SOME GENERAL REMARKS ON GLOBAL LIQUIDITY: Is there a pilot in the plane?

Contribution to the RTI Working Party on "managing global liquidity as a global public good"

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"*In economics, things take longer to happen than you think they will, and then they happen faster than you thought they could*." R. Dornbusch

ABSTRACT

This note is a contribution to the RTI Working Party on "Managing global liquidity as a global public good". The factual observations and policy recommendations it combines constitute an input to the collegial research of the Working Group. One of the key objectives of this contribution is to make policymakers more aware that global liquidity remains insufficiently perceived as a public good which generates important externalities mostly escaping to national policy actions. This inability to acknowledge the need for a multilateral instrument for managing global liquidity exposes our societies to very costly and risky instability. In fact, the current mood of some returns to economic nationalism makes it less difficult to build a consensus around existing multilateral tools (SDR) and institutions (IMF) than to look for second best like better national policy coordination. The later seems easier but is logically condemned to fail for requiring much more international cohesion and cooperation will in too many different national areas, while the first tackles the issue at a single level: the appropriate technical most global level without incurring any loss of national autonomy: creating the neutral "n+1"th currency which is not the debt of national economy, is the only option making simultaneously possible a truly rational management of global monetary conditions and the respect of the autonomy and responsibility of the "n" Central Banks of the world, because it allows for endowing the International Monetary System with a non-national anchor and a non-political collegial management of global liquidity as a public good. It restores the degree of freedom that disappears with the use of the dollar as the main global reserve

This result is deducted from the RTI's analysis, in the following argumentation, which is developed in the rest of the note:

1. The concept of Global liquidity (GL) tends to approach what is the stance of monetary conditions for the whole world economy. It is closely linked to the concept of International Monetary System (IMS) and appears as an important factor for the fluctuations of global activity and for the instability of financial markets. Its development since the global financial crisis (GFC) makes clearer the existence of significant risks of new episodes of sudden liquidity crunch, negative spillovers for national policies and difficulties for managing GL, which inevitably would inflict upon the real global economy very high economic costs and socio-political risks.

[1] We are grateful to Michael Howell and Crossborder Capital Ltd for kindly providing Charts and their useful data on global liquidities.

2. GL is the "ease of financing from international sources"; it reflects a variable combination of both the availability of funds at a national level – issued by central banks and by financial sectors - as well as the extent of international financial intermediation and integration which interconnects national liquidity with foreign sources of funding but with a quality hierarchy across assets and national currencies, at the top of which the assets in dollar occupy the dominant position, followed by a few other reserve currencies. Therefore, GL is a moving concept, which combines both volumes of funds and their variable quality or degree of "moneyness", as well as a policy component and a financial market component.
3. This financial market component is inherently unstable since financial markets are not submitted to the same logic of market pricing equilibrium as they work under mimetic competition in which supply and demand for liquidity are mutually dependent leading to multiple equilibrium (Aglietta 2019). Therefore, liquidity is by definition not ensured in crises, the very times that it matters most, and so national central bank interventions and regulations are required but in global markets, there is no comparable institution and nothing guarantees an efficient or feasible coordination of national central banks or regulations.
4. As a consequence, GL is instable, pro-cyclical and difficult to capture statistically but reflecting the changes in effective monetary conditions at global level.
5. The analysis of the dynamic structure of GL and its evolutions is the key-issue; it points clearly to systemic flaws in the International Financial System (IFS), especially in the International Monetary System (IMS) based upon the dollar as reserve currency and "safe-asset" in crisis cases, reinforcing the so-called Triffin Dilemma. Indeed, the mechanism of the present "refinancing credit mechanism" tends to increase the need for liquidity in dollar and therefore the "built-in destabilizer[2]" of the IMS based upon the dollar:
    a. in the aftermath of the GFC of 2008, QE pursued by the major Central Banks, together with financial innovations responding to new regulations, has induced major structural changes in financial markets.
    b. A major change is that the main sources of funding have been shifting from bank loans to wholesale money markets, which require collateral assets for securing high transaction volumes on this market (contrary to household bank deposits)
    c. In consequence of this shift is the higher role and increased demand for "safe-assets" in the reversed pyramid explaining the fluctuation of GL, thus raising the issue of the nature of the demanded safe-assets and the management of their issuance.
    d. The impossibility in the present IMS (based upon national reserve currencies) to create a parallel supply of safe-assets with instruments issued by national official sectors (T-Bills and Central Banks lending facilities) explains that private sector has responded by creating the needed short-term liquid assets with high-quality corporate debts used as collaterals (Repo and asset-backed commercial papers)
    e. But collaterals use to co-vary more with the financial cycle, exposing the liquidity pyramid to a systemic risk in case of economic slowdown or interest-rate rise.
    f. The consequence is that the IFS is more exposed than ever to mismatches in time-terms, currencies and credit quality. The repo bundles together T-bills and exchange reserves with high-grade corporate debts, and are used as new collaterals for the issuance of lower-grade debts. This endogenous search for collaterals tends therefore to deteriorate the quality of credit because the needed issuance of high-grade debts leads in turn to

[2] Triffin, Robert, "The IMS (International Monetary System…or Scandal?) and the EMS (European Monetary System…or Success?)", Jean Monnet lecture, European University Institute, Florence, Banca Nazionale del Lavoro, Quarterly Review, n°179, December 1991

encourage the issuance of lower-grade debt through new collateral, creating an additional reversed pyramid relying upon a shrinking base of high quality or a lower degree of "moneyness" of the collaterals, of which a part could suddenly become illiquid.

g. More fundamentally, the increasing need of collaterals means that more than ever, it implies a huge demand for safe-assets, at a time when their supply is constrained by a number of factors, including the already high level of indebtedness of major sovereign and corporate borrowers.

h. Contrary to conventional interpretation, the reduction of the term premium in interest rates does not mean an excess of global liquidity but is rather a consequence of the resulting shortage of global safe-assets. This shortage stimulates also a cumulative combination of risk appetite and financial innovations, which increases the inevitable instability of an expanding size of the reversed pyramid relying upon a proportionally too narrow base: safe-assets in dollar.

i. Therefore, in case of a deterioration of global economic conditions, the questioning of debtor quality stops suddenly the mechanism of refinancing through collaterals which could even be reversed in a deleveraged run towards genuine "safe-assets" (the base of the double reversed pyramid i.e. mainly in dollar), such a rush towards pure international liquidity being multiplied into a global liquidity crunch.

