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A National Wealth Approach to Banking Crises and Financial
Stability

by Olivier Frécaut

***IMF Working Papers* describe research in progress by the author(s) and are published to elicit comments and to encourage debate.** The views expressed in IMF Working Papers are those of the author(s) and do not necessarily represent the views of the IMF, its Executive Board, or IMF management.

I N T E R N A T I O N A L M O N E T A R Y F U N D

IMF Working Paper

Monetary and Capital Markets Department

A National Wealth Approach to Banking Crises and Financial Stability

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Abstract

The paper explores a different, supplementary way to assess and manage a particular type of banking crises, those arising from a rise of nonperforming loans to the corporate sector. It relies on a “national wealth approach,” focusing on the distribution of net wealth among economic sectors and its interaction with developments in the banking system. It identifies avenues for policy response optimization, based on an integrated macrofinancial analytical framework, both for the prevention and the resolution of these types of economic events.

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I. INTRODUCTION

Banking crises are frequent and highly disruptive events. They are also very expensive. In the latest version of their database, Laeven and Valencia (2003) identify and review 147 systemic banking crises that took place between 1970 and 2011. They estimate the median output loss for each occurrence at 23.2 percent of GDP, with direct fiscal costs for financial sector rescues reaching 6.8 percent of GDP, and the increase in the public debt ratio of over 12 percent. In the most severe cases (Indonesia and Argentina), the direct fiscal costs reached more than half of GDP. In the quest for improvements in the way such crises are prevented, detected at an early stage and resolved, the stakes are high.

This paper proposes applying a “national wealth approach” (NWA) to the assessment, prevention, and management of a sub-set of banking crises, those linked to an accumulation of nonperforming loans (NPLs) to the corporate sector. The early detection and precise assessment of banking crises is the primary objective of the NWA as an additional—rather than a substitute—way of broadening the understanding of their nature and dynamics for the benefit of policy makers, with a view to containing their cost. A second objective of the paper is to contribute to the ongoing reflection toward a closer integration of financial sector and macroeconomic analysis through extensive reliance on national accounting concepts and formats. The final, overarching purpose of an NWA is to strengthen the financial stability policy work agenda.

Overall, the NWA is a sub-set of the wider work stream on a “balance sheet approach” (BSA) to the monitoring of financial sector and macroeconomic developments. The BSA has been under consideration, including in particular by IMF staff, since the early 2000s,² and has more recently benefitted from a renewed focus as part of the efforts to better integrate macro and financial analytical work.

The paper is structured as follows. Section II describes the key features of an NWA. Section III discusses how it can be relied upon as a different way of characterizing banking crises. Section IV covers prevention issues, and Section V how an NWA could also be taken into account for the management of banking crises. Section VI outlines a further research agenda, while Section VII concludes.

II. KEY FEATURES OF A NATIONAL WEALTH APPROACH

An NWA includes two components. First, reliance on national accounting concepts and formats to look at banking sector issues from a different angle, one that is consistent with and incorporated into the existing integrated macroeconomic analytical framework that is widely used by practitioners, notably IMF country teams. In practical terms, this means using

² See in particular Allen et al., (2002).

SNA-based data sets and concepts to assess the condition of the banking sector. Second, anchoring the analysis on the SNA concept of national wealth, its distribution among economic sectors, and how it is affected by banking system and macro developments.

A. Reliance on the National Accounting Framework

The “*System of National Accounts-2008*” (2008 SNA) manual, like its four previous editions, “*is the internationally agreed standard set of recommendations on how to compile measures of economic activity,*” “*for purposes of economic analysis, decision-taking, and policymaking.*”³ It provides a comprehensive and coherent analytical framework for all sectors of the economy as the universally accepted international standard in this field, and the core concepts on which the IMF’s macro analytical framework and financial programming are based.⁴ The IMF manuals on fiscal and external issues, namely the 2014 “*Government Finance Statistics Manual*” (GFSM 2014) and the 2009 “*Balance of Payments and International Investment Position Manual, Sixth Edition*” (BPM6) are conceptually rooted in the 2008 SNA. Such is the case, too, of the IMF’s 2000 “*Monetary and Financial Statistics Manual.*” However, the latter was designed primarily for monetary policy analysis purposes in a macro context, not for prudential monitoring of the soundness of the financial sector, and even less for the management and prevention of banking sector distress and crises.

As a comprehensive framework, the SNA provides a logically articulated sequence of accounts and analytical concepts for all sectors of the economy, including the financial sector. But there is no evidence that this holistic framework has been relied upon so far for banking crises analysis and management purposes.⁵ In practice, banking sector issues are still analyzed and managed based on a set of different concepts as part of a prudential approach that relies on business accounting principles.

This paper argues that a fully integrated analytical framework, incorporating both macro and financial developments within consistent sets of data and concepts, would be a key step to more effectively addressing the challenges of today’s globalized economy and volatile financial markets. Since the SNA happens to provide such a fully integrated framework, the question arises why it has remained underused so far in this regard. Limitations to the current SNA framework, as discussed below,⁶ play a role, but the enduring analytical silos still separating macro-economists, national accountants, and financial sector specialists are probably the main obstacles. Breaking these silos and relying on the SNA to describe and

³ 2008 SNA, Chapter 1 – Introduction, par. 1.1.

⁴ See IMF (2007).

⁵ An exception is an earlier paper of mine, Frécaut (2004).

⁶ See the discussion in Section VI.

interpret financial sector developments, including banking sector distress and crises, should open the way to progress in policy making. This does not mean that the classic prudential approach to banking sector issues should be set aside; rather, both approaches should be considered simultaneously to provide decision makers with a wider perspective that is conducive to more articulate policy responses.

Wealth and financial assets in the SNA

Within the SNA framework, wealth or net worth is by construction equal to real, nonfinancial assets, since financial assets are conceptually equal to financial liabilities.⁷ National wealth is thus equal to the real assets held by all the economic entities belonging to that nation, plus or minus net claims on or liabilities toward the rest of the world, namely the Net International Investment Position (NIIP). At the global level, all individual nations' NIIPs should, in principle, net each other out, except for statistical background noise, so that the world's aggregate balance sheet consists of real assets on one side, balanced by an equal amount of wealth on the other side.

Within a given nation, the wealth of each sector, as well as that of each economic entity, is equal to the real assets it holds directly plus or minus its net financial assets or liabilities. In that sense, financial assets are just an indirect way of holding real assets, through intermediaries, with banks playing a prominent—but not exclusive—role in the intermediation of those holdings. This permanent equality between real assets and net wealth is a cornerstone of the SNA's analytical framework. Whenever a new financial asset (or liability) appears anywhere in any economy of the world, a new liability (or asset) of equal value arises somewhere else, without a direct and immediate impact on the existing stock of net wealth. This is the first relevant point to take into account when monitoring banking sector issues based on the SNA framework: financial transactions are in and of themselves wealth-neutral.

