

But these boomerang effects are no longer just about connections between advance economies. In the past, advanced economies suffered badly from EME crises typically only if their big domestic banks were horribly exposed. That was very much the case in the 1980s' Latin American debt crisis, following recycling of petro-dollars via the money-centre banks in Wall St and the City. But during the 1990s' EME crises, that channel was much milder and, even in aggregate, the EMEs were then still a relatively small part of the world economy. Looking ahead, as EMEs become an ever larger part of the global economy, accounting for a growing share of output and trade, boomerang effects via macro-economic channels will become more prevalent.

This is not a one way street, with advanced economies needing to attend to how spillovers to EMEs from their domestic policies might boomerang back, but not vice versa. There is going to be increasing symmetry. We have seen signs of that already. Some EMEs took the lessons of the 1990s crises to heart, accumulating foreign exchange reserves to build a 'fortress balance sheet', thereby self-insuring against shocks rather than relying on external insurance from the IMF. One effect was to increase global saving, with the consequent compression in global real interest rates contributing to the appreciation in asset values that provided the collateral to fuel the credit boom in the West[8]. The eventual bust slowed growth worldwide, dramatically so in parts of Asia, including Singapore. Other parts of Asia, including perhaps China, are even now grappling with the effects of credit-easing policies employed to soften the

[7] See, for example, Maurice Obstfeld, "Does the current account still matter?", NBER working paper 17877, March 2012.

[8] I stress 'contributing'. The asset bubbles and credit booms in the West also owed much to flawed domestic policies, including prudential policy not heeding the effect of loose monetary policy on risk-taking behavior.

blow of weakened Western demand. One set of imbalances can lead to another, and all too often does so.

Is the only way out of this loop a regime shift to co-ordination of macro-economic policies? I don't think so, which is just as well given the dim prospects of a regime shift of that kind. If a key to vulnerabilities is the composition of national balance sheets, then that would be a better place to start. A great lesson of the crisis for domestic policymakers is the need to fill the gaping space between monetary policy and micro-prudential supervision. This, of course, goes by the exciting label *macro*-prudential policy.

Whole-economy macro-prudential policy

A credit-fuelled property boom that enfeebled the West's banking system was, of course, what helped to tip the world into crisis in the first place. Compared with the post-Asian-crisis reform debates, two things stand out. First, there has been much more emphasis on *dynamic adjustments* to prudential constraints as booms develop. It is no longer regarded as sufficient to introduce an improved set of *static* rules and regulations for finance. However well designed for broadly normal circumstances, any set of rules can be overwhelmed by the feedback mechanisms between credit conditions, asset values and risk appetite in an exuberant upswing[9]. That is the *cyclical* dimension of macro-prudential policy. Second, the authorities have been reminded that it is the state of *the system as a whole* that matters, not that of individual firms looked at atomistically. If firms have all lent to the same borrower(s), or to each other, or funded themselves from the same source(s), the system is vulnerable. That is the *cross-sectional* dimension of macro-prudential policy. Macro-prudential authorities have been created in some countries. In others, existing authorities have been given new powers, or now conceive of using their existing *micro*-regulatory powers for *macro*-prudential ends[10]. Singapore has very much been part of this, as described last year by Monetary Authority Managing Director Menon[11].

The tools include varying requirements on capital, liquid assets, and excess collateral requirements, including loan-to-value ratios on mortgage lending. They might be used in the face of a credit boom or other developments leaving the system unusually vulnerable. So far, the focus has been on the financial sector, but it could go wider to embrace external vulnerabilities: *whole-economy* macro-prudential policy.

Macro-prudential tools for capital-flow management

[9] See Tucker 2014a, *op cit*.
[10] See Financial Stability Board/IMF/BIS (2011), "Macro-prudential Policy Tools and Frameworks: Progress Report to G20".
[11] See "Securing price stability as Singapore restructures", Ravi Menon, May 2013.

