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The Latin American debt crisis: at the origins of the BIS macro-prudential approach to financial stability

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The Latin American debt crisis: at the origins of the BIS macro-prudential approach to financial stability

Among the international policy institutions, the Bank for International Settlements (BIS) is known for its sensitivity to financial stability issues. Typical for the BIS is a broad approach to financial stability, "marrying" the micro- and macro-prudential dimensions. The BIS approach, with its emphasis on the macro-prudential dimension (a focus on the stability of the financial system as a whole), first came to the fore in the Cross Report on innovations in international banking in 1986. The Latin American debt crisis, which broke out in August 1982, was the first global financial crisis in the postwar period. The BIS played an important role in its management. Moreover, there was a lot of work at the BIS in the second half of the 1970s, aimed at restraining the debt build-up. These discussions on the rising debt levels were highly influential in shaping the BIS view of financial stability, with the "macro-prudential" concept at its core. However, in these macro-prudential analyses, the role of financial innovations in the debt build-up was not really captured. This illustrates the need to "marry" the micro- and macro-prudential approaches in the analysis of financial stability. In this paper, we first focus on the Latin American debt crisis, discussing first the debt build-up, different initiatives to restrain lending and thereafter the BIS role in the management of the crisis. Thereafter we turn to the ensuing efforts to strengthen the financial system and the BIS approach to financial stability.

Key words: BIS, macro-prudential, systemic stability, financial fragility, Lamfalussy
JEL codes: A11, B22, B32, E3, F02, G10, N10

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1 INTRODUCTION

With the financial crisis, the Bank for International Settlements (BIS) is receiving more and more attention for its analysis of financial stability issues. Typical for the BIS is a broad approach to financial stability, "marrying" the micro- and macro-prudential dimensions (Crockett, 2000, Knight, 2006). The BIS approach, with its emphasis on the macro-prudential dimension, first came to the fore in the Cross Report on innovations in international banking (1986).[1] It is commonly accepted that this was the first published official document that used the term "macro-prudential" (Bini-Smaghi, 2009). The Cross Report defined the macro-prudential domain as "the safety and soundness of the broad financial system and payments mechanism" (BIS, 1986, p. 2). In later research, it was argued that the approach has two distinguishing features (Borio, 2009). Firstly, it focuses on the financial system as a whole, paying attention to the macroeconomic dimension of financial crises. Secondly, it treats aggregate risk in the financial system as dependent on the collective behaviour of the financial institutions (which might be contrasted with the micro-prudential view, where financial institutions are regarded as having no influence on the global situation).

The Latin American debt crisis, which broke out in August 1982, was the first global financial crisis in the postwar period. The BIS played an important role in the management of this crisis, especially in the provision of "bridging loans" (before IMF stabilisation loans could be accorded). Moreover, the BIS statistics were invaluable for policy-makers to quickly identify the banks involved in the debt crises and the amounts of their credits. The Latin American crisis was also the first occasion on which the central bank community at the BIS reflected explicitely on a macroprudential approach to financial stability.

In this paper, we will first focus on work at the Bank for International Settlements in the second half of the 1970s aimed at preventing the debt crisis. We start with a section on he Bank for International Settlements and its changing role in the 1970s. Thereafter, we pay attention to the Latin American debt crisis, discussing first the debt build-up and different initiatives to restrain lending. These discussions were influential in shaping the BIS view of financial stability, especially the "macro-prudential" dimension. However, they also show that the role of financial innovations in the debt build-up was not really captured in these macroprudential analyses, illustrating the need to combine the micro- and macro approaches. Thereafter we go into the BIS role in the management of the crisis, efforts at strengthening the financial system and the development of the macro-prudential concept in the aftermath of the crisis.

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[1] Bank for International Settlements (1986), *Recent Innovations in International Banking*, Basel.

2 THE 1970S: THE BIS IN A CHANGING INTERNATIONAL MONETARY AND FINANCIAL SYSTEM

Founded in 1930, the Bank for International Settlements was set up to administer German reparation payments and as a forum for central bank cooperation. The BIS provided central bankers with three main services: research on issues relevant to international payments and prudential supervision, a venue for regular and discreet meetings, and a financial arm (particularly important in the gold market). In the postwar period, Basel was one of the main centers of international monetary cooperation, contributing to the longevity and success of the Bretton Woods system (Toniolo, 2005).

The 1960s witnessed the rapid growth of the so-called euro-currency market, which can be defined as the market for short-term deposits and credits denominated in currencies (mainly US dollar) different from that of the country in which the deposit-taking and credit-giving bank were located. Initially mainly propagated by US banks seeking to avoid stringent domestic regulations, by the late 1960s most internationally active commercial banks engaged heavily in the euro-currency business. Between 1966 and 1971 alone, the amount of outstanding credits in the euro-currency market more than quadrupled from an estimated US$ 14 bn to more than US$ 60 bn.[2] Not surprisingly, central banks became more and more interested in the growth of the Euro-currency market and its impact on international liquidity creation[3]. In order to monitor the international banking markets, the G10 central banks set up the Euro-Currency Standing Committee (ECSC) at the BIS in April 1971. However, among the central banks, there were substantial differences in approach towards the Euro-markets (Toniolo, 2005, p. 466). Most continental European central banks, especially the Bundesbank, believed they suffered significantly from the Euro-markets, blaming them for capital flows which hindered their monetary policy operations and for complicating the supervision of their domestic banks[4]. They argued for stringent regulations and for the imposition of reserve requirements. Other central banks, especially the Bank of England, furthered the Euro-markets and rejected controls. As observed by Goodhart (2004, p. 368): "The Eurodollar market grew and thrived in London from the 1960s onwards ... The Bank was keen to foster these developments, which in turn placed it at the centre of the international financial system" (see also Capie, 2010).

The collapse of the Bretton Woods system in the early 1970s, contributed significantly to a shift in the objectives of central bank cooperation. It went hand in hand with a more general shift from a government-led to a market-led financial system (Maes, 2007). With

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2 Toniolo (2005), pp. 460-69.

3 International banking and the Euro-Markets were also the topics of the first BIS Economic Papers: Mayer, 1979 and McClam, 1980. For an analysis of the emergence and growth of the Euro-markets see: Johnston, 1983; Schenk, 1998; and Battilossi and Cassis, 2002.

4 For the Bundesbank concerns, see Franke, 1999, p. 259.

floating exchange rates, increasing capital mobility and financial liberalisation (also inside countries), cooperation shifted away from monetary stability towards financial stability (Clement, 2008, p. 6). The high-profile collapse of certain banks, like Herstatt and Franklin National, helped focus central bank cooperation on the strengthening of international prudential regulation. In December 1974, the central bank governors of the G10 countries set up the Basel Committee on Banking Regulations and Supervisory Practices (BCBS).[5] Like the ECSC, the BCBS was made up of high-ranking experts from the G10 central banks, supported by a BIS-based secretariat. Both committeess reported directly to the G10 central bank Governors who met in Basel on an almost monthly basis. The creation of the BCBS led to an agreement allocating cross-border supervisory responsibilities among member authorities, the so-called "Concordat", in 1975.[6] This was followed by the development of good practice guidelines and standards in all areas of banking regulation and supervision.

3 THE LATIN-AMERICAN DEBT BUILD-UP

The oil price shock of 1973 had important consequences for international banking. The Euro-currency markets now proved to be a useful vehicle for recycling the petrodollar surpluses, also to the benefit of the deficit countries. With the recycling of petrodollars, the focus of attention at the Euro-currency Standing Committee shifted from the traditional Euro-currency markets to Euro-dollar lending to developing countries, which was growing at a tremendous pace (see Chart 1). At first, this recycling was largely beneficial to the world economy. However, it also implied that the international banking system was faced with an increase in country risk. At the meeting of the ECSC of December 1975, Kit McMahon, of the Bank of England, observed that concern was growing "about the indebtedness ... of a large number of non-industrial countries, about the role that the Euro-currency market had played since the emergence of the oil surplus and about the possible consequences of these factors in the coming year".[7]

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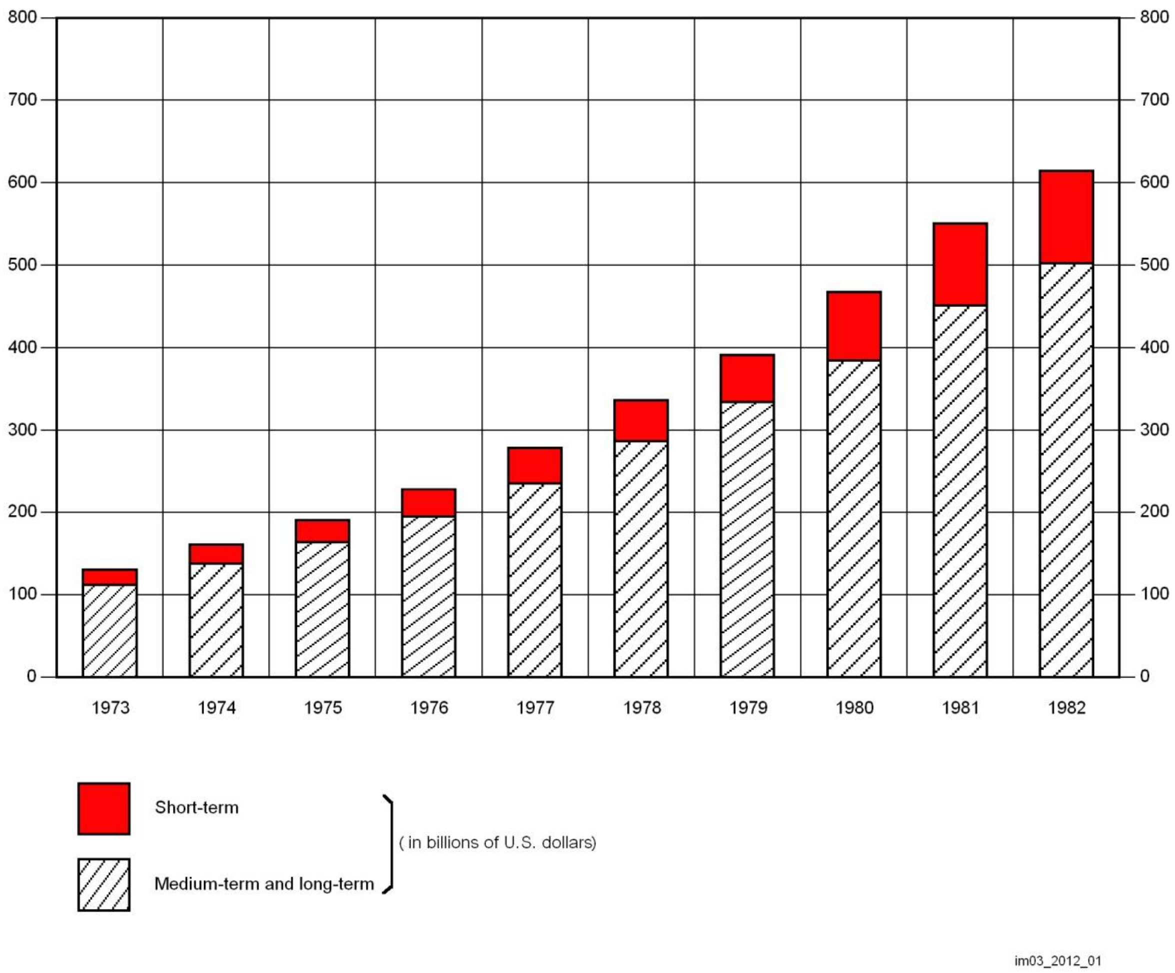
5 The name was later changed to Basel Committee on Banking Supervision, BCBS.