Quadruple vs. double entries accounting

The double-entry principle (a debit and a credit for every transaction) is the cornerstone of accounting for any economic entity. For a bank, for instance, whenever it registers a loss of value on a loan that has become nonperforming by booking a provision (a credit), it books, as the balancing entry, a reduction in its profit and net worth (a debit). By contrast, the SNA requires quadruple entries⁸ for each transaction, with those entries called “uses” and “resources” instead of “debit” and “credit.” In addition to the two entries mentioned above

⁷ Setting aside a limited number of specific items, like monetary gold, IMF's SDRs, and minor valuation differences for some types of financial assets vs. the same liabilities.

⁸ See 2008 SNA, Chapter 2: Overview, Section C: Rules of accounting.

for the concerned bank, two more entries are required in the relevant counterparty: a decrease in the borrower's debt toward the bank, balanced by an increase in its net worth. In the aggregate, national wealth is invariant to declines in the value of loans.

When only two of the four entries are taken into account, as is the case in the business-based prudential approach for banks, the SNA's permanent equality between net worth and real assets is broken. Thus, without additional adjustments, the aggregate amount of national wealth is inaccurately altered. This is the second point of relevance for banking system issues monitoring through the SNA framework: all transactions and events should be considered and analyzed based on quadruple accounting entries.

Financial losses and the SNA

The switch to quadruple entries accounting eliminates the concept of "financial losses." Financial losses, their identification, measurement, and the allocation of the resulting burden are core components of conventional banking crises prudential analysis and management. By contrast, the SNA framework does not include a comparable concept of financial losses faced by an individual economic entity. As part of the SNA, wealth reduction is the result of either a lowering in the value of the real assets held through consumption, depreciation, amortization, or "other changes in the volume of (real) assets," or transfers in favor of other economic entities. This is the third point of relevance for an SNA-based analysis: the transactions labeled as "financial losses" under business accounting reflect double entries only, and have to be completed under the SNA to incorporate quadruple entries.

Nonperforming loans and the SNA

The previous version (1993) of the SNA manual did not recognize the impairment of bank loans until they were actually written off or renegotiated. A consensual cancellation or reduction of the size of an NPL was treated as a capital transfer and a unilateral write-off by the bank as a change in the volume of assets. There was no recording of provisions for NPLs either. They were just added to the banks' own funds, with an upward distortion in the size of their reported equity base. This could lead to analytical misinterpretations when outside observers tried, for lack of other data, to rely on SNA estimates to assess the solvency of a banking system.

As part of the permanent technical discussions taking place among SNA specialists, IMF staff alerted back in 2001 about a potential loss of analytical value of the national accounts.⁹

⁹ See, in particular, Bloem and Gorter (2001).

In response, the latest version of the SNA manual¹⁰ moved somewhat in the suggested direction, recommending the introduction of two additional memorandum items, one for the nominal value of NPLs and the second for their market equivalent value. This is a step in the right direction, but only a partial and intermediate one and the debate among experts continues to this day.¹¹ Going forward, a more comprehensive and formal recognition in the SNA of NPLs would be necessary if the framework is to become more relevant for monitoring financial distress.

B. National Wealth as Analytical Anchor

A second key component of the NWA is the reliance on the “national wealth” concept of the SNA to diagnose and analyze banking sector issues. This includes monitoring the aggregate amount of national wealth, its distribution—where it is located among the various sectors of the national economy and their individual entities—and how this distribution is affected by macro and financial developments.

Business vs. SNA accounting

Business accounting is geared at measuring the financial results of the activity of individual economic entities, including determining the rights of the various stakeholders—in particular, the shareholders and the tax authorities—to claim a share of such results. This is the main purpose of the income statement, and of its bottom line, i.e. net profit. The second key business financial reporting document, the balance sheet, identifies each entity’s net worth position and lists claims from third parties as part of the liabilities. Each national bankruptcy legal framework defines priorities in the distribution of the proceeds of assets in case of liquidation. Thus, business accounting, designed to assess individual entities’ position, is entitlement-driven and relies mainly on two reporting documents.¹²

Business accounting also includes the prudence principle. Whenever doubts emerge about the recoverability of an item—for instance, a loan extended by a bank—the item has to be depreciated accordingly. In our example, that would be a provision reducing both the loan’s value and the bank’s net worth. In addition, based on the same principle, unrealized losses on a wide range of financial instruments and other assets have to be recognized in the books, whereas unrealized profits of the same nature should not. These reductions in the valuation of assets and in the net worth of the holdings entities are not balanced by corresponding

¹⁰ SNA 2008, Chapter 13: The balance sheet, Section C.

¹¹ See Durant et al. (2015).

¹² The other business reporting documents required in most jurisdictions, namely, the statement of changes in equity and the cash flow statement, are essentially providing additional details on data included in the income statement and the balance sheet.

increases in the business reporting of any counterparty. As a result, the business prudence principle, while sound and fully appropriate for the sake of assessing the condition of individual economic entities, has a distorting macroeconomic collateral impact. Because its application is, by its very nature, asymmetric, it generates discrepancies in the amount of aggregated national wealth.

SNA-based accounts have a quite different purpose and design. They are meant to describe overall economic developments as accurately as possible, with a view to providing policy decision makers with analytically meaningful and operationally actionable information. They include a comprehensive sequence of 14 successive accounts unfolding in a logical order to bring out an extensive range of policy-relevant concepts like production, consumption, savings, and investment. They end up with a closing balance sheet featuring net worth, like the business balance sheets do, but based on different definitions.

SNA accounts are meant to support the attainment of the primary objectives of economic policy, namely, “*the promotion and maintenance of high levels of employment and real income,*”¹³ a public good. To provide an accurate representation of economic processes and of their impact on all sectors, they require full symmetry in the treatment of all transactions, which excludes in particular the application of business accounting’s prudence principle.

In the end, while data produced under business and SNA accounting are similar for a number of items and transactions, they also diverge on some important points and can lead to the production of materially different reports. The concepts themselves are sometimes quite different. In particular, “profit” is the most important result of business accounting, the bottom line of the income statement, and a focus of performance monitoring, including for the banks and their prudential supervisors. But such a concept does not even exist in the SNA. The SNA’s sequence includes eight successive accounts elucidating how income is generated, allocated, redistributed and, finally, used by the different sectors of the economy. None of these accounts includes any item called “profit” or “loss.”

Financial statements conversion and integration

As part of the NWA, all material divergences between business and SNA reporting results should be identified, analyzed, and elucidated. This is a key point where an NWA can add value by providing decision makers with a broader, better integrated, and coherent perspective on developments taking place in the various sectors of the national economy, including in the banking system.

¹³ IMF Articles of Agreement, Article I (ii).