There have already been signs of this. With surging capital inflows, some EMEs have applied *temporary* capital controls. But others responded by employing macro-prudential tools to build the resilience of their domestic financial system or, more ambitiously, to dampen a domestic credit boom fuelled by foreign capital (Hong Kong is an example)[12]. Others still have deployed what are *described* as ---and in some cases may genuinely be --- macro-prudential measures to influence the composition of capital in-flows, seeking to deter short-term debt in-flows, particularly into the banking sector.

Controls on *short-term* capital flows had, of course, been applied before. Notably, Chile used controls on inflows during the 1990s, eventually lifting them as they became increasingly circumvented; and, in a different vein, Malaysia resolutely defied convention by defending itself with *out*flow-controls in the late-1990s. But none of that became mainstream, with the emphasis remaining on EMEs strengthening their financial and regulatory systems in order to remain safe. But once it is admitted that episodic flows of 'hot money' occur and, due to apparently systematic returns, will continue to hunt for yield across borders; and once leading banking authorities in the West decide that they sometimes need to mitigate or choke off excessive short-term borrowing; how, then, could there be objections to sovereign nations addressing similar vulnerabilities from short-term inflows? So the climate of opinion has changed. This is no small thing.

Further, some research suggests that macro-prudential interventions can be *more* effective than temporary capital controls in protecting a country from crisis[13]. I believe the reason lies in an important feature of 'cyclical' macro-pru measures.

A prevalent refrain of the academic literature on macro-pru is that it acts as a Pigouvian tax[14]. But this misses a big point. There is a problem with simply setting a tax to offset the negative externalities of distortions in private markets that lead banks (and others) to become excessively leveraged and maturity-mismatched, driving a wedge between private and social welfare. Namely, if the tax doesn't work and the boom continues, the fragility of the banking sector (or country) has got worse not better.

As conceived by macro-prudential regulators themselves, it is better to make the banks (and possibly other financial institutions) hold a higher-than-usual level of capital and/or liquid assets. By raising the cost of expanding their balance sheets and, thus, of extending credit, that might indeed work like a Pigouvian tax, helping to quell the boom. But even if it doesn't work in that sense, with the boom continuing to rumble away, the bust will be less traumatic as the banks have more capital (or liquidity) and so are less likely to fail. This is cyclical macro-pru as a means to enforce increased self-insurance by the financial industry. There is nothing very complicated going on here; for a given portfolio, if capital is increased by 10%, resilience to loss is increased 10%. The primary objective is *resilience*. It is a more robust policy than relying solely on the tax effects.

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[12] See Dong He, "Hong Kong's approach to financial stability", Hong Kong Monetary Authority, 2013.

[13] See K Forbes, Fratzscher M and Straub R, 2013, "Capital controls and macro-prudential measures; what are they good for?"; Ostry J, A Ghosh, M Chamon and M Qureshi, " Managing capital inflows: the role of controls and prudential policies"; and Eichengreen and Gupta, *op cit*.

[14] Eg Anton Korinek (2011), "The new economics of capital controls imposed for prudential reason". Korinek himself has a wider view of macro-pru tools (based on personal conversation).

Similarly, at the level of the economy as a whole, even if macro-prudential measures do not deter the entry of hot money, they can make the financial-sector more resilient against the risk of its sudden exit. This might be through a requirement to hold unremunerated central-bank reserves if the vulnerability is to an external run, or it might be through enhanced capital adequacy if the problem is likely to be elevated borrower defaults as a domestic credit bubble deflates. Given the well-documented coincidence of banking, currency and sovereign crises, that is potentially worth quite a lot.

Even if circumvented, a macro-prudential tightening of regulatory requirements can make the *core* financial system stronger. But circumvention is not costless. Regulatory arbitrage is endemic. Stability-threatening capital inflows are not rendered harmless if prudential measures divert them away from *de jure* banks into risky forms of 'shadow banking'. I will not dwell on that this evening other than to say that each jurisdiction's macro-prudential regime needs to extend beyond banks, including through an ability to alter the perimeter of regulation reasonably expeditiously[15].

Distinguishing exchange-rate policy from macro-prudential policy

In the way I have cast it, macro-prudential policy can legitimately be used to mitigate growing vulnerabilities from the pattern and effects of capital inflows.