6 See Borio and Toniolo (2008), p. 61.

7 Note on a meeting of the Euro-currency Standing Committee held on 8th December 1975, BISA 7.15(1), G10 D22.

Chart 1 Non-oil Developing Countries External Debt, 1973-1982



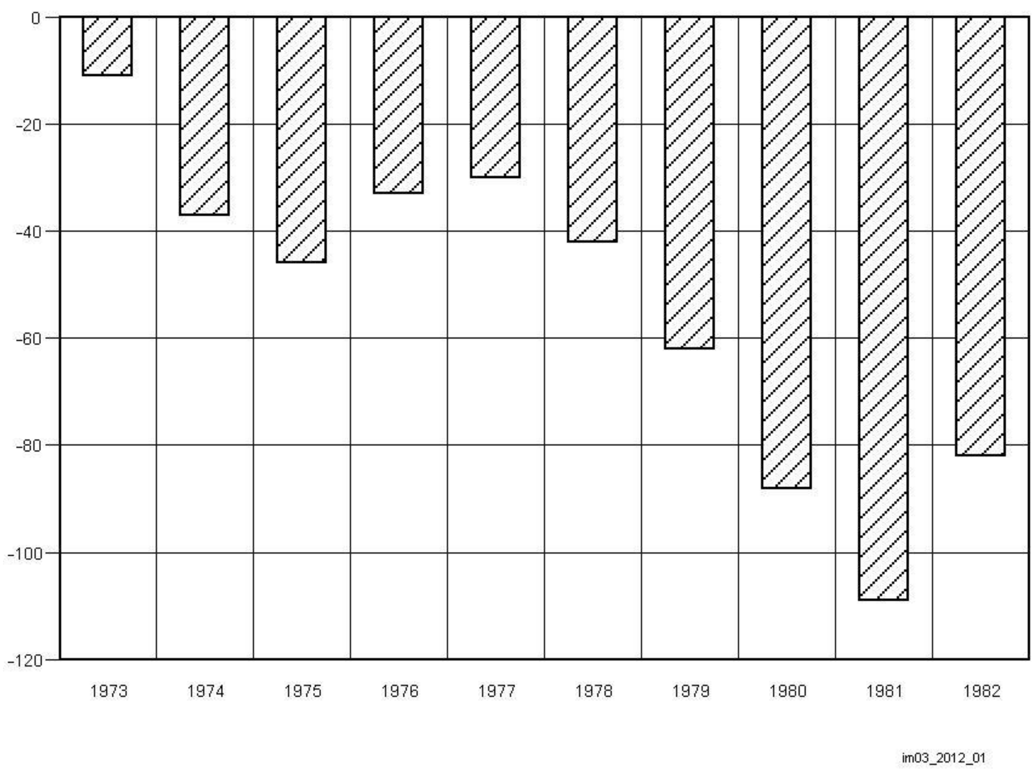
Source: IMF.

The massive growth in indebtedness of certain countries – in Latin America and elsewhere – as well as its increasingly short-term character, was sowing the seeds of a crisis. The BIS was sufficiently concerned to discuss these issues publicly. In a speech delivered in Luxembourg in 1976, Alexandre Lamfalussy, the Head of the Monetary and Economic Department of the BIS, drew attention to the risks involved: "From my three first points – the continuous growth of credits, the spread of risks to a large number of countries, and the change in the nature of credits – I draw the conclusion that the problem of risks has become a very urgent one."[8].

[8] See Lamfalussy (1976), p. 5: "De mes trois premiers points - le développement continu (des crédits), l'extension des risques à un grand nombre de pays et le changement dans la nature des crédits - je retiens la conclusion que le problème des risques devient urgent". Moreover, as observed by Eichengreen and Lindert (1989, p. 4), Latin America had a history of debt crises, "Not only is default recurrent, but the countries that default tend to be the same ones, generation after generation".

However, in 1976 and 1977, the current account deficits of several Latin-American countries improved, mainly because of adjustment policies and the recovery in the world economy (see Chart 2). But, in 1978, with a borrowers' market, adjustment policies were abandoned and the deficits increased again significantly. Indeed, the borrowers' market was too much of a temptation for the Latin-American countries. As observed by Lamfalussy, the "supply-led growth of international bank credit has led to a reduction of bank margins to the pre-Herstatt levels, to the lengthening of the maturity of bank loans and to the increase in the size of individual syndicated lending operations"[9]. For Lamfalussy, important causes of this borrowers' market were loose monetary policies and the US current account deficit, which was "pumping liquidity into the international financial system"[10].

Chart 2 Non-oil Developing Countries Current Account Balance, 1973-1982
(In billions of U.S. dollars)



Source: IMF.

[9] See Lamfalussy (1978a), p. 4.

[10] Emminger, the President of the Bundesbank, criticised the BIS analysis, "One may regret, however, the criticism levelled at the American deficit by the BIS in its latest annual report" ("On peut regretter toutefois les critiques qui ont été exprimées à l'égard du déficit américain par la BRI dans son dernier rapport annuel") Minutes of the 113th Meeting of the EEC Committee of Governors, 12 July 1977, p. 3, NBBA.

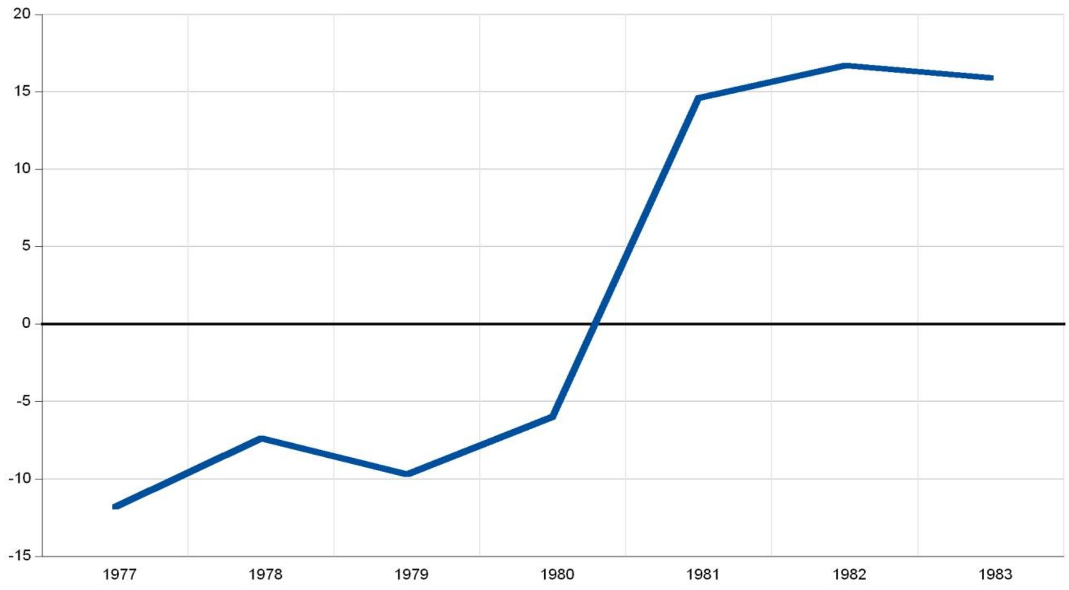
The important role of the banking sector also implied that the IMF, with its conditional financing, did only play a minor part in the financing of the current account deficits. This was one of the rare issues on which there was unanimity in the ECSC in the summer of 1978: "The Committee was agreed on the desirability of conditional IMF credits playing a greater role in the future than hitherto in balance-of-payments financing".[11]

Lamfalussy (1978b) further warned for relying uniquely on the financial markets and for a sudden stop in lending, "In principle, official organisations are better equipped than banks to grant conditional loans ... There are not many examples of succesful conditional lending by the private banking system; and in the absence of a pre-negotiated gradual adjustment program, the only way private banks can set into motion domestic adjustment policies is when they stop lending. This has happened in some cases; and when it happened, it did so fairly abruptly. Gradual adjustment, under the wisely-dosed pressure of conditional lending by the IMF would clearly be preferable to this drastic medicine".

The Latin American debt build-up was also stimulated by financial innovations, in particular the generalised use of floating interest rates in medium-term bank loans. This allowed banks, during the petrodollar recycling, to protect themselves against the erosion of their margins of intermediation. However, it also had the effect of passing on short-term market interest rate movements to borrowers (see Chart 3). With negative real interest rates in the 1970s, credit demand was stimulated, leading to a period of over-expansion. The increase in real interest rates from 1979 onwards, mainly due to the tightening of US monetary policy under Fed Chairman Volcker (leading also to a decline in the dollar prices of Latin American exports), placed a crippling burden on many debtors. The ensuing debt crisis threatened the world financial system. In a later paper, Lamfalussy's conclusion was devastating: "Innovation allowed banks to transform margin risk into capital risk which, in this case, was probably a greater threat to the stability of the international banking system - not to mention its rather disastrous effects on the borrowers themselves" (Lamfalussy, 1986, p. 14). It led Lamfalussy to doubt whether financial innovation and the ensuing redistribution of risk improved financial stability (Maes, 2009).

[11] Larre, "Comité permanent des euro-monnaies: Rapport du Président sur les problèmes de politique économique liés à l'expansion du marché des euro-monnaies et des prêts bancaires internationaux depuis l'augmentation des prix du pétrole, 3 August 1978, BdIA, Studi-Pratt. 785/31: “Le Comité a reconnu, à l'unanimité de ses membres, qu'il est souhaitable que les crédits conditionnels du FMI jouent à l'avenir un rôle plus important que jusqu'à présent dans le financement des balances de paiements”.