The starting point of this reconciliation should be a complete sequence of SNA-based accounts for the banking sector,¹⁴ which concludes with the closing balance sheet where net worth, or wealth, appears as the final balancing item. The SNA-provided data for the banking sector as a whole should then be compared with those reflected in the aggregate of the banks' two main business and prudential financial statements, namely, the income statement and the balance sheet. All material differences should be analyzed and elucidated. This comparative exercise does not need to be fully precise and exhaustive from the start; it can be carried out as far as data availability issues permit and gradually become more accurate over time. Once completed for the banking system as a whole, it can also be disaggregated at the level of individual bank(s) as needed for analytical purposes.

For the corporate sector, a similar exercise should take place, comparing any available set of aggregated core business financial statements—income statements and balance sheets—with the corresponding estimates generated as part of the SNA sequence of accounts and looking into material differences. Then, once the other sectors of the national economy are also put in the same format, an integrated macro-financial analytical framework will become available, featuring the share of the net national wealth held by each sector.

Monitoring reported variations in national wealth

The gist of the NWA is the identification and monitoring of changes in national wealth and its distribution which might appear in the context of the emergence of various degrees of banking system stress, up to a full-fledged banking crisis. This could be done by starting the analysis from a point of time that may be considered as reflecting broad financial stability. For that date, an SNA-based national balance sheet is prepared, along with its disaggregation by main sectors, including the commercial banks, showing national wealth and its distribution among sectors. The same national balance sheet and relevant details would then be prepared for one or more dates when the stress situation under review has occurred or reached a stage of specific interest. The analysis will focus on the variations in national wealth and its distribution that took place between these points in time and the different sectors of the economy, and the economic nature of the transactions that made such changes happen. This provides the basis for the diagnostic phase of the NWA.

III. BANKING CRISES DIAGNOSTIC FROM A DIFFERENT ANGLE

To start with, the NWA may be used as a diagnostic device to shed additional light on banking sector developments, in particular, during episodes of financial distress. Under normal circumstances, changes in national wealth are gradual, since they are driven by slow moving macroeconomic aggregates like production and consumption, net investment, and the

¹⁴ More precisely, for the "deposit-taking corporations" sub-sector (S122) of the financial corporations sector (S12).

fiscal and external balances. By contrast, distress episodes and crises in the banking sector typically manifest themselves through sudden, and sometimes dramatic, developments. These include, in particular, the booking, under business accounting, of large “losses” in the form of reductions in the value of banks’ financial assets, notably their loan portfolios, and related substantial declines in their reported net worth position down to insolvency in some cases.

An NWA helps to shed light on possible gaps in the timing and severity of banking crises as seen through prudential data and the underlying economic reality. Such gaps are of two types, and both may lead to sub-optimal policy responses. On the one hand, episodes of banking distress are often just the final stage of problems that arose elsewhere, and well in the past, meaning that policy responses may come too late for optimum effectiveness. On the other hand, once they are detected through prudential data, the scope and severity of banking crises may be overestimated. This might lead policy makers to take measures that are stronger than needed and costlier than necessary.

A. Delayed and Misplaced Diagnostic

The first point that the NWA helps to illustrate is that many banking crises are just the final stage of a series of adverse developments accumulated quietly over time somewhere else, typically in the corporate sector. Seen through the perspective of the SNA-based NWA, the sudden drops in banks’ net worth that mark the final stage of a banking crisis require further examination. As noted in Section II, financial transactions are wealth-neutral. Whenever banks book “losses,” aggregate national wealth, as measured by the SNA, remains unaffected. Changes in the reported net worth of banks resulting from a downward adjustment in the valuation of their existing financial assets are, in reality, transfers in favor of other entities. These can be outright transfer or delayed recognition of past transfers, or a combination of the two.

Outright transfers to other economic entities

In a range of scenarios, bookings of “losses” by banks on their financial assets are, in real economic terms, outright transfers of wealth from those banks to other economic entities. This is, in particular, the case whenever banks give up or fail for whatever reason in their efforts to recover loans in full from some of their borrowers. Examples include:

- Write-down and write-off of household mortgage loans, for instance when the borrowers behave as “strategic defaulters” on obligations that they could still honor, in particular when economic and political turmoil condones such behavior;
- Blanket loan partial or total forgiveness granted for political reasons by the authorities to an entire category of borrowers (for instance, farmers) at the expense of the banks, also typically decided in a crisis context;

- Any other changes in the conditions of existing loans imposed unilaterally by the authorities upon the banks without full compensation;
- Displacement of valuable productive assets, using fluid corporate holding structures that put them out of reach of the banks that originally funded them. This may happen in particular, and is facilitated when systemic turmoil temporarily impairs banks' collection capabilities, leaving time and the initiative for the debtors to reshuffle assets location, for instance, when the protracted process of establishing an assets management company (AMC) leads to a long suspension of collection initiatives and a loss of information needed for that process; and
- Any type of preferential treatment granted to related-party borrowers.

Outright transfers of wealth to other economic entities are not limited to banks' borrowers. They also occur when banks book "losses" on market transactions on their portfolios of financial instruments, and when they fall victim to fraudulent transactions by insiders. Thus, the beneficiaries of these transfers of wealth can be other financial institutions or any kind of market participants. In case of sudden movements in the country's exchange rate, for instance, there are also outright transfers of wealth taking place with the banks' relevant counterparties.

Delayed recognition of past transfers

In practice, however, the majority of the large "losses" booked by banks on their existing financial assets, in particular loans, are adjustments to previous reporting that had become inaccurate. Such booking adjustments are a delayed recognition of a reduction in the value of financial assets that has typically occurred gradually over time, sometimes over several years.

When, at a specific point in time, a bank acknowledges in its books that some borrowers—corporate or household—will probably not repay their loans, this inability to honor their commitments may be triggered by a sudden event, but most of the time it is the result of a gradual deterioration of the financial condition of the borrowers that has taken place over time. From an NWA point of view, the reduction in the value of the bank's claim is a delayed acknowledgment of past and gradual transfers of wealth to the concerned borrowers.

Financial and macro data distortions

The delayed recognition of gradual wealth transfers among entities and sectors means that reporting—both by the banks and in the national accounts—is out of line with economic reality. The misreporting might be material or not. Under normal circumstances, it is not, and gets corrected whenever correct information at the micro level becomes available, without generating any discernible distress. But when growing distortions accumulate and remain unnoticed and unaddressed for a long time, bank data, as well as macroeconomic data, might

get distorted to such a point that they do not provide anymore a reliable enough basis for diagnostic work and policy response formulation.

Several banking crises are just the last stage of an adverse macroeconomic phenomenon that developed for a long period: an accumulation of distortions in valuation and growing underreporting of transfers of wealth outside the banking system. Whenever those distortions become excessive, a trigger eventually makes them burst into the open, and the start of a so-called “banking crisis” is identified. But the adverse phenomenon did not happen within the banking sector, but rather among their borrowers—in particular, corporations—whose financial condition and capacity to repay their loans had gradually deteriorated. When the distortions reach the breaking point and the problems become obvious, the banks start to book massive “losses” all of a sudden, and these dramatic developments are labeled as a “banking crisis,” even a “systemic banking crisis” if widespread enough.