6. Solutions do exist to answer to the pro-cyclical behavior of GL and the consequent recurrent shortage in safe-assets and are split in two categories:
   a. To implement a systemic change tackling the roots of the shortage by managing a multilateral reserve currency (i.e. an international asset which is not a debt from a national economy) as a substitute for the official safe-asset in dollar and in secondary national reserve currencies in order to smooth the pro-cyclical nature of financial private markets by ensuring globally an optimum supply of global monetary base;
   b. To organise inside the current IFS a better cooperation among main monetary authorities for strengthening both coherent national regulations and the surveillance and coordination of national policy stances for cushioning the variations in the need for safe-assets issued by national authorities.
7. The current objections to the implementation of a systemic solution are generally based upon the feeling that a systemic change of IMS requires political conditions which would be more difficult to meet than ad-hoc coordination inside the present IFS and IMS. In fact, contrary to current views, a systemic change at IMF level would reduce neither national sovereignty nor central bank autonomy (contrary to coordination) but actually would reduce the need for coordination, being therefore more compatible with the present mood of economic nationalism, letting each national authority to face freely its own responsibility, while eradicating the present monetary asymmetry of the dollar system.

8. The return to an accumulation of global financial risks in spite of the lessons drawn from the GFC suggests a lack of understanding of the financial market dynamics and of the flaws in the international monetary non-system. This collective negligence engages especially the responsibility of the "monetary establishment" - policymakers in charge and the economists' corporation - who are all the more inexcusable that their core-mission is to stabilize macroeconomic conditions, something much more difficult without a global LOLR. Therefore, GL remains unmanageable and will provoke new very costly crisis. The following chart, taken from "Crossborder Capital", gives a rough idea of the impact of GL on global economic activity and draws attention to the new GL scarcity appearing in 2017-18, which is imposing new but uncoordinated wave of QE in 2019, involving additional risk building like currency wars.

1) Global liquidity (GL) and International Monetary System (IMS)

The main reason for RTI working group initiative on GL is the common perception among experts that global macroeconomic instability is closely related to the liquidity cycle and the pro-cyclical behaviour of financial markets, with systemic international spillovers affecting domestic and global liquidity developments independently of local financial situations, and thus real economies. Therefore, the concept of GL deserves efforts to be clarified.

The conventional definition of global liquidity is apparently the same as domestic level: the "ease of financing" applied to the international financial system i.e. the degree of easiness for funding in cross-border markets (liability side) or the capacity to transform an asset into a perfectly liquid one i.e. accepted as a universal mean of payment (asset side) without any significant effect on asset prices or risk premium. The purpose of both concepts - domestic liquidity and global liquidity – is the same but GL is not merely the addition of domestic liquidities. GL is a synthetic measure of monetary conditions in the world economy but these conditions reflect a variable combination of both the availability of funds at a national level – issued by central banks and by financial sectors - as well as the extent of international financial intermediation and integration which interconnects national liquidity with foreign sources of funding. The core of the issues about GL relies upon the mutual influences between national and international liquidity, the so-called spillovers, which requires to extend the analysis to the IMS. There are several quality hierarchy across assets and national currencies. This differentiation across currencies implies significant effects upon the global credit multiplier with asymmetrical consequences and a global financial instability. Thus, the IMS determines crucial aspects and evolutions of GL.

Therefore, it is worth to start by going back to the most basic elements which characterize any IMS. This is a pertinent question which has to be raised for understanding the Global Financial Crisis (GFC) and the key-issues about GL.

The most synthetic definition of an IMS is*: a way to solve the coordination problem arising from the existence of "n" different currencies and sovereign policy authorities in presence of clear spillovers between them which overlap their autonomy*. Unless these spillovers are explicitly acknowledged and channelled through cooperative or centrally managed arrangements, they imply negative impacts with significant costs for individual members as well as for the world welfare. Rational attitude would imply that the "n" actors would cooperate for organizing their relationships in order to maximize the net result of their separated actions. However, uncertainties about the "real model" combined to lack of communication and reliability between heterogeneous players (lack of trust for sharing the costs and benefits among autonomous actors who pursue conflicting geopolitical goals) block them in a typical "Prisoner's dilemma" situation i.e. non-cooperative attitudes leading them to a negative outcome for all of them.

Indeed, the present IMS (since Bretton Woods 1944), is the existence of "n" currencies in which the "n^{th}" one (the dollar) is demanded as the main reserve currency by the "n-1" others, creating important external liabilities for this "n^{th}"economy. Since by definition among "n" economies using the currency of one of them as international standard there are only "n-1" degrees of freedom for exchange rates, monetary policies and current account positions, global stability through managing GL could only be reached along two kinds of policy options:

- either the n^{th} one is accommodating the demand for reserve from the n-1 others up to the point of judging that global stability is under threat (Triffin dilemma), playing so the role of a benevolent Hegemon abandoning its own policy objectives to the sake of global stability,

- or by creating a perfect policy coordination among the “n” economies optimizing exchange rates, external adjustments and monetary policies (à-la-Williamson).