Chart 3 Average real percentage interest rate on developing country floating-rate debt



Source: Maddison, 1985, p. 47.

4 EFFORTS AT THE BIS AT RESTRAINING THE DEBT BUILD-UP

In this section, we focus on behind-the-scenes efforts undertaken from the mid-1970s to moderate international bank lending. We discuss four major initiatives: a proposal to create a risk office at the BIS, the so-called Burns' checklist initiative, a joint meeting of the Euro-Currency Standing Committee and the Basel Committee of Bank Supervisors, and working parties on the Euro-currency markets.

4.1 A risk office

In 1976, Alexandre Lamfalussy of the BIS (re-)launched the idea of setting up a "centrale des risques" (risk office) there[12]. His idea was that the 40 or 50 major internationally active commercial banks would submit, directly to the BIS, information on their claims to individual countries. The information would also comprise a breakdown into the four or five major categories of borrowers (banks, non-banks, governments, multinationals,..), and a broad maturity structure.[13] Lamfalussy also had discussions with commercial bankers to

[12] An earlier idea for creating an international risk office was rejected in 1965 (Toniolo, 2005, p. 469).

[13] Note by Lamfalussy, "Some remarks on the Memorandum on The Euro-currency market and regulations of international financial flows", 9 July 1976, BISA 7.18(15), LAM 27/F72. A *centrale des risques* was also a topic of discussion at the level of the EEC, Minutes of the EEC Committee of Governors, 13 July 1976, p. 4 NBBA.

explore the feasibility of the project.[14] He argued that it would provide a much better picture of the debt situation than the available data. This initiative shows a key element of the BIS "macro-prudential" approach: a focus on the key players, which are of systemic importance, also to get a better understanding of the macro situation. However, the idea of a risk office was not taken up.

4.2 Burns' checklist

In 1977, Arthur Burns, the then Chairman of the Fed, suggested drawing up a "checklist of questions" for banks which were lending to sovereign borrowers.[15] The idea was to ask the banks to have a look at the relevant economic indicators before taking their lending decisions.[16] This initiative followed after a first financial crisis in Mexico in 1976. Burns, in the FOMC meeting of 16 November 1976, had criticised the FOMC and the Fed staff for being too lax regarding the Mexican financial situation (Meltzer, 2009, p. 960).

The "Burns' checklist" comprised two pages, with questions for information on "Countries' long-term external indebtedness" and "Short-term external liabilities and assets".[17] The BIS Monetary and Economic Department, especially Alexandre Lamfalussy and Michael Dealtry, was very much responsible for drafting the questionnaire.[18] Together with the respective central banks, they contacted around fifty-seven international banks to sound out their willingness to participate in this arrangement.

During the preparations of the "checklist", several central bankers made critical remarks. Leonhard Gleske (Bundesbank) observed that "he already knew that his big banks had very good systems for informing themselves about the situation of the countries where they made loans and he feared that anything that could be asked for in the proposed questionnaire would be less than the banks already knew. However, other banks did not have such good information; the idea of the questionnaire therefore would improve the information at the disposal of the banking system as a whole". Pierre Languetin (of the Swiss National Bank) observed that he "was not sure what the aim of the proposed questionnaire was. Was it to teach banking to bankers? In his view they had as much to learn from the banks as they could teach them. What banks really needed to know was the outlook for political stability in borrowing countries".[19]

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14 For instance, with W. Schoellkopf of Chase Manhattan New York, BISA 7.18(15), LAM 27/F72.

15 US banks were particularly exposed to the Latin American debt (Lamfalussy, 2000, p. 14).

16 See Maes, I. (2011).

17 Suggested list of information to be requested by lending banks from, or with respect to, the external financial situation of the country of residence of foreign borrowers, BISA, 7.18(12) DEA2.

18 BIS Checklist, BISA, 7.18(2) DEA2, p. 2.

19 Dealtry, "Note on the meeting about information to be requested by banks from prospective borrowers in the international credit markets, 18 June 1977, BISA, 7.18(12), DEA2.

In their concluding report to the Governors, Lamfalussy and Dealtry first presented a general overview of the challenge for the central banks: “The authorities are therefore faced with the task of trying to ensure that banks continue to contribute substantially to meeting deficit countries' balance-of-payments financing needs but that they do so on the basis of as full information as possible on the borrowers' situations".[20]

The report noted that the idea of improving the information on the debt was met positively by the banks and that several banks welcomed the recent improvements in the data. However, the report also noted that not all the banks knew about the BIS statistics, a crucial tool for understanding their credit risks.

As observed in the report, there was a wide variety in the reactions of the banks towards the checklist proposal. However, in general, the banks were reluctant to take on Burns' questionnaire. The main reason was that they feared losing lucrative business to unfair competitors: "By far the biggest difficulty is seen as lying in the degree of competition for foreign business that exists between banks. There was virtually no bank visited that did not take this point of view. Doubts were expressed by banks as to whether their closest competitors at home would all be ready to forego the advantages that might be gained from not asking such questions when others were doing so; and not infrequently banks in one country expressed the view that even if they were all to use a checklist it was doubtful whether banks in certain other specified countries (not always the same countries were mentioned) would voluntarily do so".[21]

Among the central banks, there was a discussion whether the checklist should be mandatory. Henry Wallich, of the Board of Governors of the Federal Reserve, argued strongly against this, "Stressing the concept of voluntarism seems important. ... We will want to underscore that such supervisory actions will rest individually with each country's banking authorities".[22] During the ensuing discussions, the idea of a checklist was quietly dropped. However, the Governors instructed the BIS to produce a new "Manual on statistics compiled by international organisations on countries' external indebtedness" and asked the BIS for further efforts at improving the statistics.

4.3 A joint meeting of the ECSC and the BCBS

The Burns checklist proposal was not pursued, but concerns regarding the rapid growth of international lending remained unabated. The “policy problems related to the growth of the Euro-currency market and of international lending since the oil price increase” were

[20] Report to the Governors on the reactions of commercial banks in Group-of-Ten countries and Switzerland to Chairman Burns' proposed checklist, 26 October 1977, BISA 7.18(12) DEA2.

[21] Report to the Governors on the reactions of commercial banks in Group-of-Ten countries and Switzerland to Chairman Burns' proposed checklist, 26 October 1977, BISA 7.18(12) DEA2.

[22] Letter to Lamfalussy, 22 July 1977, BISA 7.18(12) DEA2.

discussed at the ECSC meetings in spring 1978. The outcome was a report that highlighted the linkage between prudential regulation and macro-economic concerns and a request by the ECSC for a joint meeting with the BCBS.[23] Lamfalussy, in a preparatory note for this joint meeting,observed: "the members of the Euro-currency Standing Committee ... were agreed in their concern with regard to the prudential problems involved in international banking. In addition, some members expressed the view that between the purely macro-economic issues and the purely prudential ones there is a range of questions where the two fields overlap. They therefore suggested, and the Governors at their September 1978 meeting in Basle agreed, that a joint group of representatives from the Euro-currency Standing Committee [ECSC] and the Cooke Committee [BCBS] ... should consider whether there were ways in which the use of prudential measures might be extended into the macro-economic field for the purpose of controlling the expansion of international bank credit, and should try and develop a common view in that field".[24] The initiative for this joint meeting originated with the ECSC, then chaired by René Larre, General Manager of the BIS. The note observed that the objective was "not to try and stop the growth of international bank lending but rather to see that it takes place on a sound and sustainable basis".

The joint meeting of the Euro-Currency Standing Committee and the Basel Committee on Banking Supervision took place on 15 November 1978. The meeting discussed in particular the possibilities of controlling the growth of international bank lending by three different types of banking supervisory measures: limits on the total international element in banks' balance sheets; limits on banks' lending to individual foreign countries and their residents; and limits on maturity transformation in banks' international business. However, the use of these instruments was rejected. As stated by Peter Cooke, the Chair of the BCBS, the meeting "concluded that uniform limits even at the national level in individual banks' international business were neither desirable nor possible. Country limits too were not regarded as an acceptable instrument for controlling the overall growth of international bank lending, although the importance of improving the information on country indebtedness available to banks was re-emphasised. Maturity transformation was generally agreed to be an area to which particular attention should be paid and here the first priority was to obtain better information".[25]

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[23] ECSC, “Chairman’s report on policy problems related to the growth of the Euro-currency market and international bank lending since the oil price increase”, BISA 7.18(15) – *Papers Lamfalussy*, LAM20.

[24] Possible uses of banking supervisory instruments for controlling the expansion of international bank credit, 31 October 1978, BISA, 1.3a(3)F Vol. 2.

[25] Chairman's note, BS/79/10, BISA, Banking Supervision 1979/9.

4.4 Working parties on the Euro-currency markets

Shortly afterwards, with Bill Miller as its new Chairman, the Federal Reserve Board took the initiative to propose a reserve requirement on Euro-currency deposits. This proposal received mixed reactions from the other central bank governors. The discussions led to a decision, in May 1979, by the G10 Governors to investigate how the Euro-currency market could be better "controlled".[26] The Governors decided to set up three study groups:

- the Larre Group (presided by René Larre, the General Manager of the BIS), instructed with identifying the areas in which international lending gave rise to concern;
- the Lamfalussy Group (officially, Working Party on Possible Approaches to Constraining the Growth of International Bank Lending), which had to examine the different possible approaches to limit the growth of the banks' international lending;
- the Axilrod Group (chaired by Steve Axilrod of the Federal Reserve Board), which investigated techniques for the establishment, on a consolidated basis, of reserve requirements on Euro-currency deposits.

There was a hierarchy between these groups, with the Larre Group discussing the major policy concerns, the Lamfalussy group possible techniques, while the Axilrod Group was a sub-group of the Lamfalussy Group.[27] In the discussions in these groups the macroprudential concept came clearly to the fore.

A key theme in the Larre Group was the "over-financing" or "surrecyclage" of the surpluses of the oil-exporting countries. As observed in a note of the representatives of the National Bank of Belgium: "The international banking system has allowed a useful recycling of capital at a time that the oil price hike has caused both exceptional surpluses on current account for many of the oil-exporting countries, as well as serious deficits on current account for a lot of other countires, industrialised or not. However, one has to admit that this type of financing has now gone far beyond what the international community would have tolerated if it had fully realised the speed at which this was happening and the limits to what these deficit countries could have obtained through the official authorities – both nationally and internationally”.[28]

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26 Note, Le contrôle du marché des euromonnaies, NBB, 6/3/1980, NBBA, C.416/1.