In economic reality, there is often no sudden crisis but a gradual and hidden deterioration that had been taking place somewhere else in the economy—in the real sector—and had started in the past, sometime years ago. Thus, more focus deserves to be on put on prevention and on pinpointing more precisely the nature of the low noise distortions that might eventually lead to a crisis.

The key role of sub-optimal investment

A number of banking crises that burst suddenly have similarities with the collapse of the surface ground under which a sinkhole had been developing silently over time. As with such phenomenon, the precise nature of the erosion process has to be identified. An SNA-based NWA shows that many data distortions start with sub-optimal investment, when a fraction of the transactions classified as “investment” by the concerned entities are in real economic terms “intermediate consumption.” This entails wide-ranging consequences, as illustrated by the numerical example in the Appendix, impacting both the banks’ position and key macro aggregates.

B. Overestimates and Overreactions

While the late detection of distress lurking in the rest of the economy and, eventually, impacting the banking system might be the problem that arises most often, the overestimation of the scope of the crisis, once it has burst into the open, is an equally serious one. Such overestimation may lead to a damaging overreaction, and, in some cases, even to triggering self-fulfilling adverse outcomes. These concerns are related to the risk of double-counting, to the impact of the business prudence principle, to that of temporary liquidity tensions, and to the potentially far-reaching consequences of perfunctory financing mistakes when distress emerges.

Distress double counting

A basic—but not unheard of— misperception might lead to double-counting financial distress that starts in the corporate sector and then spreads to the banking sector. The classic scenario is that some inefficient corporate borrowers run into difficulties and become unable to honor their commitments toward the banks. Banks acknowledge the situation by booking provisions. If such provisioning is large enough, banks themselves may start to experience tensions and distress. Some observers—and even policy-makers—might conclude that the crisis has now engulfed both the corporate and the banking sectors. However, as illustrated in the Appendix, an SNA-based NWA makes it clear that the problem is either in the corporate or in the banking sector, but not in both, even though, in practice, this is a sequencing issue, with difficulties being gradually transferred out of the affected corporate borrowers and into their banks when the latter start to accumulate provisions against NPLs.

Prudence principle and precautionary provisions

Compliance with the prudence principle is a key and fully valid requirement of business accounting. It leads banks—as they should—to start booking provisions based on risk of non-repayment rather than on the actual inability of the borrower to honor its commitments. But this also creates, as mentioned above, an asymmetric change in aggregate national wealth.

The prudential approach is appropriate to assess the repayment capacity and the financial condition of individual entities within a specific sector, and should certainly continue to be adhered to. At the same time, the NWA, which adopts a broader perspective, should also be taken into consideration to provide decision makers with a more comprehensive assessment of the situation. Under an NWA, a systematic analysis should be undertaken to separate banks' provisioning against NPLs in two components:

- The share of the provisions that corresponds to an actual decline in borrowers' net wealth position and capacity to repay, which should be viewed also as a transfer from the banks to the borrowers; and
- Additional provisions that are accumulated in compliance with the prudence principle and that, while maintained in the banks' books in line with applicable local prudential requirements, should be analytically set apart and temporarily disregarded as part of an NWA.

If, in a given situation, this type of analysis suggests that a large fraction of the provisions by the banks reflect the application of the prudence principle, while there is no material change in the net wealth of the borrowers, the NWA will allow decision makers to identify a risk of overestimation of the severity of the crisis and to adjust their policy response accordingly.

Temporary liquidity tensions

Signs of banking distress might also appear as a result of temporary liquidity shocks, emerging in the corporate sector, the banking sector, or both, for a number of reasons, e.g., disturbances on internal or external markets, political turmoil, or any other source of a drop in confidence that impairs the normal flow of transactions. Seen through the lens of the NWA, liquidity events that do not spring from, nor end up in, changes in the net worth of the concerned economic entities as a first-round impact, are less severe than “real” crises where net worth positions are compromised. Their different nature and lesser degree of seriousness should be acknowledged and a lighter set of policy response measures applied.

Perfunctory inadequate financing

On a daily basis, banks take large numbers of decisions relying on risk assessment and judgment. Some of those decisions prove to be incorrect, such as choosing inadequate financing instruments for certain operations. A typical example is funding longer-term investments with short maturity facilities, or even, as is customary in some countries, with overdraft accounts. Another type of routine mistake is an erroneous anticipation of the timing of loans repayment, with the bank remaining stuck with an outstanding balance longer than originally anticipated.

Under normal circumstances, such ordinary mistakes represent a small fraction of the banks’ decisions. They have no discernible impact on the concerned banks, are corrected as part of established control and management procedures, and do not require any action from the prudential supervisor. But when distress develops, such technical mistakes can have a substantial, even critical, impact. They may trigger on sound prudential grounds supervisory action that could, in some cases, be seen through the NWA as being disproportionate from a public good point of view (see the example in Box 1 below).

At the end, regarding the diagnostic phase of the banking crises under consideration, the NWA can contribute to a more balanced assessment of the situation and thus lay the groundwork for a more balanced policy response, with a view to avoiding two main pitfalls:

- First, acting too late because the ingredients of the crisis have been brewing underground until the moment they burst into the open like a volcano that erupts when pressures, silently accumulating for years, lead to a sudden and destructive release. This is discussed in the next section; and
- Second, taking disproportionately strong measures based on an overestimation of the depth and scope of the situation. This is discussed in Section V.

**Box 1. Perfunctory Inadequate Financing—Dire Consequences in a Crisis Setting:
An Example**

Suppose that, in the middle of a crowded metropolis facing strong demographic pressures and large unmet housing needs, a reputable real estate developer gets a rare opportunity to acquire a particularly well located but expensive plot of land, provided he makes a quick decision. The purchase requires far higher funding than in any of his previous business deals. The medium-size bank he has been working with for years agrees to disregard its exposure limits for a limited period of time, and to provide the entire funding through a six-month bridge loan, until, as part of a finalized development project, a suitable financing arrangement is put in place. The bank wants to support a long-term customer with whom it has established a close relationship of mutual trust, expects to get its share of a lucrative project, and anticipates that its large exposure will have disappeared before the end-of-year closing of its books.

In the event, the liberty taken by the bank with the established rules of sound management proves to be a fatal mistake. Within months, the country enters into macroeconomic and political turbulences that temporarily freeze most housing development projects. After its six-month maturity is reached, the bridge loan becomes overdue. Then, as time passes, based on prudential requirements, it has to be classified as substandard, then doubtful, and, eventually, as a loss, with required provisions of 15, 50, and, finally, 100 percent of its balance. Because of the size of the loan, this leads the authorities to consider the bank as insolvent and to take it over. The valuation of the bank's assets is downgraded from a going concern to liquidation, with fire sales at the worst possible time in the economic cycle, and proceeds falling short of full liabilities coverage. Observers conclude that facts have demonstrated that the bank was indeed insolvent all along and that resolving it was the right move. The deposit insurance fund is called in to step up and rescue covered small depositors, while leaving larger ones with losses, which triggers a few more corporate bankruptcies. Beyond the fate of that particular bank, and of its customers and depositors, general public confidence in the domestic financial system is damaged, exacerbating the turmoil on domestic financial markets and adding to the edginess of other banks' depositors, while the international reputation of the country and its authorities is tarnished.