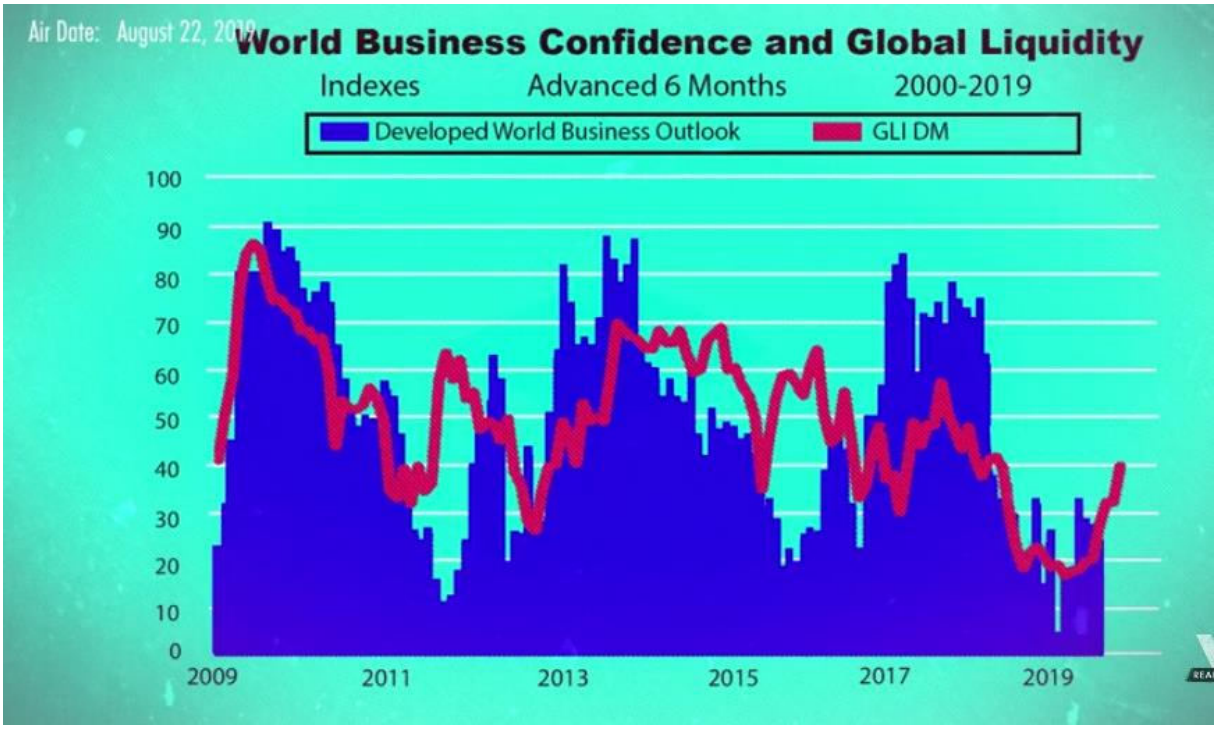
It is clear that no one of these branches of the alternative looks politically realistic in the present geopolitical context. In particular, the global policy coordination which would be needed for ensuring efficiently global stability with “n” currencies without a multilateral one, would imply building a sophisticated multilateral surveillance exercise, with strong and politically sensitive abandons of national sovereignty for coordinating "n" different monetary policies and reciprocal external adjustments i.e. through an unrealistic supranational big brother or a super G-20 endowed with supranational powers for imposing the policy-mixes of their members.

This is why it looks easier and much simpler to focus first on correcting the IMS from its main defect (to rely upon a n^{th} national currency used as reserve currency) by creating the missing “$n+1^{th}$" reserve currency used as safe-asset as it was the case with gold in the XIX century, but with the big difference and advantage of getting a “$n+1^{th}$”th safe-asset not issued by geological factors but by a collegial mechanism regulating the degree of GL according to technical multilateral rules. It is essential to remind the elementary principle that as (international) money is first of all a liquid debt of an agent (an economy) it must be issued by a specific agent which is "multilateral" with respect to the "n" agents (economies) and not by one of the "n" competing ones (economies) the debts of which would increase with the need for (international) safe-asset, creating an inner asymmetry between this "n^{th}" agent and the "n-1" others. This is true both at national as international level and it is this very basic principle which allows for managing the monetary creation process as a public good. Amazingly, this universally shared principle when talking about national levels does not seem to be fully understood when dealing with the international level or is perceived as an inaccessible dream.

A multilateral reserve currency is an ultimate, pure “safe-asset” issued by a specific adjusting agent, collegially managed, the "$n+1^{th}$" one. The essential advantage which makes a key-difference with the present dollar-system is that this multilateral agent issues its debt-at-sight as the multilateral international currency which is the debt of no national economy but of the global system. By definition there is no net liability or asset worldwide, liabilities being pilled-up not against an individual economy but against the global system itself and as the counterpart of equivalent assets held on the asset side of this system. The "n" participants to the system face all the same liquidity constraint. It looks tautology but it is the attractive principle of a clearing union that backs the initial Keynes/Triffin proposals for creating a symmetric IMS that most economists do not seem to fully realize. Such a neutral agent issuing a “n+1”th currency restores symmetric decentralized forces able to constraint automatically the set of "n" monetary policy stances through a technical (a-political) constraint which needs almost no supranational power and much less international bargaining.

From all the existing alternatives for reforming the IMS, this option is the most coherent from a political economy point of view and the less intrusive into national sovereignties, therefore it should become the most pragmatic one for facing the current populist mood against international cooperation and return to economic nationalism. It consists in charging this "$n+1^{th}$" agent to validate the net result of "n" sovereign policies upon GL demand from the "n" autonomous choices under the single constraint of acting as the global nominal anchor managing collegially GL conditions compatible with international price stability and stable macroeconomic growth. This is the first best option for managing GL as a public good. Such a public good is a-political, purely technical, and at the highest global level: managing multilaterally the degree of GL by supplying adequate safe-assets in function of objective parameters.