27 In fact, the composition of the Larre group was identical to the Euro-currency Market Standing Committee itself. As such, Alexandre Lamfalussy also participated in the discussions of the Larre Group.

28 Comité permanent du marché des euro-monnaies, Compte rendu de la première réunion tenue à Bâle le 10 juin 1979, NBBA, C.416/5 : Le système bancaire international a permis un recyclage utile des capitaux au moment où le renchérissement du pétrole provoquait à la fois des surplus courants exceptionnels dans le chef des pays exportateurs de pétrole et des déficits courants fort importants dans le chef de nombreux pays, industrialisés et autres. Il faut admettre toutefois que ce financement a dépassé en importance ce que la communauté internationale aurait toléré si elle avait eu pleinement conscience du rythme auquel il s'effectuerait et, en tout cas, ce que les pays en déficit auraient pu obtenir auprès des instances officielles - nationales et internationales”.

In its report, the Larre Group argued that there were three worrying aspects of the rapid expansion of international bank activities: indesirable macroeconomic consequences (such as inflation), problems for monetary policy, and prudential concerns with respect to banks.

The Larre Report drew attention to the fact that the growth of the banks' international lending increasingly exposed banks to potential losses in countries over which the authorities of the lending banks had no control, "This concern is particularly felt with respect to a number of developing countries which are already heavily indebted to foreign borrowers and whose external deficits will increase further as a result of the latest oil price increase." [29]

According to the Larre Report, banks were underestimating the risks which they were taking. The Report clearly took a macroprudential perspective, distinguishing between the risk at the level of individual banks and the risk for the banking community as a whole, "As a result of their relatively good loss record in international banking over recent years the banks' perception of the risks involved in this part of their business has perhaps been lower than would be justified on a rational macro-economic assessment. In that connection, even if the positions of banks considered individually appeared quite acceptable, the exposure of the international banking community as a whole might give cause for some anxiety." The Report further argued explicitly that a "macro-prudential" perspective was necessary as risks would increase in the future due to the oil price shock of 1979 and the reappearance of large OPEC surpluses, "Moreover, prudential concerns about the international side of the banks' business are related not only to past developments but also to the situation that has been created by the re-emergence of the problem of recycling large OPEC surpluses to oil-importing countries that are in balance-of-payments deficit. The banks' rôle in the recycling of the new OPEC surpluses will lead to further growth of their international lending in circumstances where imprudent lending policies could have major consequences not only for the banks themselves but for the world economy. In that connection it is argued that there will be greater macro-prudential risks for the banks in the future than can be assessed on the basis of past experience. If this argument is well-founded, central bank supervisors may wish to take this macro-prudential view into account".[30]

However, there were quite important differences in approach and emphasis between the central banks. These came clearly to the surface in the Lamfalussy Group. As observed by Jean-Jacques Rey, one of the Belgian participants: "It was particularly difficult to

[29] Report of the Euro-Currency Standing Committee on areas of concern about the growth of international banking, 29 February 1980, BISA., 7.18(15), LAM20, F57.

[30] Report of the Euro-Currency Standing Committee on areas of concern about the growth of international banking, 29 February 1980, BISA., 7.18(15), LAM20, F57.

finalize the wording of the Lamfalussy Group report because of deep-seated differences of opinion".[31] The differences of opinion within the Lamfalussy Group, especially between Lamfalussy and Axilrod of the Fed, concerned in particular[32]: (1) the mandate of the Group, with Lamfalussy emphasising an approach to control international bank lending and the Fed focusing on control of international liquidity[33]; (2) the role of national monetary policies in the control of the Euro-markets, with Lamfalussy emphasising that the key lay in domestic monetary policy[34], while the Fed and the Bundesbank were in favor of a permanent and uniform system of international control based on reserve requirements; (3) the nature of reserve requirements, which were considered by Lamfalussy rather as one of the disparities between official regulations of domestic and international banking, which could be removed, while the Fed and the Bundesbank considered them as a technique for controlling the Euro-currency market.[35]

The use of prudential measures to limit international bank lending aroused a debate at the first meeting of the Group, on 19 June 1979. Axilrod was sceptical of the idea, which was defended by Lamfalussy and McMahon of the Bank of England. The discussions continued during the second meeting, on 7 November 1979, on the basis of a paper by the Bank of England, "The use of prudential measures in the international banking markets".[36]

In the Bank of England paper, the "macro-prudential" concept was forcefully advanced. The paper argued strongly that the micro-prudential aspect of banking supervision needed

[31] Note, Fin des travaux des Groupes Lamfalussy et Axilrod, 20 February 1980, NBBA C.416/17 : “Le rapport du Groupe Lamfalussy a été particulièrement laborieux à mettre au point en raison de profondes divergences de vues ”. See also Axilrod, 2009.

[32] According to the minutes of the representatives of the National Bank of Belgium, notes of 29 June 1979 and 20 February and 6 March 1980, NBBA, C.416/6.

[33] At that time, the monetary aggregates were the intermediate target of US monetary policy.

[34] In line with his view that the strong growth of international lending was related to the borrowers' market and loose US monetary policy.

[35] The Bank of England was less enthusiastic. In a paper of 26 March 1979, "Some comments on the FRB's discussion paper 'A preliminary proposal for a reserve requirement on euro-currency deposits' ", the Bank of England was quite critical. She not only raised a number of practical issues, but also underlined the difference in philosophy with respect to the Euro-markets, "In the Bank of England, we have tended to focus our attention on the prudential concerns". The Bank of England further observed that, "It is our general impression that the prudential advantages are not great, and that they may be outweighed by prudential dangers" (BdIA, Carte Baffi, 209/4).

[36] The paper, dated 24 October 1979, was signed by David Holland, Deputy Chief of the Bank of England’s Overseas Department, BISA, 7.18(15) LAM25/F67. As London was an important centre of the Euro-markets, the Bank of England was closely monitoring international banking developments (see, e.g., the regular articles in the Bank of England *Quarterly Bulletin*). Moreover, after the "secondary banking crisis" of 1973-1974, the Bank of England was invested with statutory responsibility for banking supervision, following the Banking Act of 1979 (Cooke, 1982, p. 547). This naturally stimulated interest in supervisory issues at the Bank of England. However, Goodhart (2003, p. 33) observed that, initially, supervision itself was a very practical business, which "eschewed academic input" from economists. Moreover, contacts between the supervision department and other departments remained rather limited.

to be placed in a wider perspective. The paper characterised the "macro-prudential approach", as focusing on problems that "bear upon the market as a whole as distinct from an individual bank, and which may not be obvious at the micro-prudential level". The paper suggested three examples of macro-prudential problems, to illustrate that the micro-prudential viewpoint might fail to take full account of the wider macro-prudential picture:

- the growth of the market. While the growth of an individual bank's business might seem wholly acceptable from a microprudential standpoint, the overall rate of growth of international lending might be risky. So, banks might make rather optimistic assumptions about the adjustment process of countries with balance of payments deficits;
- the perception of risk. The paper argued that, as bad debt had been low in recent years, "sovereign risk has appeared to the banks not only to be low but perhaps even to be declining";
- the perception of liquidity. Banks are faced with both interest rate risks and funding risks. The paper argued that banks probably regard interest rate risk as the greater risk, at least in the short term. So, banks may be "unduly complacent" about the funding risk.

The concept of macro-prudential supervision was further very prominent in the Lamfalussy Group's final report of 29 February 1980.[37] The term "macro-prudential supervision" was used seven times, including three times in the conclusion. So, the Lamfalussy Report stressed the need for an "effective supervision of the international banking system, from both the micro-prudential and the macro-prudential points of view" (p. 12). A crucial reason was the increased risks confronting the banks, due to the recycling of the new OPEC surpluses, after the second oil price shock of 1979.

The Bank of England paper further discussed five groups of prudential measures to constrain the growth of international bank lending: control of banks' foreign exchange exposure, control of banks' country risk exposure, capital ratios, maturity transformation, and controlling the "entry" of new market participants. The paper was quite positive on the use of prudential measures, concluding that they "could be a useful approach to ensuring that growth of international bank lending markets is soundly based. They could further have some, albeit modest, constraining influence on that growth".

The Bank of England paper was a topic of intense discussion in the Lamfalussy Group. In the end, it was decided to consult the Basel Committee on Banking Regulations and Supervisory Practices (BCBS – then chaired by Peter Cooke of the Bank of England)

[37] “Report of the Working Party on possible approaches to constraining the growth of banks’ international lending”, BISA, 7.18(15), LAM25/F66. In the chairman's interim report of 8 February 1980, Lamfalussy used the term "macro-economic surveillance".

about the technical feasibility of using some of these prudential measures.[38] So, a questionnaire concerning the feasibility of the use of special balance-sheet provisions for involuntarily rescheduled loans and the use of capital ratios was sent to the Cooke Committee.

The Cooke Committee was not very much in favour of a "macro-prudential" approach.[39] In its Report, it took as its starting point the view that "supervisors should not impose on the banks for which they are responsible any measures for which there are not sound prudential reasons".[40] The BCBS rejected the proposals of the Lamfalussy Group to use prudential measures in order to constrain the growth of international bank lending, not only for technical reasons, but also because of a lack of prudential justifications and even of a potential conflict between macroeconomic and prudential aims. It observed that the two proposed prudential measures "would be technically difficult to implement at the national level and, on the basis of experience to date, both would be difficult to justify on prudential grounds. More importantly, both appear to pose problems of conflict between macroeconomic and prudential aims[41]; and neither appears likely to exercise much constraining influence on banks' international lending beyond what would be achieved by effective prudential controls on individual banks applied on a consolidated basis".[42]

In its final report, the Lamfalussy Group emphasised three elements: the need for effective supervision of the international banking system, the reduction of inequalities in competitive conditions between domestic and international banking, and the monitoring of international banking developments.[43] In this respect, the Report pleaded for improvements in the timeliness and quality of the statistics reported to the BIS. On the basis of the different reports, the G10 Governors decided, in April 1980, to officially entrust

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[38] Chairman's progress report on the activities of the "Working Party on Possible Approaches to Constraining the Growth of International Bank Lending", 28 November 1979, BISA, 7.18(15), LAM25/F67.

[39] Committee on Banking Regulations and Supervisory Practices, Report on the use of certain prudential measures to constrain the growth of banks' international lending, February 1980, BISA, 7.18(15), LAM25/F67.