All of these developments are in line with sound, well-established prudential norms and international standards. At the same time, from a national wealth perspective, where real assets are of the essence and financial assets just an indirect way of holding them, the relevant benchmark would have been the intrinsic, long-term economic value of the plot of land. It is determined by the aspiration of some inhabitants of the city where it is located to secure better housing conditions. This has not been changed by any of the various steps of the process described above, as national wealth has remained unaffected.

IV. PREVENTION: MULTILATERAL COORDINATION AND NATIONAL INITIATIVES

The best crisis is the one that does not happen, and the second best is the one that is nipped in the bud. Preparedness is essential.¹⁵ It includes having in place an adequate crisis resolution framework—which is beyond the scope of this paper—and prevention, where the NWA can play the role of a supplemental contributor. At a global level, the NWA may contribute to the prevention and containment of financial system distress, based on a multilateral macro-financial framework starting from the highest level of integration. This can then be broken down and implemented at the national level based on local circumstances. Robust international coordination mechanisms would help underpin this framework.

¹⁵ Tellingly, the relevant unit in charge of crises within the IMF's Monetary and Capital Markets Department (MCM) is called "Financial Crisis *Preparedness* (emphasis added) and Management Division."

A. A Multilateral Macrofinancial Framework

At the multilateral level, it would be essential to set up a framework to ensure that national wealth is reported in an operationally actionable manner and following a consistent methodology across countries and time.

Global wealth measurement

Developing a measure of global wealth for the world as a whole, comprising only real assets, and monitoring its evolution over time would be the key first step toward a global system of banking crisis prevention. A global institution that regularly interacts with all economies in the world as part of its core mandate and possesses the whole range of required in-house expertise (macro-economists, statisticians, and national accounts and financial sector experts) would be best placed to carry out such an exercise, liaising with other stakeholders in relevant national and multilateral institutions.

Complex and unsettled technical issues with the definitions and the methodology needed to measure global wealth do not have to be resolved for the process to start. Provisional agreements and compromises could be reached on all pending methodological questions with a view to proceeding expeditiously with a first measurement of global wealth. Data gaps can also be temporarily set aside. With time, progress will unfold and the measurement will become more precise. What is of the essence to start the process is the availability of a set of definitions—even imperfect ones—that could be applied consistently across countries.

National level disaggregation of global wealth

Once an agreed upon measure and estimate for global wealth (i.e. for global real assets) becomes available, the next step would consist in its disaggregation at the level of each national entity in a way that preserves consistency with the global measure. The disaggregation should be part of a cooperative effort involving both multilateral coordinators and each country's national accountants and statisticians, and could proceed as follows:

- First, distributing global real assets among all countries, and identifying the amount of real assets held by each of them;
- Second, introducing financial assets and liabilities to the framework, which, together with the real assets, will determine each country's net wealth; and
- Third, within each country, disaggregation of net wealth and its three components for each of its SNA-defined five economic sectors.

Both global wealth measurement and its national level disaggregation are expected to be iterative processes, with progress achieved in one of these work streams feeding into the

other. The key point here, too—rather than immediate accuracy—is to preserve consistency as progress unfolds, based on a robust coordination mechanism managed at the multilateral level.

B. National Level Initiatives

National authorities should follow up with complementary initiatives suitable to their specific circumstances. These tasks include ensuring the permanent availability of actionable macro-financial data and the early detection of, and remediation of macro-financial reporting discrepancies and data distortions from sub-optimal investment.

Keeping actionable macro-financial data at the ready

As part of the computation of their national accounts, most national statistical authorities already prepare the country-wide and sector-based sets of accounts and balance sheets in line with the SNA concepts that are necessary for an NWA. The task here would thus be to ensure comprehensiveness and consistency of the work carried out at the national level with the global wealth measurement initiative. Progress in this regard should be monitored, vetted, and confirmed by a relevant body¹⁶ as an NWA-based step of the work agenda toward the preservation of financial stability.

Another priority for national authorities would be to ensure that sets of actionable, macro-financial data, suitable for the country's specific circumstances, are permanently available for use in policy making. These data sets are not meant to replace but to supplement the wealth of data already produced to monitor domestic financial stability.

This supplemental information would be particularly important for banking supervisors. To complement the standard business and prudential income statements and balance sheets used by these professionals in their daily work, they should be provided with a second set of tables and indicators based on SNA concepts. Banking supervisors should prepare and keep updated a bridging table elucidating the material differences between these two sets of reports. Preparation by each country's authorities of those documents and bridging tables for their domestic banking system could become a standard requirement of crisis preparedness and financial stability monitoring. Aggregate tables at the sector level should suffice under normal circumstances for general surveillance purposes. However, when signs of financial distress start to emerge, lower-level disaggregation should be carried out as needed, down to individual banks of special interest, as a preparatory step should some kind of intervention become necessary. The items on the SNA-based balance sheet could also be arranged in an operationally useful manner; for instance, by distributing them based on the assessed financial robustness status of the counterparties.

¹⁶ This could be, for instance, part of the Article IV consultation between the IMF and its member countries.

The problem of orphan financial assets

A particularly important task of this global initiative would be the identification of macro-financial reporting discrepancies, including “orphan financial assets,” i.e., those for which there are no reported balancing liabilities. These assets are a root cause of misleadingly inflated national wealth numbers, as they represent duplicate claims on the same real assets indirectly held through financial assets. The task of identifying these assets should be guided by a multi-disciplinary team, including national accountants, statisticians, macro-economists, and financial sector experts.

An overarching requirement is to preserve at each stage of the exercise full consistency between aggregate numbers and any of their disaggregation at the sector or individual entity level. The task itself would require comparing SNA numbers for net wealth and its components with any other reported data produced by each sector of the economy as follows:

- For the government, widespread country reliance on the IMF *GFSM 2014* will limit the scope of the work, as most if not all of the relevant numbers should already be available in a SNA-based framework;
- For households, the SNA-based data should be compared with the results of any available survey or similar research work providing relevant data;
- For the banks, the task would consist of a thorough comparison of the aggregate sector-wide income statement and balance sheet collected by prudential supervisors with the SNA-based numbers. Disaggregation at the individual institution level should be considered when relevant; and
- For the corporate sector, it would be particularly important to produce aggregate sector-wide income statements and balance sheets based on business accounting, similar to those available for the banking system. Any country-specific available data resources should be taken advantage of, like corporate financial statements databases, data available in credit registries, from the stock exchange, rating agencies, and various surveys. Data gaps should be filled through extrapolations and reasonable assumptions, giving priority to the search for comprehensiveness over accuracy, as broad order of magnitudes should already yield actionable information.