But there is plainly a risk that, at least while it remains in fashion, the 'macro-prudential' epithet will be applied to capital-flow management (CFM) tools that have a wider, macroeconomic *purpose*, such as forestalling a warranted appreciation in a country's exchange rate. Vigilance is needed to guard against countries attempting to avoid making fundamental reforms by seeking to legitimize creeping capital controls under this season's fashionable 'macro-prudential' banner. One amounts to a beggar-thy-neighbour policy, while the other --- 'true' macro-pru --- is close to the opposite, as other the international system should be better off if crises can be averted by enhanced resilience. This puts a premium on finding criteria to distinguish prudential controls from other CFMs. Efforts to date are in some respects flawed.

One criterion offered is that the prudential capital-flow measures will apply only to banks and other regulated firms[16]. But that rests on too limited a view of 'macro-prudential'. Measures aimed at mitigating or limiting vulnerabilities in the aggregate balance sheet of the household or business sector can be macro-prudential in spirit.

Another criterion is that, in contrast to straight capital controls, prudential measures do not discriminate on the basis of residence. Although that's right in principle, in practice the world is complicated. Sometimes the only flows that matter to the incipient vulnerability will, indeed, be from non-residents. But on other occasions, some of the 'hot money' will be the fruits of domestic savings, controlled at home but 'resident' abroad, moving in and out tactically.

[15] This is a central theme of Tucker 2014a, *op cit*.
[16] See Ghosh A, "Managing risks associated with volatile capital flows", IMF.

I think part of the answer has to be that *countries should make clear the purpose of macro-pru measures designed to affect the composition of capital flows*. They should publish supporting analysis framed in terms of national or sectoral balance sheet vulnerabilities that, absent the policy action, would be a material threat to financial stability. That would not legitimise, for example, "Action X was taken as a 'macro-prudential' step to mitigate vulnerabilities in the national balance sheet rendered by an appreciating exchange rate undermining the viability of the export sector, with hysteric effects'. Macro-prudential policy is not a cure for the Dutch disease. And a measure is not genuinely macro-prudential just because the words 'macro-prudential' are used.

I think it is useful to distinguish between:

a) Adjusting requirements on institutions subject to micro-prudential regulation in order to increase their collective resilience. (Macro-prudential)
b) Introducing new requirements for institutions within the regulatory net but not usually subject to prudential supervision, or extending the regulatory net, to make them more resilient taken as a whole. (Macro-prudential)
c) Applying tighter requirements to the terms on domestic lending by regulated institutions to households and firms, to make the lenders more resilient. (Macro-prudential)
d) Stopping households and firms borrowing from non-residents (or bringing the proceeds home) in order to circumvent (c). (Macro-prudential-motivated CFM[17])
e) Taxing or barring inflows in order to influence current account positions and/or the exchange rate. (Not macro-prudential)

Broadly, a policy should be described as 'macro-prudential' only if it is directed at stability-threatening balance-sheet vulnerabilities. Some government-led policies could be macro-prudential, eg (d), but many CFM measures would not be[18]. Where countries are resorting to capital controls plain and simple to influence their exchange rate and terms of trade, they should say so; and the IMF should keep them honest.

<u>Containing and controlling spillovers from bank insolvency</u>

Whole-economy macro-prudential policy is largely prophylactic; preventative in purpose. It is, therefore,

[17] Direct controls on household balance sheets, eg loan-to-value (LTV) ratios, are open to circumvention unless accompanied by capital controls. That is distinct from imposing LTV caps on domestic lenders, which is akin to a raised sectoral capital requirement. See Tucker (2012), "The good things in life require stability", FT op-ed.
[18] This is a somewhat different set up from that implied in some IMF papers, as (d) is recognized as macro-prudential on grounds of the objective it serves. Political-economy considerations bearing on the division of labour between central banks and the executive branch of government were discussed in more detail in Tucker, "Macro-prudential policy and the international monetary system: triangulation or strangulation?", conference held by the US Treasury Office for Financial Research, January 2014b.

obviously incomplete as a protection from contagion once a crisis breaks. Even if excessive short-term external liabilities have been avoided, distress could spread through the failure of internationally active banks with offices in a number of countries. The solution to this problem of *cross-border resolution* entails being clear *ex ante* where losses will go, and which of a group's home or host authorities will lead. That amounts to pre-programming channels for controlled 'contagion'. It has important implications for the structure of banking groups.