[40] However, it continued: "At the same time, it is recognised that there can be concerns of a macro-prudential nature, which may not readily be perceived at the level of the individual bank, to which the supervisor should have regard. In addressing itself to the questions posed by the Lamfalussy Working Party, the Committee has not attempted to reach a collective judgment on whether or not such concerns arise in present circumstances".

[41] The "problems of conflict" were not specified in the Cooke Committee Report.

[42] In this context, Charles Goodhart concludes: "Some will view this as the BCBS at its best, independent and principled; in particular, sticking up for the principle that regulation should be for (micro)prudential purposes only, and prepared to run counter to the preferences of their own central banks if they thought it right to do so. There is another view. The main concern of bank regulators, on this latter view, should be with (macro)prudential concerns relating to systemic stability. Subject to concern over (depositor) customer ignorance, the individual bank can, and should, be the best judge of its own micro-risk/return trade-off. The regulator then should have much more concern about macro than about micro-fragility." Goodhart, C. (2011), p. 138.

[43] It also mentioned that "a number of members of the Working Party" were in favour of prudential measures to constrain international bank lending.

the Standing Committee on the Euro-Currency Market (ECSC) with the monitoring of international banking developments. A brief press communiqué was released to this effect.[44]

The 1978 joint meeting of the ECSC and the BCBS and the 1979-80 Lamfalussy Working Party provided examples of the, sometimes very difficult, dialogue in the central banking community on prudential issues, especially between the Basel Committee on Banking Supervision and the Standing Committee on the Euro-Currency Market.[45] The BCBS typically took a micro-prudential point of view. Its main objective was to check the compliance of the banks with prudential regulations. The ECSC took a more "macro-prudential" approach, pointing to the increasing debt overhang of certain countries. However, for the BCBS, the risks of these credits were regarded as very limited: it were short-term credits (floating-rate notes) which could be withdrawn quickly if there was the slightest danger.

In the second half of the 1970s, there was then a high degree of concern in the central banking community, and certainly at the BIS, about the Latin American debt build up. There was also a clear awareness by several central bankers, especially in the Standing Committee on the Euro-Currency Market (much less in the Basel Committee on Banking Supervision) that a "macro-prudential approach" was necessary. The term macro-prudential was used explicitly and defined as focusing on problems that "bear upon the market as a whole as distinct from an individual bank, and which may not be obvious at the micro-prudential level". However, there was nearly no awareness that financial innovations (floating rate notes) were an important contributing factor to the debt build-up. This was aptly summarised in a NBB note on the Larre report, which identified three reasons for the rapid expansion of international bank lending: the internationalisation of economic life also in banking, the worsening of global imbalances, and the evasion of reglementations. The NBB note was rather pessimistic about the work of the Larre Group, "The Larre Group has not been able to formulate a precise diagnosis of the nature of the undesirable effects of the market, nor a unanimous judgement on the necessity to moderate its growth" However, it concluded, "The report of the Group, nevertheless, reflects the general sentiment that there is good reason for the authorities to collectively

[44] Lamfalussy looked back rather critically on this period, "The G-10 governors continued to discuss the situation and eventually published, rather late, their April 1980 press communiqué. To cut a long story short, central bank endeavours to slow the sharp rise in unconditional international bank lending failed. So did the crisis prevention warnings of the June 1982 BIS Annual Report" (Lamfalussy, 2000, p. 13). Noteworthy is also that the word "macro-prudential" was not in the April 1980 press release. The interrelation between "micro"-and "macro"-prudential issues led Lamfalussy to become a strong advocate of central bank responsibility in the supervision of systematically important financial institutions (cf. Lamfalussy, 2004).

[45] Interview, Alexandre Lamfalussy, 5 May 2009.

focus their attention on the developments observed in the international credit market" giving especially attention to the "macro-prudential risks that are likely to gain in importance in the context of the new phase in the recycling of petro-dollar surpluses".[46] With the outbreak of the international debt crisis in 1982, these concerns would soon become reality.

5 THE BIS ROLE IN THE MANAGEMENT OF THE DEBT CRISIS

As mentioned before, in April 1980 the G10 Governors had entrusted the ECSC with the continuous monitoring of international banking developments. International banking statistics collected by the BIS, and published in its annual reports, demonstrated a further rapid growth of developing countries' indebtedness. In three years, from the end of 1978 to the end of 1981, the claims of G10 banks on Mexico, Argentina and Brasil more than doubled from US$ 62.2 billion to US$ 129.1 billion (see table 1). As a result, in the discussions among central bankers a subtle shift in focus was discernible from 1980-81 onwards. Previously they had looked primarily for ways to prevent or, at least, slow down developments that were thought to hold potential risks for the international financial system. Now, as the onset of a major crisis seemed increasingly likely, more attention was devoted to practical preparations on how best to deal with the fall-out of such a potential crisis. In its meeting on 9 November 1980, the ECSC discussed a Bank of England paper on *Possible consequences of a debt service failure by a major borrowing country*. A practical outcome of this discussion was that the ECSC in April 1981 sent to the G10 central banks a questionnaire on the means available to national authorities for providing liquidity support to banks in a crisis situation.[47] The results of this survey were analysed at subsequent ECSC meetings in 1981-82, leading to a consensus "Report on possibilities for central bank co-operation in handling liquidity crisis situations affecting banks' foreign establishments". This report was submitted to the G10 Governors for discussion during their scheduled meeting in Basel of 12 July 1982. In an early version, the report had been quite outspoken about the existing threats to the international financial system: "Developments that have taken place since the Committee started working on this subject in the spring of 1981 have materially increased the concerns felt about the riskiness of international banking. (..) Default by one, or even several, international borrowers which at

[46] Le contrôle du marché des euromonnaies, Commentaire des rapports Larre, Lamfalussy et Axilrod, Bruxelles, 6 March 1980, NBBA, C.416/17 and C.416/1: "Le Groupe Larre n'a pu formuler ni un diagnostic précis sur la nature des effets indésirables du marché, ni un jugement unanime quant à la nécessité de modérer la croissance du marché. (..) Le rapport du Groupe reflète néanmoins le sentiment général qu'il y a matière, pour les autorités, à resserrer collectivement l'attention qu'elles accordent aux développements observés sur le marché international du crédit. (..)", giving special attention to "les risques "macro-prudentiels" susceptibles de revêtir une importance accrue dans le contexte de la nouvelle phase de recyclage des capitaux pétroliers".

[47] Euro-currency Standing Committee 1980-82, In BISA, 7.18(15) – *Papers Lamfalussy*, LAM21.

that time was just a working assumption has become a real possibility".[48] In the final version submitted to the Governors this assessment – found to be too gloomy by some Committee members – was toned down.

Table 1 – Claims of G10 banks on some Latin American countries, 1976-81
Totals (partly reported, partly estimated) in billions of US $, current prices, end of period

claims on:	**1976**	**1977**	**1978**	**1979**	**1980**	**1981**
Mexico	17.8	19.3	23.4	30.9	41.3	55.5
Argentina	3.4	4.5	6.9	13.4	19.2	23.2
Brazil	21.2	22.9	31.9	37.4	43.9	50.4

Source: Bank for International Settlements, *Annual Report*, Basel: BIS, years 1977-1982.

When they met in Basel on 12 July none of the Governors can have been under any illusion regarding the international debt situation. The problems in Eastern Europe had already led to a first BIS bridging loan to Hungary in March 1982. In June 1982, the BIS Annual Report had warned against commercial banks reducing their international exposure too suddenly and indiscriminately.[49] The day before the G10 Governors meeting, another ECSC meeting took place at which its chair Lamfalussy asked members whether they could "..confirm reports that in recent months, and in particular since the outbreak of the Falklands crisis, there has been a change in banks' perceptions of the risks involved in their international business. Are there signs that banks are becoming more reluctant to increase further their international exposure, or even have the desire to reduce it, either vis-à-vis non-resident customers in individual borrowing countries or groups of countries, or in the international interbank market, or both?".[50] At their meeting in Basel on 12 July, the Governors discussed what action – if any – could be taken on the basis of the ECSC report. They concluded that the situation was indeed very grave. All the same, they did not want to sound too alarmist and decided against issuing a public statement on the availability of liquidity support aimed at re-assuring the markets, as had been done in September 1974 in the wake of the Herstatt crisis. Talking publicly about the

48 "Draft report to the Governors", 25.03.1982, BISA 7.18(15) – *Papers Lamfalussy*, LAM22. This early draft goes on to identify the main causes for this concern: "..the current state of the world economy – in which there is a combination of economic stagnation, relatively high inflation rates, low asset prices, high real interest rates and volatility of both interest and exchange rates – has increased the risks inherent in financial intermediation both internationally and domestically. (..) the deterioration of the world political climate has added new types of risk to international lending. Moreover these developments have occurred at a time of declining capital ratios in a number of international banks".

49 BIS (1982), *Fifty-second Annual Report*, Basel, p. 188.

50 Telex to ECSC members from Alexandre Lamfalussy, 1.07.1982, BISA 7.18(15) – *Papers Lamfalussy*, LAM22.

central banks' lender-of-last-resort powers might do more harm than good, it was argued, as it might be wrongly interpreted as a vote of no-confidence in the entire international banking system. There was broad agreement that in the event of a liquidity crisis, the continued proper functioning of the interbank market would be essential.[51]

Barely a few weeks later the situation took a sudden turn for the worse. On 12 August 1982, the Mexican Finance minister Jesús Silva Herzog closed his country's exchange markets and informed the US authorities that Mexico's reserves were exhausted. Mexico was not any longer in a position to service its debts. It was the public ouverture to what has become known as the Latin American debt crisis, a dramatic turning point in the history of the countries directly involved, but also of the international financial system as a whole.

The history of the Mexican crisis has been recounted in detail elsewhere.[52] Suffice it here to recall the broad outlines, with a specific focus on the BIS's role during the hectic first phase of the crisis. On 13 August a Mexican negotiating team, headed by Silva Herzog, met with IMF Managing Director De Larosière. The first priority, and a pre-condition to any substantive financial arrangement with the IMF, was to mobilize the immediate liquidity necessary to avoid an outright default. In separate arrangements with the US authorities, the Mexicans obtained more than US$ 2 billion in advances and temporary credits. Enough to keep the interest payments due to banks and other commercial creditors flowing, but not for long. More would be required to bridge the time until an IMF package could be negotiated. It was Federal Reserve Board chairman Paul Volcker who, already on Friday 13 August, took the initiative to muster additional support from the Group of Ten central banks. He got in touch with BIS President and chairman of the Swiss National Bank Fritz Leutwiler to find out whether a meeting in Basel could be arranged at very short notice. This was in the middle of the summer holiday period, and not everyone could be reached immediately. During the next weeks Leutwiler at the BIS and Governor Richardson of the Bank of England would take the lead in coordinating the central banks' response to the Mexican crisis.