Chart 1: Global Liquidity as a leading indicator of Global economic cycle



Source: Howell, Michael, *Countering the Global Liquidity Crunch*, Crossboder Capital, London, August 2019 NB: GL has a lead of 6 months

2) <u>Global Liquidity matters for global economy: New and growing financial fragilities correspond to structural changes that need analysis and responses</u>

Chart 1 – kindly provided by Michael Howell from Crossborder Capital Ldt (London) - shows clearly that GL is a leading indicator of global activity. As far as GL could be efficiently managed, there is no reason to remain exposed to uncontrolled financial development. A rational reaction requires better understanding of GL evolution and determinants in order to consider the means to manage it better than presently.

The present liquidity cycle and its growing risks reflect <u>structural changes on financial markets</u>. The huge QE implemented by the main Central Banks have induced effects upon market behaviours and market structures.

- First, the <u>QE together with new regulations</u> imposed to banks have changed the sources of funding with a significant shift from bank loans to bonds (non-banks) and to wholesale monetary markets (shadow-banks). With this increase in the share of intra-financial system funding, the global financial system has become a <u>refinancing mechanism</u> in which the quantity supply of liquidity to roll-over existing positions matters more than interest rates and the provision of finance for new projects.
- Second, the <u>adaptive change of global bank</u> strategy to QE effects on yields has made them to chase higher returns out of their traditional markets, thus relying more on corporate and

investment banking and on the use of derivatives, alternative investments (hedge funds, specialized mutual funds in high yield bonds, in emerging market, real estate, infrastructure or commodities), which represent an increasing share of their incomes. Among these changes, the resulting growing share of the international bond market gives more weight to the asset management industry i.e. to "agent behaviours" (risks pushed upon clients) by contrast with "principal" behavior of the bank (supporting themselves the risks). In particular, "corporate institutional cash pools" have heavy role with foreign exchange reserve managers in Asia, or US corporates that are running major treasury piles of cash.

- Third, these growing activities on wholesale markets increase the need for collateral assets i.e. a higher demand for international safe-assets with respect to present structural supplies of such assets. Therefore, private sector organizes the supply of additional collateral with these existing safe short-term assets invested in the money markets, generating bonds and securities, themselves multiplied by being "repoed" and sold back. Thus, the global credit multiplier is increased out of any regulation. This mechanism is biased by the inner greater appetite for risk and search for yield of this financial sector (remuneration of fund managers, evaluation with index tracking and return benchmarking etc.), so pushing to create new assets usable as collateral with a decreasing debtor quality. This process amplifies the mimicking attitude and the bubble processes of financial markets. All these features develop in a highly concentrated and interconnected industry, therefore increasing the cumulative process of self-fulfilling prophecies in a stronger pro-cyclicality. Therefore, the exposure to illiquidity risks is systemically amplified through the trend towards more currency/term mismatches, more exposures to interest rates changes, to decrease in debtor solvability and to derivatives masking their intrinsic illiquidity in case of crisis.
- Fourth, global private liquidity dynamism creates a pro-cyclical expansion of permissive liquidity conditions which tends to accumulate forces of liquidity destruction. We coin this systemic flaw the paradox of private liquidity overshooting and self-destruction: *its expansion creates the risks provoking its own destruction leading to force official liquidity to make up for their liquidity crunch in case of cyclical reversal*. Nevertheless, this cycle cannot be considered as a balancing mechanism since it creates a perverse amplification of macroeconomic instability with increasing costs in terms of activity, jobs and total productivity. The more detailed explanation of this inner instability of private financial markets is presented lower in section … An intuitive presentation of GL dynamic behavior is also presented below in the following section 2 with the analogy of an increase of a "*reversed double pyramid of credit*" in which the expansion of the base is itself partially a pro-cyclical pyramid in as much as there is no tool for adapting proportionally the supply of the ultimate safe-assets that compound the genuine base of these intertwined instable pyramid. Therefore, without adequate tools for managing effectively their base through the global supply of safe-assets, this pyramid represents a growing systemic risk for the world. The underlined structural changes have developed a cyclical expansion of GL which - by definition of its dynamics - cannot face a strong cyclical reversal. Indeed, in case of cyclical downturn, a significant part of the private liquidity disappears provoking a run towards the ultimate safe-assets mainly in dollar. The inner dynamism of financial markets does make riskier the whole financial system by increasing strongly the gap between ultimate safe-assets and other created collateral assets.

These structural mechanisms and changes explain the accumulation of indicators and reasons to worry about growing fragilities of the global financial system:

- the sustained decline in interest rates and risk-premium boosting asset values implies very high interest-rate risk exposures, only considering "*general government debt outstanding in developed countries amounting to $40 trillion, taking an average maturity of the debt to be five years would mean that a 100bp rise in interest rates would cause a $1 trillion fall in market values*[3]" but the losses will be higher on lower-quality debtors, especially for financial institutions
- all the more that the duration on bonds has increased, due to new regulations that obliged banks and insurance companies to hold more bonds, as well as to low-rates inducing a larger duration and a substitution of interest-rate risks for credit risks,
- the increasing importance of global bond markets with respect to bank loans with a big rise in issuers from non-financial emerging economies dependent on cyclical exports implies more cyclical exposures and more weight to the asset management industry and its risk-taking and mimicking behavior which amplify the interconnectivity in the financial sector,
- increases in currency mismatches and maturity exposures, especially for non-resident non-banks,
- deterioration in the quality of issuers and higher public debt ratio in most economies
- regulations mainly on banks tend to shift the risks (unregulated leverages) to non-banks
- liquidity risks have increased in parallel to the increase in the share of intra-financial system funding, in particular with the new development in opaque derivatives and the interconnectivity they imply,
- The importance of the international banks operating in dollar outside the US with respect to the domestic banking sector and the capacity of the US to supply emergency liquidities: the swap lines with the Fed reached a peak of 600 billion while the bank liabilities in dollar outside the US amount to more than 14 billion.
- The Exchange-Trading-Funds (ETF) have grown at a very fast pace and their wider use as collateral and for liquidity management comes with a growing potential for transmission and amplification of liquidity risks (on primary assets as in counterparts)
- A new global liquidity crunch has almost occurred at the end of 2018 and beginning of 2019, explaining the 2019 reversal in Chinese Central Bank followed by the Fed, the ECB and some others; according to Michael Howell (Crossborder Capital[4]) "*World private sector liquidity has fallen by some US$3 trillion, with roughly two thirds of the drop coming from the Developed economies, while World Central Bank liquidity has fallen by another US$1.1 trillion, with two-thirds of its drop recorded in Emerging Markets, paced by their large foreign reserve losses. Added together, Global Liquidity has in total fallen by just over US$4 trillion to US$124.1 trillion".*