The model developed by the international community is, broadly, to put losses exceeding equity onto bondholders and to have groups structured so that this can be achieved without damage to operational liabilities (pre-eminently insured deposits). This works essentially as follows.[19] A financial group must be structured so that it is clear whether it would be resolved as a whole under the control of its home authorities or, alternatively, as clearly defined regional (or country) subgroups under the control of relevant host authorities, with home-authority coordination of the plans taken as a whole. The former is known as single point of entry (SPE) and the latter as multiple point of entry (MPE). This distinction will, I believe, transform the way banks are structured, run and talked about over the coming decades. It should, for example, drive requirements on how equity capital is distributed across the entities in a group and policies on subsidiarisation.

On structure, my own view is that there is an important distinction between, on the one hand, domestic banking services (which I am going to refer to as 'retail' even though I mean to include domestic business banking) and, on the other hand, international, wholesale banking. This distinction is especially important for countries, such as Singapore and the UK, that house very large international financial entrepots. A country will do well to ensure that really significant retail-banking operations are housed in locally incorporated subsidiaries. Groups comprising such businesses are natural candidates for MPE resolution. Local subsidiarisation (with degrees of ring-fencing) is less important for wholesale operations, not only because business models rely on geographically mobile capital but because the costs of distress are felt in terms of tax and employment rather than in the *domestic* credit system[20]. Those businesses are natural candidates for SPE resolution of the worldwide group.

This approach, which is broadly consistent with Deputy Prime Minister Shanmugaratnam's 2012 statement on banking structure in Singapore[21], would not balkanize genuinely international banking and capital markets businesses. But it brings to the fore the matter of how a (SPE) group can be made to stand behind its international outlets and operations when losses in a foreign subsidiary exceed the group's equity stake. Two steps are involved.

The first step involves transferring losses exceeding a subsidiary's equity to its parent. In essence, the solution is for overseas (and domestic) subsidiaries to issue super-subordinated debt to their parent

[19] See Financial Stability Board "Guidance on developing effective resolution strategies", July 2013; and Tucker, "Resolution and the future of finance", May 2013.

[20] These views, amongst others, are reflected in the recent Bank of England paper on the regulation of international banks. The broad policy was agreed at the board of the Prudential Regulation Authority prior to my retirement and move to Harvard.

[21] "Ensuring strong anchors in our banking system", speech by Deputy Prime Minister Tharman Shanmugaratnam, Chairman of the Monetary Authority of Singapore, June 2012.

group. The subsidiary's 'excess' losses are covered and its solvency is restored by writing down and converting into equity as much as is needed of the intragroup debt[22]. Thus, the subsidiary is recapitalized without going into default itself --- at last making a reality of the long-standing doctrine, underpinning all consolidated supervision, that groups should be a source of strength for their component parts.

Losses having being transferred up to a group's top company, the second step is to ensure that the holding company can in turn be resolved in an orderly way if it is mortally wounded. This requires that financial-group holding companies maintain in issue a critical mass of bonds which can be 'bailed-in' to cover losses and recapitalize the group to the required equity level. The holders of those bonds become the new owners, and will have strong incentives to monitor and price banking risks. Bonds issued by the holding company will, therefore, be risky, 'information-sensitive' securities. They should *not* be held by issuers of monetary or other short-term runnable 'information *in*sensitive' liabilities, in order to avoid systemic fragility being recreated elsewhere in the financial system[23]. In my view, regulators should require group holding companies[24] to issue *at least* as much long-term debt as their equity requirement—i.e., *at least* 10 percent of risk-weighted assets for the biggest groups, producing total loss-absorbing capacity (equity plus bonds) of over 20 percent *before* any operating liabilities would need to absorb losses.