An impromptu meeting of the G10 Governors did not seem feasible nor desirable. Instead, the Euro-currency Standing Committee was called to Basel for an ad hoc meeting on Wednesday 18 August, to "identify the exposure vis-à-vis Mexico of the individual national

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51 "…whilst the international interbank market may contribute to the international diffusion of a banking crisis, the continued proper functioning of this market in the event of a liquidity crisis that has actually occurred could lessen the need for possible central-bank action. This follows from the consideration that the first external line of liquidity on which a bank can draw when facing a withdrawal of deposits is the interbank market itself". Speaking note for the Chairman's introduction, G-10 Governors' meeting, Basel 12.7.1982, BISA 7.18(15) – *Papers Lamfalussy*, LAM22.

52 See in particular: Kraft, 1984; James, 1996, pp. 347-408; Boughton, 2001,,pp. 281-318; Diaz-Alejandro, 1984; Dornbusch, 1986; and Marichal, 2010.

banking systems of the Group of Ten countries", and to discuss the possibility of arranging immediate financial assistance for the Bank of Mexico.[53] The second part of the discussion was attended by two Mexican representatives, Ariel Buira (Alternate Executive Director for Mexico at the IMF) and Alfredo Phillips Olmedo (deputy Director at the Bank of Mexico), who had flown into Switzerland the day before. The two questions were interrelated. The estimated exposure to Mexico of the individual banking systems would be used as a rough basis to calculate the share of each of the G10 countries in the emergency credit. It immediately became apparent that, in spite of all previous efforts to improve banking statistics, the readily available data were neither complete nor current. It took the BIS and central bank experts a little while to compile, more or less reliably, the consolidated claims of banks with head offices in the G10 countries vis-à-vis Mexico at the end of 1981. At that point in time – i.e. more than seven months earlier – they together had held an estimated total of US$ 58 billion of claims against Mexico. Banks in the United States and Japan were most exposed (holding US$ 22 billion and US$ 10 billion respectively), followed at some distance by banks in the United Kingdom, France and Canada, and then, for smaller amounts, by the other G10 countries.[54]

The general principle and magnitude of a credit facility in favour of the Bank of Mexico were quickly agreed to. The BIS offered a US$ 925 million credit, backed by the G10 central banks joined for the occasion by the Bank of Spain.[55] The US monetary authorities (Federal Reserve and Treasury) matched this with an equal amount, so that a total of US$ 1.85 billion was made available for an initial period of three months (three times renewable to up to one year). The collateral offered caused some last-minute problems – necessitating the dispatch of a BIS team to New York and then to Mexico – but eventually consisted of a gold pledge by the Bank of Mexico and advance claims on future revenues of the Mexican state oil company Pemex. The credit was made available in three tranches – subject to progress being made in Mexico's negotiations with the IMF – the first of which was paid out on Monday 30 August 1982.

The credit facility granted jointly by the US monetary authroities and the BIS, representing the other G10 central banks and the Bank of Spain, was announced in a press statement released on 29 August 1982. Its main purpose was to reassure the markets and to buy time. Time to allow Mexico to conclude an agreement with the IMF on an economic stabilisation programme that would enable it to qualify for drawings under the IMF's extended fund facility. Time also to allow the Mexicans to engage in difficult negotiations

53 Telex Günther Schleiminger, BIS General Manager, of 16 August 1982, BISA 7.18(15) – *Papers Lamfalussy*, LAM22.

54 Telex A. Lamfalussy to G-10 central banks, 25 August 1982, BISA, 1.3a(3)B – *Euro-currency Standing Committee*, vol. 5.

55 The details of this operation are documented in: BISA 2.403 – *Banco de Mexico, Policy*, vol. 1.

with the commercial banks on a necessary re-scheduling of Mexico's private loans. These negotiations started in earnest on 20 August, when a coordinating committee was established, comprising senior officials of Mexico's largest creditor banks, and a temporary roll-over of principal on these banks' loans to Mexico was granted. In order to get all of the more than 500 international banks who had a substantial exposure to Mexico on board, it was essential to convince them that the problem could still be contained if all parties involved cooperated, even if this meant temporarily increasing their exposure by granting Mexico additional credits. Obviously, the US and BIS bridging credits and the prospect of a conditional IMF facility played a key role in this strategy.

These efforts were almost derailed when on 1 September the outgoing Mexican President López-Portillo caused a shock by announcing the nationalisation of Mexican banks and the introduction of exchange controls, while blaming foreign creditors – including the IMF – for much of Mexico's predicament. The Governor of the Bank of Mexico, Miguel Mancera, who disapproved of exchange controls, was replaced by Carlos Tello, a declared opponent of the adjustment policies propagated by the IMF. The G10 Governors with BIS Assistant General Manager Lamfalussy met on Sunday 5 September 1982 in Toronto, in the margins of the IMF-World Bank Annual Meeting taking place there, to assess the situation. The emergency credit granted on 30 August was confirmed, but the release of the second tranche was temporarily frozen pending developments in Mexico and further progress in the negotiations between Mexico and the IMF. The Governors feared that publicly revoking the emergency support to Mexico would have a detrimental effect on the attempts to negotiate a debt re-scheduling with the commercial banks. No resolution was in sight at the end of the Toronto meetings. The chaotic situation led to a temporary panic on the interbank market on Tuesday 7 September, that was only halted by the central bank Governors leaning heavily on the main international banks, and by using the first tranche of the BIS loan for repaying part of the outstanding claims.[56]

In spite of all the difficulties – including the tense political transition in Mexico from the López-Portillo to the Miguel de la Madrid-presidency – negotiations between Mexico and the IMF and between Mexico (with heavy IMF support) and the private creditors continued. On 10 November 1982, a Letter of Intent between Mexico and the IMF was finally signed, providing for access to the extended fund facility in exchange for a mutually agreed and monitored structural adjustment programme. IMF Managing Director Jacques de Larosière insisted that before the facility was granted by the IMF Board, the commercial banks needed to be brought on board with a commitment to raise their exposure to Mexico with no less than US$ 5 billion in 1983. The only alternative, the IMF argued, was an outright default, which would have cost the banks a lot more and might

[56] Boughton (2001), p. 301.

even have caused a severe systemic financial crisis. After a lot of wrangling and high-powered negotiations, in which de Larosière and Federal Reserve Chairman Paul Volcker played a substantial role, agreement in principle was reached in early December. On 23 December 1982, the Executive Board of the IMF unanimously approved the arrangement under the extended fund facility, releasing a total of US$ 3.75 billion in new credits to Mexico. With the complex separate arrangements with the commercial banks being finalised in the early months of 1983, Lamfalussy was able to conclude in a note to the G10 Governors for their meeting in Basel on 7 February 1983 that "..the international debt situation has been brought under control – at least for the time being".[57] Repayment of the BIS credit facility was completed on time in August 1983.

By early 1983, Lamfalussy was not only referring to the Mexican crisis, but also to the debt crises in Argentina and Brasil, which both had been contained in similar fashion, including bridging loans provided through the BIS: in December 1982 to the benefit of the central bank of Brasil for the amount of US$ 1.2 billion (later increased to US$ 1.45 bio.), and in January 1983 to the central bank of Argentina for the amount of US$ 500 million.

In the final analysis, the crisis management in the face of the international debt crisis of 1982 had been quite successful, at least in containing the spread of the crisis. As Lamfalussy concluded many years later: "The crisis management was indubitably successful in one major respect: it prevented the Latin American payments crisis from developing into a full-blown international financial crisis with unpredictable *real* consequences for the world economy as a whole. Given the size of bank exposure to Latin America such a scenario was a genuine risk, although as with other systemic risks it is impossible to quantify it, even with hindsight".[58] An essential factor contributing to this outcome was the successful "bailing in" of commercial banks. This was by no means an easy exercise, but it was facilitated by the relatively straightforward nature of the problem – one sovereign debtor faced with a finite number of lending banks – and by the fact that the available BIS banking statistics, in spite of their shortcomings, allowed to identify very quickly which were the markets, and hence the banks, that were most severely exposed.

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57 "The international debt situation: prospects for 1983 and policy options", note Lamfalussy, 1 February 1983, BISA 7.18(15) – *Papers Lamfalussy*, LAM 35, 89. With hindsight, the 1982 rescue package would turn out to be only the start of a protracted process of managing Mexico's excessive indebtedness. A straight default was avoided, at least technically, but for many years to come Mexico was denied direct access to the international capital markets, instead going from one rescheduling exercise to the next until in 1990 a "final" debt-reduction agreement was negotiated under the Brady Plan.

58 Lamfalussy, Alexandre (2000), *Financial Crises in Emerging Markets*, Yale University Press: New Haven & London, p. 15.

6 STRENGTHENING THE FINANCIAL SYSTEM AND THE BIS MACRO-PRUDENTIAL APPROACH

In the light of the discussions that had taken place in the central bank community in the late 1970s (see sections 3 and 4 above), the question is warranted what the short- and longer-term consequences were of the Latin American debt crisis for these debates. How did this crisis affect the central banks' policy and research agenda over the following years? Basically, the impact of the 1982 crisis can be seen at three levels.

6.1 Improved monitoring

First, there was a renewed impetus to further improve the monitoring of the international financial system. The aim was to detect potential problems and imbalances at an early stage with the hope to prevent them developing into a future crisis. Multilateral surveillance and monitoring of the international financial system had of course been a constant theme since at least the 1960s. The most obvious tool to help improve monitoring were accurate and timely financial and banking statistics.[59] The BIS already had something of a tradition in collecting and disseminating financial statistics.[60] In 1974, in the wake of the Bankhaus Herstatt failure, the BIS started publishing quarterly statistics on the euro-currency market. These were locational statistics, that is to say accounting for the international exposures of all banks active in a given country, whether domestic or foreign-owned, on a gross and un-consolidated basis (ie including exposures vis-à-vis own affiliates). Reporting was initially limited to the G10 countries. From 1978, these quarterly locational banking statistics were complemented by the semi-annual publication of consolidated banking statistics, reporting the international financial claims of national (ie domestically-owned) banking systems vis-à-vis individual countries on a net and consolidated basis (ie excluding exposures vis-à-vis own affiliates) and broken down by maturity.