These factors of potential financial liquidity crisis have to be seen in a context which amplify the risks of liquidity needs for both creditors and debtors facing loan failures all the more that most of loans are collateral-based of which the marginal part is corporate securities especially exposed to business cycle. Indeed, with historically low availability of counter-cyclical tools while the US policy mix is pro-cyclical and trade policy is threatening many debtors, the probability of confidence losses and risk-adverse behaviours is rising when the macroeconomic outlook turns negative after the longest phase of expansion in the post-war period which has seen a new accumulation of financial risks both by investors and debtors.

In addition to these worrying development, the main reasons to be preoccupied is the fact that since the GFC and the new financial risks resulting from the huge injections of official liquidity, no effective international agreement has been reached for trying to actually prevent or reduce these new fragilities,

[3] Srichander Ramaswamy & Philip Turner, "A dangerous unknown: interest rate risk in the financial system - Central Banking", Central Banking, February 2018

[4] Howell, Michael, *Why has Global liquidity crashed again?* Crossborder Capital, London January 2019.

and overall no arrangement has been made for coordinating significant measures, safety nets or making available some LOLR option in order to provide emergency liquidity in case of new global crisis. Global liquidity remains perceived insufficiently as a public good as it should. Amazingly, the bad experiences of the GFC and some lessons drawn from it have not led to sufficient reforms and regulations, in spite of some efforts and improvements realized in micro and macro-prudential regulations. Furthermore, the new regulations being shaped for some categories of institutions or operations tend to shift the risks to other activities or instruments. Are the adopted measures sufficient for facing the new fragilities which have been developing since the GFC and which could even be worse than in 2008?

The answer is clearly negative when observing the lack of - or even the diminishing - international cooperation. By definition, the global liquidity cycle shows international links (spillovers) that escape the management capacity of any single national authority. This means that acting efficiently upon global liquidity cannot rely only upon national liquidity policies. Only international and inter-institutional (Central Banks, Treasuries and prudential bodies) cooperative strategies could internalize liquidity spillovers and reduce the financial instability. Therefore, rational policymakers should decide to put in place cooperative tools/actions for reducing the development of financial fragilities and for being prepared to increase jointly emergency liquidity to cushion the next international crisis. However, progress remains almost absent or limited to mere intentions (the report of the G20 Eminent Person Group being emblematic of this absence of cooperative action in prevention of risks as well as in coordinated response to a liquidity crisis).

Furthermore, the ideal solution, as repetitively underlined by RTI, requires a multilateral arrangement, which is not anymore on the agenda of the G20 and not even mentioned by the stakeholders in the debates. This first best option is the simplest and most rational one: to implement at the international level what was made at national level with the creation of national central banks for making possible to control the supply of safe-assets in function of the needs. The national LOLR makes possible to control the spillovers generated by the banking system's money creation through the management of bank liquidity by issuing or destroying its own liabilities used as the national currency. At the global level such a central bank role able to regulate global liquidity is still missing although the concept is very elementary, the need to make-up for instable private liquidity is obvious at each cycle and furthermore the institutional basis does exist because it would consist in upgrading the IMF for allowing it to issue a single international currency (an upgraded SDR becoming a genuine multilateral currency) against national currencies reserve (national bonds). The IMF would be able to create global liquidity without creating more liquid debt for the issuing economy without asymmetries and credibility risks (i.e. without Triffin Dilemma). Indeed, the proposed multilateral currency is the liability of the global system itself (the IMF) which owns the corresponding value on the asset side in national bonds, making it able to restore adequate proportions between private liquidity and official one without global financial risk. Clearly, this new multilateral reserve currency could provide the best way to manage rationally and collegially global liquidity (both ways, withdrawing or adding liquidity by open market operations) as a public good, using objective indicators, resolving in a single shot several hot-issues: no more need for stronger coordination of policies interfering into national sovereignties or central bank autonomies, no more need for dedicating resources to safety nets, no more waste of time for bargaining polemical burden-sharing, no more Triffin dilemma since the IMS would become automatically more symmetrical, and therefore no more "built-in destabilizer" [5] of the dollar-system, since the proposed multilateral

[5] Triffin dilemma, see Ghymers, Christian "Réagir à l'emprise du dollar" *in L'Ecu et la Vieille Dame*, Aglietta, Michel, Economica, Paris, 1986. and Triffin, Robert, "The IMS (International Monetary System…or Scandal?) and the EMS (European Monetary System…or Success?)", Jean Monnet lecture, European University Institute, Florence, Banca Nazionale del Lavoro, Quarterly Review, n°179, December 1991 1991

currency would be managed in function of global stability and the general interest as defined in the Board of IMF. An important result would be that net global savings could be more easily redirected towards the financial needs for investing in the energy transition in the emerging economies. In addition, this ideal solution could even be used for financing "green bonds" dedicated to moving to low-carbon production structure in the LDCs.