Through those two steps, a group-wide, global resolution can be executed without operations across the planet going into local liquidation or resolution. Last year's G20 Summit called on the Financial Stability Board to agree detailed standards to deliver this by the autumn 2014 summit in roughly six months' time.

These plans *can* solve the challenges in the *cross-border* resolution of international banking groups. Crucially, they force home and host authorities to hard wire up front how they will coordinate the resolution of a global group. For example, if a group's home authorities will not make a holding company issue a minimum level of bailinable bonds or if they will not agree to a trigger, in the hands of host authorities[25], that allows excess losses to be transferred up to the group holdco, then host authorities know that the home is either unable or unwilling to effect a whole-group resolution. That is much preferable to discovering *ex post*, as a crisis breaks, that they can't rely on each other. The internationally agreed policy should, therefore, give a harder edge to discussions amongst home and host authorities in supervisory and crisis-management colleges.

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[22] It is economically equivalent to a collateralized parental guarantee. A simple, unsecured guarantee would leave a subsidiary and its host jurisdiction exposed to the ability and willingness of the holding company to pay.

[23] This means, amongst other things, that banks and money-market mutual funds should not hold bonds issued by banks and bank holding companies. The significance of the concept of information-insensitive securities, epitomized by money and money-market instruments, is stressed in a series of papers by Gary Gorton and Bengt Holmstrom. See, for example, Holmstrom, "The panic of 2007: comment on a paper by Gorton", Jackson Hole 2008.

[24] For multiple-point-of-entry groups, read: subgroup *intermediate* holding companies.

[25] The host authority for a key subsidiary must have a hand on the trigger for converting intra-group debt into equity. If the home country alone controlled the trigger, host authorities would likely be worried that the home authorities might not, in fact, pull the trigger. That would not help to stem regional balkanization of banking groups operating internationally.

What I have described amounts to a major structural policy. Indeed, it is *the* big structural reform**;** in my view, Volcker, Vickers and Liikanen are sub-plots. Groups must have simpler legal, financial, and organizational structures that positively enable orderly resolution. That can make global banking a lot safer without balkanizing it. It is down to regulators and resolution authorities to deliver. Important technical steps are needed over the next year or so to get over the finishing line, including eliminating cross-guarantees and other clauses that could trigger contracts being declared in default when a group is being resolved[26]. But it is now basically a matter of will.

Containing spillovers from a liquidity crisis: LOLR co-operation

I have described two sets of policies to contain spillovers and contagion: macro-prudential controls on external balance sheet vulnerabilities, and resolution policies that pre-programme which creditors of an international financial group absorb losses exceeding local equity. These policies can make liquidity crises less likely. For example, if firms can be re-capitalized by bondholders via resolution, liquidity stress will be both slightly less likely and, if it occurs, easier for the central banks to address. But no one should imagine that liquidity crises can be avoided completely. I turn finally, therefore, to international cooperation in LOLR policies and operations. This does not depend on making the IMF an international lender of last resort: the SDR is not a currency and the IMF is not a bank of issue. So it is down to the central banks to deliver this integral part of the international monetary system.

Forty years ago this year, a generation of central bankers changed the face of global finance as they grappled with the failure of Bankhauss Herstatt and its cross-border spillovers. Famously, they created the Basel Supervisors Committee and set in train a process of convergence in bank regulation standards and supervision. Rather less discussed but at least as important, they thrashed out a momentous agreement on the division of labour on LOLR assistance. The agreement, reflected in a statement to the press running to all of a couple of paragraphs, was broadly that the host central bank should lend.

They said less about a closely related issue: what if the local liquidity shortage is not in the domestic currency? This isn't hypothetical. With banks holding foreign currency-denominated assets financed short-term in the markets, it is quite likely that a central bank will from time to time face a local banking system short of foreign-currency liquidity. And with a dominant world reserve currency, such shortages are today most likely to be in dollars. That is exactly what happened in the early phases of the current crisis. Central banks responded by reviving an earlier network of agreements to lend each other currency, known as swap lines. There are overlapping swap networks, including this region's Chiang Mai

[26] See FSB Report to the G-20, "Progress and next steps towards ending TBTF", September 2013.

initiative[27]. No doubt the network will need to evolve as the use and relative position of reserve currencies evolves. Even today, shortages could arise in euros or other widely used currencies.