While established business-based reporting should continue to play a central role, the exercise would allow supervisors to identify and raise awareness of meaningful divergences with SNA-based data. When doing so, supervisors should disregard “orphan assets.” This includes, for instance, any deferred tax credits on the books of either banks or corporations that are not explicitly part of the government’s liabilities.

Monitoring corporate investment

As noted earlier, the accumulation of sub-optimum corporate investment is a key source of distortions in both macro and financial data that, if left uncorrected, may lead to a banking crisis (see Appendix). Early detection of such an accumulation is of the essence. Prevention efforts could be based on surveys specifically designed to monitor and assess the quality of corporate investment. To do this, each country could set up a steering committee (including macro-economists, statisticians, national accountants, and banking supervisors) to design and develop specialized surveys and provide guidance for the interpretation of their findings and the follow-up corrective actions. International coordination of these efforts would facilitate the sharing of country experiences about the best ways to accomplish progress and the emergence of relevant international standards.

Individual reviews of key borrowers

In addition to sector-wide surveys, the same steering committee could be tasked with the identification of a sub-set of bank borrowers of special interest and make them subject to individual reviews. The corporations to be subjected to individual reviews should be selected on the basis of the size of their bank indebtedness, the robustness of their financial condition, and the prominence of their role in the national economy. The reviews would be based on a conversion of their business income statements and balance sheets into SNA formats. This would allow a review of the borrowers' investments over the last several years and could lead, in some cases, to retroactively reclassifying part of their investments as intermediate consumption. This process would also allow to assess the corporation's viability in terms of its adjusted capacity to create added value (in the SNA production account) large enough to generate an operational surplus after providing for the compensation of employees and the other uses in the SNA's "generation of income account."

The framework proposed is summarized in Box 2.

Box 2. A National Wealth Approach to Financial Stability Monitoring

- Define and measure global wealth based on the SNA (real assets only).
- Disaggregate global real assets to the country level.
- Add financial assets and liabilities for each country (SNA-based national balance sheet).
- Disaggregate the SNA-based national balance sheet to the sector level.
- Compare sector-level SNA balance sheets with any available similar reports based on business or other standards and formats; elucidate materials divergences between the two sets of documents, looking in particular for "orphan financial assets."
- Conduct surveys of the corporate sector to look for accumulation of sub-optimum investment that should be reclassified as intermediate consumption.
- Review the SNA-defined value generation capacity of individual prominent corporate borrowers.
- Assess the impact on concerned banks and take appropriate corrective measures.

V. CONTRIBUTION TO CRISIS MANAGEMENT

A comprehensive banking crisis prevention work agenda may reduce the frequency of their occurrence and their severity, but will certainly not end them. Relevant institutions in charge of addressing crises continue to accumulate experience and expertise in this field, reflected in an expanding body of literature and reference documents. Important lessons have been learned and detailed methodologies have been developed over time. The NWA may contribute to this ongoing improvement process, bringing a broader perspective on the issues. This would be the case, for instance, with regard to the rules for support to distressed banks, the selection of the targets of the policy response, and the related communication strategy.

Stronger criteria for crisis support to banks

In any banking crisis, public support to the affected entities is a central issue, and quite detailed rules and frameworks have been already considered and agreed upon, including as part of international guidelines and best practices. The NWA may contribute to further progress in this field, for instance, with regard to the qualification for support, taking into account the nature of the distress, and for the improvement of fiscal recoveries.

An NWA would be useful to develop a system of pre-qualifications for support in case of crisis, for example. Individual financial institutions could be certified in advance as “SNA-solvent,” which could qualify them for more expeditious liquidity support in case of stress. For the banking system as a whole, when tensions start to emerge, the pressures could be assessed from the NWA’s perspective and, if stemming primarily from liquidity turbulences, firmer ground would be provided to decision makers for system-wide liquidity support.

As regards fiscal recoveries, the NWA could open the door to the design of a system based on the fact that the SNA does not encompass “losses” but only transfers. Thus, under crisis circumstances when many banks book massive “losses,” it would be possible to activate temporary mechanisms and procedures to requalify those entries as transfers. Those transfers could, in principle, become taxable income of the beneficiaries. For example, when writing down NPLs, the banks could deliver to the concerned borrowers a “wealth transfer certificate,” with a copy to the tax authorities. Even though the prospects for actual tax recoveries might be limited, the authorities would at least have a firmer basis to investigate the true source of the losses and their final beneficiaries, possibly with the help of an added “tax pursuit mechanism.”

Selection of the target for policy response

In case of distress originating among corporate borrowers and, subsequently, contaminating the banks, the NWA would help make it clear that there is one problem to address, not two. This means that there is a choice about the selection of the target for the policy response:

either the banking system or the corporate sector. The conventional approach is to take care of the banks first through emergency support, as needed, and then restructuring and resolution. Corporate restructuring and recycling of their assets are normally taking place afterwards, as the third phase of crisis management.

An NWA would open the possibility of following a different strategy: focusing first on the problem at the level of the corporate borrowers, and paying much less attention to the banking system. In principle and in practice, resolving an issue closest to its source tends to be more efficient. If distressed borrowers are resolved and brought back to financial viability, they will be able to resume servicing their banks' loans normally, and the banks will not be in need of support. This would also avoid transfers of wealth from the banks to the corporates, which are a source of both fiscal risk and moral hazard.

More effective crisis communication

Effective communication under crisis circumstances is critical to the success of the policy response and its acceptance by society at large. The experience suggests that public support to banks is often misunderstood and perceived as suspicious, even abusive, by a large part of the population in the concerned countries. Few people have a sufficient grasp of the critical role of banks for the normal functioning of the overall economy. There are deep-rooted concerns that preventing their collapse with public funds amounts to protecting the bankers, who are seen as responsible for the problems of the country, while the narrative to spread such views is easy to construct.

An NWA that targets the policy response at corporations rather than banks also provides improved communication opportunities. First, it would demonstrate that the problems were not caused by the banks, but by some borrowers. And second, SNA-based core concepts are easier to understand and accept than the more abstract prudential considerations related to banking sector stability. An NWA-based communication can focus on the role of corporations of all sizes to produce goods and services and create value. That value must be sufficient to be distributed to employees and other stakeholders. Then it becomes easier to convincingly identify the sources and impact of problems. When value added is insufficient, a policy response is warranted to minimize the risks that inefficient corporations pose for all their stakeholders, including employees as well as banks and their depositors.

VI. FUTURE RESEARCH AGENDA

As noted earlier, the intention of this paper is to contribute to the literature on financial stability and in particular to the integration of macro and financial analysis and the related revival of the balance sheet approach. By focusing on a basic type of banking crises, i.e., those rooted in mounting distress among corporate borrowers, it only scratches the surface of what the NWA—and a broader reliance on the so far underused SNA—could bring. It does not address either a range of unresolved issues and limitations in this regard. A further

research work agenda could thus unfold in several directions, some of which are discussed below.