The need to further improve the accuracy and timeliness of these statistics had been stressed most recently in the Lamfalussy Group report to the G10 Governors of February 1980 (see section 4.4 above). However, this remained a major challenge, not least because of the associated effort and costs. Moreover, the Latin American debt episode held a sobering lesson as regards the usefulness and impact of such statistics. From at least the late 1970s, imperfect but sufficient data had been available showing that a

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[59] This is a perennial theme. It has resurfaced during the current crisis, where it has been contended that poor financial data – or rather data that has lost much of ist relevance in the face of growing financial complexitiy – has led market participants to incorrectly assess systemic risks and to increase their leverage and risk-taking activities. See for instance: Barnett, William A. (2012), *Getting it Wrong: How Faulty Monetary Statistics Undermine the Fed, the Financial System and the Economy*, Cambridge: the MIT Press.

[60] Clement, Piet (2004), "The historical background to the statistical activities of the Bank for International Settlements, 1930-2000", *Irving Fisher Committee Bulletin*, 18, pp. 27-34.

potentially unsustainable situation was developing. But these data, and the warnings from the central banks, the BIS and IMF that went with them, went largely unheeded. In fact, in late 1982 the BIS started receiving complaints from commercial bankers about "an alleged lack of timely information of countries' external bank debt and, in particular, on the maturity breakdown of such debt".[61] When *The Economist* and the *Financial Times* in December 1982 reported that bankers "were not aware until the Mexican crisis broke just how big a lump of the country's debt was short-term", Lamfalussy took the unusual step of publishing a letter to the editor in which he vigorously refuted this, citing the banking debt figures published by the BIS since 1978: "…by December 1980 anyone who cared to look at our figures could see that an increasing proportion of Mexico's external borrowing was beginning to take the form of short-term credits. (..) …by January 1982 the trend had become crystal clear. (..) To put it bluntly, actual or potential creditors did have early warnings ... well before the eruption of the Mexican crisis in July 1982".[62] This episode not only echoed one of the conclusions of the earlier Burns' checklist initiative (see section 4.2 above) – namely that quite a few banks were not even aware of the existence of the BIS statistics; it also underlined the old adage that as long as everything seems to be going well and profits keep flowing in, not many are prepared to take such warning signals very seriously.

In spite, or because of, all of this the Latin American debt crisis sparked a renewed effort by the Euro-currency Standing Committee to substantially improve banking statistics. The exercise undertaken in August 1982 to determine the exposure of individual countries' banking systems to Mexico had revealed various shortcomings in the available data (eg in comparing consolidated to unconsolidated figures). In their meeting on 27 September 1982 the G10 Governors requested the Euro-currency Standing Committee to discuss and implement as soon as possible improvements in the BIS international banking data.

In its meeting on 7 November 1982, the ECSC discussed a proposal for introducing an improved reporting system for measuring the country exposure of reporting countries' national banking systems (semi-annual consolidated banking statistics). A special meeting of central bank statisticians was convened in Basel on 3-4 March 1983 to work out the details for implementation from end-1983. At the same time, the geographical coverage of these statistics was expanded considerably. From 1978 they had covered the G10 countries plus Austria, Denmark, Ireland and Switzerland and US banks operating in offshore banking centres. In 1984, Finland, Norway and Spain were added. From 1985 full data on the international operations of banks in Bahrain, the Bahamas, the Cayman Islands, Hong Kong, the Netherlands Antilles and Singapore were included.[63] Reporting

[61] Letter Lamfalussy to the G10 Governors of 15.12.1982, BISA 1.3a(3)B – *Euro-currency Standing Committee*, vol. 5.

[62] Letter to the editor from A Lamfalussy published in *Financial Times* (11.01.1983).

[63] BIS (Feb 1985), *International Banking Developments, Third Quarter 1984*, Basel, pp. 1-4.

delays were compressed as much as possible, but it proved very difficult to bring them below twelve weeks on average for the majority of participating countries.

Finally, the Latin American debt crisis bolstered the cooperation between the BIS and the other international financial and economic organisations, in particular the IMF and the OECD. Detailed banking statistics had already been shared with the IMF. Now the idea, first floated – unsuccessfully – in 1978, to combine BIS banking data on countries' external indebtedness with debt figures collected by the OECD, was picked up again. It would lead to the publication, from spring 1984 onward, of the joint OECD-BIS Statistics on External Indebtedness.

6.2 Strengthening international banks

Secondly, the Latin American debt crisis triggered a fundamental discussion on the ways and means to strengthen the financial system, ie to make the internationally active banks more resilient in the face of future crises. There were two main themes in this respect: liquidity and capital.

Initially, much of the focus was on liquidity issues, particularly as these were closely linked to bank solvency issues. Excess liquidity flooding the market might create an unsustainable bubble. The bursting of that bubble might lead to a serious crisis, to which markets might over-react causing a sudden dearth of liquidity, which in turn might put many banks in dire straits and further aggravate the crisis. Already in the run-up to the 1982 crisis, central banks were concerned that the functioning of the interbank market had contributed to excessive lending to high-risk non-bank borrowers (particularly but not only Latin American sovereign borrowers). Due to the maturity transformation mechanism at work (short-term deposits vs. longer-term loans) this had considerably increased the risk-exposure of many internationally active banks. Once the crisis did break, the central bankers' concern predictably shifted to a potential lack of liquidity to keep the system afloat: would individual banks have sufficient access to liquidity, and could the interbank market be relied upon to continue to function more or less normally? Or, put differently: how could the excessive exposure of certain banks be reduced without causing a potentially damaging disruption of the interbank market?

In March 1982, the ECSC had created a study group on the international interbank market, chaired by David Holland of the Bank of England. The study group's report, finalised in December 1982, was influenced by the international debt crisis that had broken out that summer. The report was discussed first by the ECSC meeting of 6 February 1983 and then by the G10 Governors in their meeting of 7 March 1983.[64] The conclusion reached was that it was difficult to attribute the concerns over excessive or

[64] "Report of the Study Group on the International Interbank Market", 23 December 1982, BISA, 7.18(15) – *Papers Lamfalussy*, LAM 22, F61.

inappropriate lending to the existence and functioning of the interbank market as such. Nevertheless, it seemed that the interbank market was perhaps too easily regarded as low-risk, both by the participants in it and by the supervisory authorities. This, it was argued, had a potentially negative impact on the banks' liquidity management, as they did not always adequately assess the degree of dependence they placed on the ready availability of funding from the interbank market. In fact, assets held on the interbank market were generally less liquid than claims on governments and monetary authorities.

However, the report had not much to offer on how to resolve this problem. Market risk assessment and liquidity management were within the purview of the banks themselves and best left there. Certain prudential measures that might have been be contemplated – for instance accounting provisions against involuntarily rescheduled loans – were more within the mandate of the Basel Committee on Banking Supervision, which already earlier had shown its reluctance to impose such macro-economic measures on individual banks.[65]

Still, it was tacitly recognised that in extraordinary circumstances, authorities might be called upon to take extraordinary actions "which are inherently undesirable" to stop the spread of a market disturbance and guarantee the continued availability of sufficient liquidity. For the sake of transparency and to ensure that commercial banks would be aware of the authorities' considerations regarding the interbank market, the G10 Governors decided to publish the main conclusions of the Holland report.[66] For strategic reasons (ie to avoid moral hazard issues from arising), the extraordinary measures that central banks *might* contemplate to counter a liquidity crisis were not made explicit in the published version of the report.

Once the worst of the crisis was over, liquidity concerns receded more in the background. Instead, the focus gradually shifted towards bank capital adequacy. This was not a new issue. The G10 central bank governors had worried about the eroding capital basis of internationally active banks for some time. The press statement they issued on 15 April 1980 to highlight the risks of increased international lending, reminded banks of the "cardinal importance (..) of the maintenance of sound banking standards – particularly with regard to capital adequacy, liquidity and concentration of risks".[67] The BCBS had subsequently been tasked with preparing a "report on the capital adequacy of banks operating internationally". This report, presented by BCBS chairman Peter Cooke at the G10 Governors' meetings in Basel in July and September 1982, concluded that a lot of work remained to be done to achieve a greater convergence in the national definitions of bank capital and to refine the techniques of capital adequacy measurement. However,

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65 In the context of the joint ECSC-BCBS working group discussing possibilities to control the growth of international bank lending (1979); see section 4.4 above.

66 "The International Interbank Market, A descriptive study", *BIS Economic Papers*, 8 (July 1983), Basel.

67 Bank for International Settlements (1980), *Fiftieth Annual Report*, Basel, pp. 116-7.

there was no doubt that a further erosion of banks' capital ratios was clearly undesirable. In fact, this particular BCBS paper laid the basis for agreement among the G10 central banks on a common framework that would allow to work towards an accord on capital adequacy.[68] How this accord was eventually reached is outside the scope of this paper.[69] In a nutshell, the 1988 Basel Capital Accord was the result of careful consensus-building within the BCBS receiving a decisive impetus from a bilateral US-UK initiative to force through capital adequacy requirements for their own banks. This US-UK initiative had its direct origin in the Latin American debt crisis. The Mexico crisis in particular had caught out the New York city banks with a weak capital basis. When the US administration went to Congress to request additional funding for the IMF to help it finance the Mexico rescue package, Congress demanded as a quid-pro-quo stricter regulation on American banks in order to avoid a repetition of the international debt debacle. The administration and the American banks were concerned that such a unilateral move would put the American banks at a disadvantage vis-à-vis their international competitors. For that reason, the US, soon joined by the UK authorities for reasons of their own, started to push hard for an international agreement on common minimum capital standards in order to create a level-playing field for all. They found the ideal forum in the BCBS, where these same issues had already been discussed at length and where a concensus was slowly crystallizing.

Despite these strong drivers, the road to the 1988 Basel Capital Accord (Basel I) would be a long and arduous one. The consensus that was being built in the BCBS since the issue first arose in the late 1970s, and that was bolstered by the 1982 debt crisis, proved critical to its ultimate success. The flipside of this focus on capital adequacy was, however, a relative neglect of the liquidity issue. As Goodhart rightly observes: "In the event, discussion on capital adequacy received an enormous boost in the early 1980s, especially in the aftermath of the Mexico-Argentina-Brasil crisis, and got taken forward under strong external pressures, (..) whereas review and analysis of liquidity issues languished comparatively".[70]

6.3 Towards a macro-prudential approach?

Thirdly, the outbreak of the Mexico crisis – its magnitude and its potential impact on the global financial system and economy – highlighted not only the risks to financial stability but also the inadequacy of a purely domestic, micro-prudential approach to banking supervision and regulation. Since the 1974 Herstatt crisis efforts had been made – notably through the Basel Committee on Banking Supervision – to define and adopt some

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[68] Goodhart, Charles (2011), *The Basel Committee on Banking Supervision, A History of the Early Years 1974-1997*, Cambridge-New York: Cambridge University Press, p. 150-51.