Whatever the theoretical arguments around the persistence of the Triffin dilemma and independently of the views about the feasibility of the first best option with the SDR, the present alarming situation requires to get out of the present status quo for building as soon as possible a new consensus and proposing on time concrete actions for facing the next global crisis.

First observation: there is an urgent need for understanding better the dynamics of global liquidity, its pro-cyclicality and its instability linked to an unmanageable proportion between official and private liquidity.

Second observation: how is it possible that majority of economists and market "rational" analysts don't question the inner instability of financial markets and its dominance effect upon the real economic cycle?

3) An intuitive approach of the dynamics of global liquidity

Contributing to the formulation of proposals able to tackle these growing risks and to face the next crisis requires to go back to an analysis of the concept and inner mechanisms of global liquidity and to its very structured but dynamic nature. Although many works do exist for trying to define global liquidity and to measure it, the conceptual and empirical grasp on the nature of liquidity and its effects is still far from sufficient from a policymaker point of view for understanding the present risks of a new GFC. This is why we feel the need to go further by crossing different perspectives for understanding the dynamic process making instable the GL conditions.

3.1. The interactions between the GL components explaining the GL dynamics

GL can be viewed from three different angles:

- the asset – liability point of view,
- the private – official components, and
- the national – international interactions

3.1.1. The first point of view is useful from a statistical interest for attempting to measure the degree of international liquidity: either from the asset side, measuring the total amount of credits, determining the extension of international credit, or the liability side, measuring the borrowing capacity of financial institutions, allowing to focus on the role of financial-sector balance sheets in shaping overall lending patterns and activity. These two points of view are complementary.

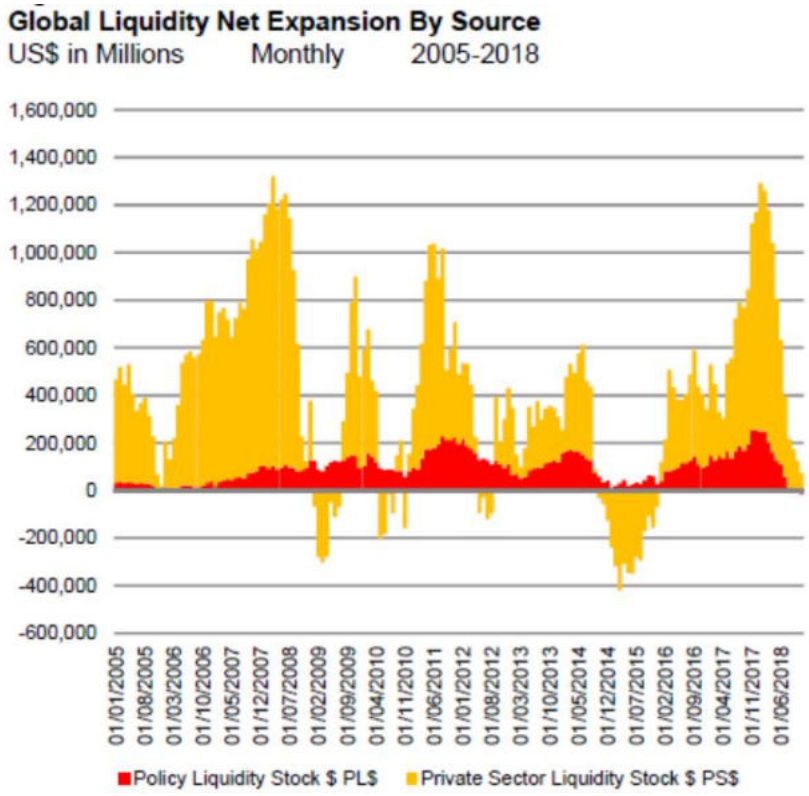
3.1.2. The conventional distinction between private and official liquidity

Generally, global liquidity is approached as a conceptual aggregate of official liquidity (Central Bank reserves) and private liquidity (international loans, bonds, deposits,) showing that in quantitative terms, private liquidities statistically dominate official ones and tends to be endogenous and pro-cyclical. However, it makes no sense to add up official and private liquidities which respond to different determinants, influence each other but with a clear dominant hierarchy giving to official liquidity the ultimate responsibility.

Chart 2 illustrates the dynamics between official liquidity and private one. For example, the sharp halt in liquidity creation of 2018 reflects the Central Banks interruption in their QE or global easing as well as the consequent loss of reserve by Central banks of emerging economies as the Fed tightening reversed capital inflows in these economies (see Chart 2) provoking a stop in global private liquidity expansion.

Private liquidity is considered as "endogenous" to the conditions in the global financial system i.e. it is "market-driven" depending on the willingness of market participants to supply funding or trade in securities markets. This endogenous feature depends also on financial innovation and behaviours which developed alternative sources of funding, presenting different risk exposures. (as opposed to traditional "core" liabilities of banks which are their customers' deposits) with collaterals

Chart 2: Official and Private Components of Global liquidity



Source: Howell, M., *Why has global liquidity crashed again?* Crossborder Capital, London January 2019

Therefore, an important indicator for analysing liquidity development is the decomposition of private liquidity liabilities in two categories which reflect different behaviours and liquidity risks:

- "core liquidity" brought by resident deposits to banks without inter-bank deposits; this segment is close to the traditional monetary aggregates; the characteristic of these liabilities is that banks have the ability to create more liabilities through their loans;
- "non-core liquidity" brought by financial markets i.e. liabilities across financial institutions as cross-border deposits and other deposit corporations as well as loans and securities (other than shares) of commercial banks, nonbanks and other financial intermediaries. These liabilities are typically not included in traditional monetary aggregates and corresponds to the "shadow banking" activities. These liabilities are more fragile than those of the traditional banks because they rely upon collaterals that co-vary more with the financial cycle, making that funding

expands or contracts depending on the market value of the underlying collateral. During the upswing, prior to the global financial crisis, non-core liquidity was the key driver of global liquidity meaning that financial institutions relied increasingly on endogenous "money" creation.