Unresolved practical issues hindering a wider reliance on the SNA and the NWA

Relying on the SNA concepts for financial stability and banking distress assessment and management has been constrained so far by well-documented limitations of the SNA framework. These include the costs of setting up strong statistical frameworks, well beyond the means of numerous countries, compilation lags, constant data revisions, valuation issues, and the fact that SNA data will never be as timely and detailed as prudential data for individual banks. Implementing the NWA proposed in this paper would thus require significant shortcuts and broad assumptions, while it would remain only a source of supplementary information for decision makers, providing orders of magnitude rather than precise estimates. Further research work is required to identify ways to address the SNA shortcomings in the context of the proposed NWA while preserving its operational relevance.

A second unresolved issue requiring further consideration is that of the legal dimension of banking distress and resolution. The established prudential approach includes powerful legal processes and instruments for resolving troubled banks, including for intervening them under specific conditions and for recycling their assets; these legal tools do not apply in the same way to their corporate borrowers. To be operationally useful, the NWA would need to lead to decisions that are legally enforceable.

SNA-based expanded set of ratios and indicators

An additional set of NWA-based ratios and indicators could be developed on the basis of the global wealth concept and its disaggregated components at the country, sector, and even, in some cases, the individual entity level. A measure of national wealth per capita, for example, would display a wide range of cross country variation. The strong impact of the net international investment position (NIIP) level in this regard would emerge, suggesting more focus on this key indicator in the context of financial stability reviews. The distribution of national wealth among sectors may also be of interest. The standard ratios comparing flows (in particular, GDP) with stocks (for instance, banking system assets) could be supplemented by new ones comparing stocks (for instance, national and sector-based wealth) with other stocks (banking sector assets), bringing new ways of measuring intermediation and financial depth. Financial intermediation could also be analyzed from a different angle by calculating how much wealth is held either directly or indirectly through financial assets. And international comparisons for these new ratios could facilitate the identification of sources of weaknesses and financial fragilities.

Reviews of past banking crises review, including the recovery process

The database of systemic banking crises that has become a key reference in the field could provide a starting point.¹⁷ A systematic review and analysis of the past banking crises in the database, using an NWA, would be a useful addition. That addition could also include the processes and mechanisms through which NPLs decline in the recovery phase, when banks often report a very quick reduction in their volume. Comparing the actual evolution of the net worth of the formerly troubled borrowers with their NPLs, as reported by the banks, could provide a way to check if, and to what extent, some past banking crises were actually overestimated at their peak, and why. Performing post-mortem analyses of past crises from this point of view could provide valuable insight for more precise assessment and management of future crises.

Bank value creation and profitability issues

The NWA could also be used for a prudential review of bank value creation and profitability in the framework of a financial stability analysis. In terms of the SNA framework, banks create value mainly through the intermediation services that they provide; these have to be measured indirectly as they are part of the interest margins collected by the banks.¹⁸ The items included in the business income statement that closes with “net profit” may be compared with key SNA concepts, in particular “operating surplus” (in the generation of income account), “disposable income” (in the secondary distribution of income account), and “net saving” (in the use of disposable income account). Information-rich anomalies like a *negative* output in the “production account,” which might appear when the business income statements of banks engulfed in a severe banking crises are converted into SNA formats,¹⁹ could be further reviewed to draw conclusions on their macro-financial implications.

The comparison of SNA and business-based bank profitability data could also help sharpen and quantify analytical insights. As the output of the banking sector is a use of their resources by the other sectors, banks are, in essence, capturing a share of the wealth created by the other sectors. As a result, the more profitable the banks, the higher the burden on the rest of the economy and the lower its capacity to invest. The NWA could help illustrate this in terms that are consistent with a macroeconomic analysis. It could for, instance, assist in measuring to what extent policies that support wide interest margins for banks to allow them to restore

¹⁷ Laeven and Valencia, (2013).

¹⁸ Banks’ main output is called FISIM, or “Financial Intermediation Services Indirectly Measured” in the 2008 SNA. See Chapter 6, “The production account,” section on “Financial services provided in association with interest charges on loans and deposits,” par. 6.163 to 169.

¹⁹ See Frécaut (2004).

their financial health impair investment and growth. It could also make clear that bank capital can only be increased either at a specific point in time through transfers that deplete the net worth of the other sectors of the economy—a given amount of national wealth just being distributed in a different way—or gradually through economic surplus accumulation within the banks that implies that the other sectors of the economy—those that use banking intermediation services—have a commensurately lower capacity to invest.

VII. CONCLUDING REMARKS

This paper discusses how a “national wealth approach,” a sub-set of the wider “balance sheet approach,” could add to the identification, prevention and management of banking crises. As a preliminary exploration exercise, it limits itself to the simplest and most straightforward type of banking crises, those arising from a deterioration of the quality of the banks’ loans to their corporate borrowers.

A main point of the paper is that the SNA, a comprehensive analytical framework and the internationally accepted standard for macroeconomic analysis, has been so far underutilized in the study of financial stability issues. It argues that a broader reliance on the SNA through a National Wealth Approach could be part of the response to the so far elusive search for a unified macro-financial analytical framework.

An NWA highlights the fact that banking crises involve transfers among economic sectors and not just “losses” in a specific sector. It also identifies the mechanism through which macro and financial distortions might accumulate before eventually resulting in a crisis, namely sub-optimum investment, which in economic reality is a value absorbing intermediate consumption. The NWA suggests that, this type of crisis might be detected only at a late stage, but that afterward it might be prone to overestimations of its scope and severity.

New insights about crisis prevention can be obtained from an NWA, based on a measurement of global wealth and its disaggregation, leading, in particular, to a reinforced monitoring of developments in the corporate sector. The crisis management framework could be enlarged, too, including with a policy response more directly aimed at the source of the problems, which would also open the door to a more effective communication strategy. Finally, the paper discusses possible avenues for future research.

Appendix I. Sub-Optimal Corporate Investment as a Root Cause of Banking Crises: A Numerical Illustration

The root cause of a number of banking crises is a gradual accumulation of sub-optimal investments in the corporate sector. A number of events described as “banking crises,” when banks start to recognize large “losses” on their loan portfolio and fall into distress as a result, are just the final, symptomatic manifestation of adverse economic developments that took place somewhere else in the economy and well into the past, while remaining out of sight and unnoticed. The operational conclusion is that, to preserve financial stability, more should be done, at an earlier stage and outside of the banking sector, as part of an integrated macro-financial approach. This also requires a more precise identification of the source of the problem and of the precise mechanism through which it develops.