[69] See in particular: Kapstein, Ethan B. (2008), "Architects of Stability?", C. Borio, G. Toniolo and P. Clement (eds.), *Past and Future of Central Bank Cooperation*, Cambridge-New York: Cambridge University Press, pp. 113-52. Goodhart, C. (2011), pp. 146-96.

[70] Goodhart, Charles (2011), *The Basel Committee*, p. 318.

common international standards. It was now clear that these efforts not only needed to be stepped up dramatically – as in the case of the capital adequacy requirements – but that they needed to be complemented with what became known as a “macro-prudential” approach.

Macro-prudential in this context was understood to refer to concerns over the stability of the financial system and its link with the macroeconomy (see section 4.4 above). More specifically, it refered to “the use of prudential tools with the explicit objective of promoting the stability of the financial system as a whole, not necessarily of the individual institutions within it”.[71] Obviously, most of such macro-prudential tools would have to be applied at the level of individual financial institutions. As we have seen, as recently as 1979 the implementation of such tools to counter the excessive growth in international lending – eg by imposing limits on banks' lending to individual foreign countries or on maturity transformations in banks' international business – had been rejected. The 1982 Latin American debt crisis revived this discussion, without, however, leading to a decisive breakthrough.

BIS Economic Adviser Alexandre Lamfalussy was very much aware of the potential macro-economic or systemic implications of the Mexico crisis. Based in part on the discussions he had had with commercial bankers at the IMF-World Bank meetings in Toronto in early September 1982, he produced a note for the benefit of the G10 central bank Governors entitled “The current position and policies of the G10 countries’ commercial banks: some macro-economic and ‘macro-prudential’ issues”.[72] In this note, Lamfalussy discussed the difficult situation of the international banking sector in the wake of the Mexico crisis, and the risks this raised for the global economy. The main concern was that, in a context of weak economic growth, high interest rates and persistent structural imbalances, this situation could easily lead to a systemic crisis. If international bank lending were to dry up as a result of the debt crisis, this might well trigger a global economic depression and further aggravate the positon of the banks themselves. In Lamfalussy’s view, a variety of measures or precautions might be considered to deal with this macro-economic threat. A traditional monetary policy intervention was the most obvious one: a sizeable reduction in short-term interest rates would immediately alleviate the debt servicing burden for sovereign and corporate borrowers alike, particularly since a substantial proportion of debt was held in floating-rate instruments. Thus, an innovation that in a time of rising (real) interest rates had been an aggravating factor in the brewing debt crisis, might actually prove to be helpful if interest rates were to decline. Secondly, the first lines of defense could be strengthened in case the crisis were to spread further. Liquidity support by the central banks and monetary authorities, like that arranged for

[71] Clement, P. (2010), p. 65. See also: Maes, I. (2009).

[72] Lamfalussy, A., “The current position and policies of the G10 countries’ commercial banks: some macro-economic and ‘macro-prudential’ issues”, BISA, 7.18(15) – *Papers Lamfalussy*, LAM 35, 89.

Mexico in August 1982, would be hard to refuse to others in a similar predicament (as the cases of Argentina and Brasil would indeed demonstrate). The resources at the disposal of the IMF therefore ought to be increased. Thirdly, the problem might be tackled at its root: the destabilising maturity profile of international bank debt. Lamfalussy argued that in a crisis context the orderly rescheduling of debt of the most exposed countries "should be positively encouraged rather than simply accepted as a last-resort measure".[73] Finally, some macro-prudential tools might be considered in the context of the regular banking supervision and regulation process. These would typically pertain to the regulation of the banks' capital and balance sheet, for instance through the imposition of country risk limits, capital surcharges, and loan loss provisions.

As a matter of fact, the one, rule-based macro-prudential tool that resurfaced persistently in the context of the post-Mexico discussion was the proposal to force banks to set aside provisions to cover problem loans to sovereign borrowers (loan loss provisions), an idea that had already been discussed and rejected by the BCBS back in 1979. Besides this, serious consideration was also given to a discretionary macro-prudential tool "par excellence", that of supervisory warnings. These could take different forms and degrees. Authorities might warn market participants about the build-up of particular risks in the system. Some of the G10 central banks and the BIS itself had in fact done so – through their regular publications or in public speeches – well before the outbreak of the Latin American debt crisis.[74] A serious potential drawback of such warnings is that they may have adverse effects if they turn into self-fulfilling prophecies. Public statements are even more problematic when their primary motive is not so much to caution but to re-assure markets and strengthen the banks' confidence in the stability of the banking system. The IMF, at its meeting in Toronto in early September, in an effort to avoid a panic-atmosphere from spreading, urged banks to judge the credit-worthiness of individual countries on their merit and to refrain from a large-scale withdrawal from international lending. In the wake of the Mexico crisis, the G10 Governors briefly considered whether there was a case for issuing a statement along the lines of the famous press communiqué on lender-of-last-resort arrangements issued in September 1974 following the Herstatt crisis. As it was felt that such a statement might overdramatize the situation and therefore might do more harm than good, the idea was quietly dropped. As for the discussion on loan loss provisions: this eventually got caught up in the discussions on the Basel Capital Accord (1988).

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[73] Lamfalussy, A., "The current position and policies of the G10 countries' commercial banks: some macro-economic and 'macro-prudential' issues", BISA, 7.18(15) – *Papers Lamfalussy*, LAM 35, 89, p. 9.

[74] For instance: Bank for International Settlements (1982), *Fifty-second Annual Report*, Basel (14 June), pp. 188-89.

7 CONCLUSION

The macro-prudential approach to financial stability had its origin in the circles of central bankers and supervisors within the context of the rapid build-up of external debt by newly-emerging economies, in particular in Latin America, in the late 1970s. It was understood to refer to prudential policies that promote the safety and soundness of the broad financial system – not of individual financial institutions alone – in relation to its impact on and vulnerability to the macro-economy. Macro-prudential instruments considered at that time were typically linked to the regulation of the banks' capital and balance sheet: loan loss provisions, reserve surcharges, specific risk exposure limits. However, while the merit of a macro-prudential approach was generally recognised, no practical measures followed.

In conclusion, it would seem that once the worst of the Latin American debt crisis was brought under control, the macro-prudential approach to banking supervision and regulation was relegated back to the drawer. The fact that the main promotor of banking supervision and regulation standards, the BCBS, was keen not to be distracted from its micro-prudential mission, was no doubt an important factor.

The BIS approach, with its emphasis on the macro-prudential dimension, came publicly to the fore in the Cross Report on innovations in international banking (1986). In that way, the macro-prudential approach became very much associated with financial innovations in the 1980s-1990s. In the late 1970s – when macro-prudential concerns were first raised – the potential impact of financial innovation (floating-rate instruments) on financial stability and systemic risk was not much discussed. True, from the mid 1970s, financial innovations increasingly became a topic of discussion among economists and policy-makers. An important reason was that conventional money demand functions began to overpredict the quantity of money in circulation, leading to the "puzzle of the missing money" (Goldfeld, 1976). Financial innovation and its effects on monetary policy thus became a crucial topic of research among central bankers, also at the BIS. This became apparent in the 1982-1983 Annual Report, which included for the first time a chapter entitled "Financial Markets and Financial Innovations". The main preoccupation was the impact of financial innovations on monetary policy. This was also the theme of the 1983 central bank economists' meeting (BIS, 1984). However, as observed by Wenninger (1984), the impact of financial innovation on financial fragility was rather neglected.

This changed by the mid-1980s. In a presentation, "The changing environment of central bank policy", at the American Economic Association meeting at the end of December 1984, Alexandre Lamfalussy very much focussed on financial fragility. Lamfalussy emphasised the accelerating speed of financial innovation. He explicitly raised the issue of systemic stability, "You may argue that when risk-averse market participants shift risks associated with unexpected interest and exchange rate developments onto willing risk takers, everybody is going to be better off. This may well be the case, but increased collective happiness does not necessarily mean greater systemic stability. Or does it?" (Lamfalussy, 1985, p. 411). In a speech in 1986, Lamfalussy gave a negative answer to the question whether the redistribution of risk improved financial stability. His argument was strongly influenced by his analysis of the Latin American debt crisis (Maes, 2009). In his view, the shift to a generalised use of floating interest rates in medium-term bank loans, during the petrodollar recycling phase, allowed banks to protect themselves against the erosion of their margins of intermediation. However, it also had the effect of passing on short-term market interest rate movements to borrowers. With negative real interest rates in the 1970s, credit demand was stimulated, leading to a period of over-expansion. The return to positive real interest rates in 1979 placed a "crippling" burden on many debtors. The ensuing debt crisis threatened the world financial system. Lamfalussy concluded: "Innovation allowed banks to transform margin risk into capital risk which, in this case, was probably a greater threat to the stability of the international banking system - not to mention its rather disastrous effects on the borrowers themselves" (Lamfalussy, 1986, p. 14).

The rapid development of derivatives markets and the increasing securitisation, in the 1980s and 1990s, brought new vulnerabilities to light that raised macro-prudential concerns. In the 1990s, the term macro-prudential began to be used more outside central banking circles, particularly in the wake of the 1997 Asian financial crisis. Finally it rose to real prominence after 2000, and particularly in the context of the global financial crisis that started in 2007-08. Compared to the late 1970s, the concept has since gained in depth and dimension. It now commonly refers to a prudential framework that focuses on the financial system as a whole, and that through the application of specific tools seeks to limit risks deriving from the procyclicality of the financial system (ie how risk evolves over time, during the financial cycle) and deriving from the particular distribution of risks within the financial system at any point in time (the so-called cross-sectional dimension of risk; eg the “too big to fail” problem).[75] But, ultimately, the goal of a macro-prudential approach remains what it has been since the term was first used in the late 1970s: to limit the risks and costs of systemic crises. Typical for the BIS is a broad approach to financial stability, "marrying" the micro- and macro-prudential dimensions. A crucial lesson of the Latin American debt crisis is certainly the necessity of combining micro prudential information (for instance on financial innovations) with the macro prudential approach.

75 Galati and Moessner (2011).

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