The system typically works as follows. The *local* central bank decides whether to extend LOLR assistance to particular firms. It makes the loan, takes the risk *itself*, and takes collateral to mitigate that risk. It borrows the money from the issuing central bank, providing its own currency as collateral. The issuing central bank typically places its foreign currency collateral on deposit with its counterparty central bank; there is no monetary expansion in that currency, consistent with there not having been an increase in demand for that currency.

The big issue, therefore, is not whether the issuing central bank will accept a credit exposure to the ailing firm, but whether it will accept an exposure to the other central bank and its currency. A strength of the regime is that, like the cross-border resolution arrangements I described, it forces key decisions to be taken up front.

Where a swap line is *not* available, the local central bank and prudential authorities need to ensure that their local banking system does not take foreign-currency denominated liquidity exposures that they, the authorities, would not be able to cover themselves --- either from their own reserves or by going into the fx markets to raise the liquidity. The regime should force those judgments on host authorities.

Conclusion

To sum up, although progress in reforming the international monetary system stalled, all is not lost. Elements of the new international regulatory order can be turned to mitigating spillovers and crisis contagion in the IMS. As a major international financial entrepot, Singapore has a significant stake in this endeavor.

Even without reform of its governance and resources, there is much that the IMF could do to bring this about. In fact, a clear agenda suggests itself. In the first place, the Fund should reconfigure its bilateral surveillance to incorporate risk assessments of national balance sheets, and thus the composition of *gross* capital flows as well as current account positions[28]. Also, in its Financial Stability Assessments, the Fund should address whether clear *ex ante* commitments exist between home and host authorities for handling distress, including distributing losses across creditors, at internationally active banks and other financial firms. Authorities should not be able to hide fudge; it is too dangerous for the rest of the

[27] "The establishment of the Chiang Mai initiative multilateralization", press release by the finance ministers and central bank governors of the ASEAN member states plus China, Hong Kong, Japan and Korea,2010. Under this arrangement, central banks borrow US dollars from each others' reserves collateralized by the currency of the borrower.

[28] The new Integrated Surveillance Decision of July 2012, coming into effect in January 2013, recognizes gross capital flows but not national balance sheets. That was a mistake, but one that can probably be corrected in practice.

international system. If, for example, credible resolution plans are not in place, that should be reflected in assessments of a country's fiscal position.

But perhaps most significant of all is the advent of macro-prudential policy. Up to now the IMF has typically cast their advice to countries in terms of fiscal policy, monetary policy and, to some extent, *micro*-regulatory policy. Going forward, there is a new heading: they should ensure that Article IV and FSAP reports explicitly address *macro*-prudential policy. In doing so, they will sometimes need to distinguish between internally oriented and externally oriented policy. And, as I have discussed this evening, it will be vital to avoid macro-prudential policy becoming a cover for creeping capital controls aimed at distorting a country's terms of trade.

This is not to say that a proper use of macro-prudential tools will not have macroeconomic *effects*, possibly globally as well as nationally. For example, if countries insure against hot money by constraining the short-term foreign-currency liabilities of, say, banks and government, they may choose to hold a smaller pool of foreign exchange reserves. Depending on how the private sector as a whole adjusted, national saving might end up lower. And if the economies concerned were in aggregate reasonably large, the global real rate of interest may end up higher. This is simply to say that macroeconomic variables can be affected by whether latent vulnerabilities in national balance sheets are controlled directly (via macro-prudential policy) or insured against by government policies on national saving (eg through fx reserves accumulation).

The advent of systematic, whole-economy macro-prudential policy will, therefore, influence the evolution of the international monetary system. This underlines the need for jurisdictions to articulate a clear framework for macro-pru; and for the international authorities to enrich their surveillance in order to keep up with these important changes and the new set of inter-linkages they will bring. The specific reforms of the international monetary system may have stalled, but the IMS is changing nevertheless.