The combination of too expansionist monetary policies with pro-cyclical financial markets, especially shadow banking activities, was the main driver of the acceleration of global liquidity leading to the GFC. Growth of credit above the deposits permitted by additional non-core funding is associated with the accumulation of financial imbalances and systemic risks since wholesale funding model are fragile for being based on short-term repos exposing to market collateral-based and highly pro-cyclical development

Shadow banks transform some bank assets and liabilities and refinance them as longer and more complex intermediation chains providing alternative stores of value, e.g. asset backed securities, to institutional investors that do not want to hold all of their liquid assets as (uninsured) demand deposits. However, shadow banks largely repackage and recycle existing savings. By lengthening intermediation chains they became involved in large volumes of wholesale funding, without creating much new lending. Before the GFC shadow banks had been borrowing against new collateral, such as US dollar deposits, and re-hypothecating existing collateral (i.e. the so-called collateral multiplier) to create an artificial, additional monetary base (what is dubbed by Michael Howell a 'shadow monetary base'). Since the cross-border flows to emerging economies are dominated by dollar loans funded on off-shore wholesale markets, there is a close correlation between this "shadow base" and cumulative capital inflows to emerging economies. The destabilizing spillover from the dollar liquidity dynamics on emerging economies is clearly visible on Chart 3 taken from M. Howell[6]:

The same kind of dollar spillover was also observed later from 2016 with the effects of the "tapering" which provoked a contraction and even a reversal in capital inflows to emerging economies with a parallel cut in their forex reserves and thus in their domestic primary liquidity.

Official liquidity appears as "exogenous", because its supply depends more on monetary and fiscal policies, although private liquidity also affects the official one. However, in case of global crisis private liquidity tends to disappear and global liquidity collapses into some segments of its official component which becomes a run to "safe-assets". This behaviour of financial markets makes clear that the dynamics of financial markets relies upon a mutual influence between private and official liquidity with a strong hierarchy across assets in term of degree of effective liquidity. The analysis requires further considerations by using an additional dimension which focuses upon the non-homogeneity of the national official reserves which present different and variable degree of liquidity.

3.1.3. The national and international interactions explaining GL dynamics

As set in our definition of GL, the key for understanding the GL development and issues relies upon the mutual influences between both national and international sources of liquidity. These interactions reveal a quality hierarchy across assets components and national currencies. This hierarchy reflects the fundamental asymmetry created by the use of national currencies as reserve-currencies, all the more that there is in fact only one dominant currency in which are issued the ultimate first category of safe-assets. Generally, the link between GL behaviour and the International Monetary System (IMS) is not sufficiently underlined.

[6] Howell, Michael, Why has global liquidity… op. cit.

Indeed, this asymmetrical IMS based upon the domination of the dollar plays a role in the GL dynamics which could be compared to a double reversed pyramid: the traditional multiplier applied to the global monetary base, combined with another one inside this global liquidity base which relies upon the narrower safe-asset in dollar. In other terms, the dollar system endows this reserve currency with a higher degree of "moneyness" than other currencies. This systemic feature is translated into an additional multiplier inside the GL dynamics. This inner multiplier explains part of the amplification of the financial cycle both in the expanding phase and in the following liquidity crunch with a run out of current assets for getting safe-assets in dollar, which by definition are not sufficient for meeting the crisis needs. The GL is therefore instable and dominated by a pro-cyclical asymmetric two-tier system i.e. a moving concept which combines both volumes of funds and their variable quality or degree of "moneyness", the later retroacting upon the relative scarcity of the volumes of funds provoking a destabilizing evolution. The dollar system has created what Triffin coined thirty years ago a "built-in destabilizer" for the global economy.

The concept of degree of liquidity could be named the degree of "moneyness" of an asset. This degree is impossible to quantify for being determined by changing risk appetite and mimetic competition on financial markets making self-fulfilling their assessment of liquidity conditions, thus being necessarily pro-cyclical and instable. Financial assets have different degrees of "moneyness" from a maximum for the purely "liquid" one, the monetary base ("high powered money") to lower degrees according to the costs of conversion to liquid assets (cash or at-sight deposits).

At national level the degree of moneyness changes can be approximated with the changes in monetary aggregates while at international level global monetary aggregates are less useful except by selecting specific indicators from aggregated components as non-resident deposits or cross-border loans.

The major difference between national and global liquidity is the fact that in the latter there is no equivalent possibility as in the former, to issue sufficient liquid safe-asset. This is the basic function of the Lender-of-Last-Resort (LOLR) which does exist only at national level (or regional for Monetary Unions). In addition to this systemic difference, the national monetary bases or national safe-assets present different degree of international liquidity: the local safe-assets are also exposed to become illiquid at international level or to imply high transaction costs (through spread and depreciation of exchange rates), not only in case of idiosyncratic shocks or bad national governance, but also in case of generalized flight to international safe-assets i.e. some short-term dollar assets which are suddenly too scarce. At global level there is thus a hierarchy of a few reserve currencies and T-bills which means that official liquidity is not homogenous but rather compounded by different layers structured by market expectations, different monetary objectives and by the rating of sovereign bonds used as substitute for liquid safe-assets; therefore, some official liquidity cannot be seen as homogeneously endowed with the same highest moneyness degree but some segments are also imperfectly substitutable. Indeed, local safe-assets could lose also part of their moneyness if exposed to a run towards foreign currencies constraining the effective liquidity in this economy, while this is not the case, by definition; for the assets issued in the main international reserve currency.