During the sometimes quite long incubation period leading to a banking crisis, parallel distortions develop in both financial and macro data, misleading decision makers and preventing them from developing an adequate and timely policy response. A root cause of the distortions is the accumulation of sub-optimum investment by the corporate sector. Investment is sub-optimum when there is any kind of overpayment, because of inflated costs or other inefficiencies in the investment process, for instance in the form of commissions paid to intermediaries and other facilitators. It is also sub-optimum when the newly produced real assets are misused or underused, like, for instance, buildings with lower than normal occupation levels or a factory functioning well below capacity. It can happen for a number of reasons, including an investment glut at a later stage of the economic cycle, less than desirable governance and business practices, or technical difficulties.

From an SNA-based NWA perspective, such sub-optimum investment leads to overestimating national wealth and economic growth, while, if material enough, also setting the stage for a future banking crisis, as illustrated by the following example that includes both actual book entries and economic reality.

The precise technical point is that sub-optimum investments lead to distortions because they are booked for their whole amount as “gross fixed capital formation” (GFCF) whereas, to be aligned with economic reality, they should be split between two components. Only the sound, effectively productive part of the investment should be recognized as GFCF, while the balance should be booked as “intermediate consumption,” an item absorbed as part of the production process without leaving any kind of standing accumulated value, as real investment does.

Table 1. Impact of Sub-Optimum Investment

		As Booked	Economic Reality
Non-financial Corporations			
I. Production account			
1	Output (sales)	5,000	5,000
2=3+4	Intermediate consumption	2,000	2,300
3	Supplies purchased	2,000	2,000
4	Overpayments on investments	0	300
5=1-2	Value added (GDP)	3,000	2,700
II. Distribution and use of income account			
6	Compensation of employees	2,600	2,600
7=5-6	Operating surplus	400	100
8	Interest paid to banks	120	120
9	Dividends paid	70	70
10=7-8-9	Balance of primary income	210	-90
11	Taxes on income	110	110
12=10-11	Savings	100	-200
III. Accumulation account			
12	Savings	100	-200
13=14+15	Gross fixed capital formation	1,000	700
14	Real economic value	700	700
15	Overpayments on investments	300	0
16=12-13	Net lending (+)/borrowing (-)	-900	-900
17=(-16)	Net increase in bank loans	900	900
IV. Balance sheet			
18	Fixed assets	1,000	700
19	Bank loans	900	900
20=18-19	Equity	100	-200
Banks' Balance Sheet			
21	Loans to corporations	900	900
22	Deposits from the public	800	800
23=21-22	Equity	100	100
National Wealth			
24	Non-financial corporations	100	-200
25	Banks	100	100
26=24+25	Total	200	-100

The table above summarizes, with an arbitrary numerical example, the SNA sequence of accounts for the nonfinancial corporations (NFC), starting at the top with the “production account.” However, the point about sub-optimum investment is to be considered first in the “accumulation account” (section III). This is where investment, booked for its total amount of 1,000 in this example, should be corrected to reflect economic reality and its value reduced to 700, because 300 in overpayments have been identified and should be treated differently.

The impact of this downward adjustment of 300 to investment (GFCF) in the “accumulation account” should then be reflected in the other accounts of the SNA sequence for the NFC:

- In the “production account,” intermediate consumption increases by 300 to 2,300. As a result, the balance of this account, value added, is reduced by 300. Since GDP is the aggregate value added by all units of the economy, growth is adjusted downward: *sub-optimum investment in the corporate sector directly leads to artificially inflated growth numbers.*
- The components of the “distribution and use of income account” (section II) are not affected, but its balance is reduced, with savings actually becoming negative in our example.
- Back to the “accumulation account,” the amount of bank borrowing by the NCF remains unchanged at 900, but a key change has taken place in the way the resources provided by the banking system are used. Instead of being entirely relied upon to fund productive investment, namely, an increase in the volume of real assets, part of the resources from the banks cover intermediate consumption, with no corresponding increase in the stock of assets.
- The “balance sheet” of the NFC, which, as reported, displayed a positive equity of 100, has, in real economic terms, fallen into negative territory.

At this stage, national wealth has been reduced by the amount reclassified as consumption rather than investment in the accounts of the NFC sector. This also means that the equity position of the banks remains unchanged—and positive—in line with the SNA principle of quadruple entries accounting. Otherwise, real economic losses would be double counted in both the corporate and the banking sectors, as they sometimes are by some analysts of some banking crises, when they rely on business accounting for both sectors separately. In other words, either the banks or their corporate borrowers are in trouble, but not both.

Seen from an NWA perspective, a stylized sequence of crisis-related events would look as follows:

- During the incubation phase (column “as reported” of Table 1), the fact that part of the corporate investment expenses is actually intermediate consumption remains unnoticed and/or unrecognized. Value added, GDP, corporate equity, and national wealth are commensurately overestimated.
- At some stage, some trigger will lead to the recognition of the impact of sub-optimal investment, as reflected in the column “economic reality” of Table 1, with all the distorted data listed above being corrected. The reduction in national wealth, previously hidden, becomes apparent and is located in the corporate sector only.
- The banks will acknowledge the fact that some corporate borrowers are unable to honor their obligations by categorizing the latter as nonperforming and building provisions, labeled as “losses” under business accounting and conventional prudential analysis. As national wealth remains unchanged, this means a transfer of wealth from the banks to the corporate sector, even if the beneficiaries do not explicitly book it.
- Should the banks be subsequently recapitalized by the government, national wealth would still remain unaffected and there would be a second transfer, this time from the taxpayer to the banks.
- In the end, the cost of inefficient corporate investment has been first absorbed by the banks, and then taken over by the taxpayer.

REFERENCES

- Allen, Mark, C. Rosenberg, C. Keller, B. Setser, and N. Roubini. (2002), “A Balance Sheet Approach to Financial Crisis,” IMF Working Paper 02/210.
- Bloem, Adriaan M. and C. N. Gorter. (2001), “The Treatment of Nonperforming Loans in Macroeconomic Statistics,” IMF Working Paper 01/209.
- Durant, Dominique, K. Hood, L. Nakamura, and M. Reinsdorf, (2015), “Towards Completing the Picture of Financial Activity in National Accounts,” paper prepared for the April 16, 2015, session of the IARIW—OECD Special Conference: “W(h)ither the SNA?” in Paris, France: <http://www.iariw.org/papers/2015/durantetal.pdf>.
- European Commission, International Monetary Fund, Organisation for Economic Co-operation and Development, United Nations and World Bank, (2008), “*System of National Accounts 2008*.”
- Frécaut, Olivier, (2004), “Indonesia’s Banking Crisis: A New Perspective on \$50 Billion of Losses,” *Bulletin of Indonesian Economic Studies*, Vol. 40, No.1, 2004.
- IMF Statistics Department, (2007), “The System of Macroeconomic Accounts Statistics—An Overview,” Pamphlet Series No. 56.
- IMF (1993) “Articles of Agreement,” IMF, Washington, D.C.
- Laeven, Luc and F. Valencia, (2013), “Systemic Banking Crisis Database,” *IMF Economic Review*, Vol. 61, No. 2.