Therefore, at global level the instability of moneyness is generally much higher than at national level (except when contagion effects and a massive panic rush for safe-assets could destroy liquidity in some local economies

The attempts to define and control liquidity at national level led to the concept of monetary aggregates and to statistical captures of them by adding the banking deposits and some others endowed with the higher degree of moneyness but rejecting all the others. This conventional simple-sum aggregation implies that all components of the money stock are supposed to be perfect substitutes while all the others would get a zero substitutability. Therefore, national monetary aggregates are biased indicators of

effective liquidity. A weighted sum of the values of all financial assets with weights for each asset varying from one to zero according to their degree of moneyness would be closer to reality. This is what is attempted by the alternative "Divisia[7] monetary aggregates" proposed by W. Barnett for the USA[8], publish by the St Louis Federal Reserve Bank and also applied to the UK by the Bank of England[9] and more recently by Breugel[10] for the Euro-area. A Divisia index for money is an attempt to weight each of the monetary component assets according to the extent to which they provide transactions services. These improved indicators bring significant results for the monetary theory and for the national conduct of monetary policy, as their better aggregation index captures dynamically the substitution across components of the monetary stock. However, these improved aggregates don't capture the full range of liquidity-creating instruments nor the full impact of the activities of large cross border financial intermediaries, which play an increasingly important role in globally integrated capital markets. Monetary aggregates may have been useful before the advent of the market-based financial system and the financial engineering. Changes in liquidity assessments made by financial markets could be captured by a combination of quantity data informing on the risk exposures with price indicators giving the costs of funding. Usual price indicators are: spreads between major mature-market government securities yields and interbank rates, spreads between interbank rates and expected overnight interest rates, bid-ask spreads on major mature-market currencies etc.

At international level, the complexity is higher because aggregation does not provide much usable information on the degree of global liquidity, international spillovers are not captured and overall the range and variability of the moneyness of assets is much more instable and under external influence. For example, the global monetary base was about ten times higher in nominal terms in 2018 with respect to 1990, or four times higher in % of GDP. This cannot be interpreted in degree of liquidity and leads to the paradox of liquidity: some past increases in global aggregates tend to destroy liquidity in crisis time. An aggregation of specific categories of international assets/liabilities (such as external reserves, term premium, international credits or deposits from non-residents, aggregate cross-border lending through the banking sector, share of funding coming from wholesale market or collateralized borrowing, etc.) could give useful information as indicators of the evolution of risk exposure.

National and global liquidity are interconnected through capital movements and various spillovers predominantly asymmetrical from the US upon other economies: US monetary policy drives global capital flows, international banks leverages, risk assessments and asset prices. Limited national liquidity uses to be complemented by external liabilities, especially of resident banks.

Central Banks have an outsized-effect in deregulated financial systems, where retail deposits are not the sole funding source, because what matters most in the present financial system is the ability to re-finance positions and at the margin Central Banks are the marginal suppliers of liquidity.

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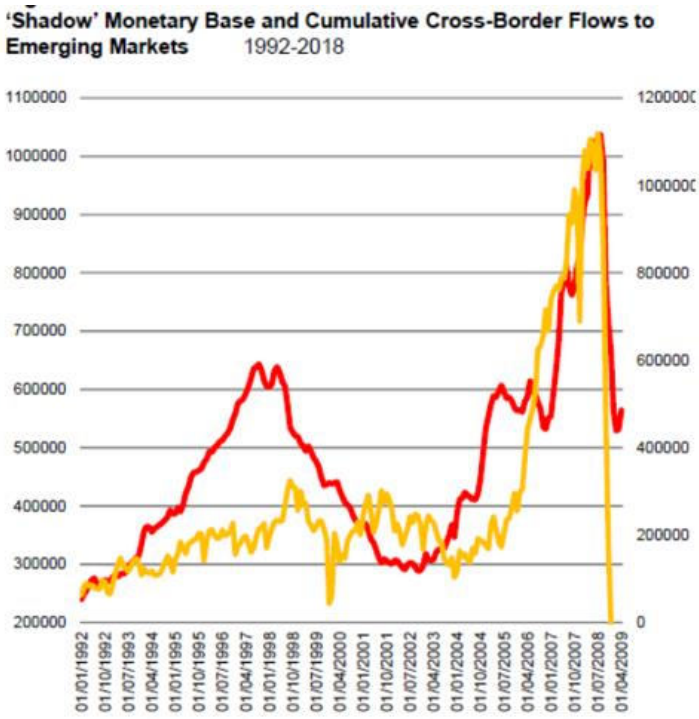
[7] From the name of its inventor, François Divisia, a French economist (1889 – 1964) who developed alternative weigthed averages.

[8] Barnett, William A. 'Economic monetary aggregates: an application of index number and aggregation theory', Journal of Econometrics 14, 11–48, 1980; Barnett, W. A., Getting It Wrong: How Faulty Monetary Statistics Undermine the Fed, the Financial System, and the Economy, 2012.Boston: MIT Press

[9] Bank of England Quarterly Bulletin, May 1993, and Hancock, Matthew 'Divisia Money', Bank of England Quarterly Bulletin 45 (1) 2005, 39-46

[10] Darvas, Zsolt 'Does Money Matter in the Euro area? Evidence from a new Divisia Index', 6 November 2014, Bruegel Working Paper 2014/12

Chart 3: Liquidity Spillover of shadow-bank loans in dollar on Emerging economies



Source: Howell, M. *Why has Global liquidity crashed again?* Crossborder Capital, London January 2019

However, the key aspect of liquidity development relies on the cumulative changes in the market assessment of the degree of moneyness of assets and economies. Price indicators are appropriate measures of these changes while quantity measures give only information on potential risk accumulation. These price indicators used to be the costs of primary liquidities or interest rates but as developed by M. Howell, with the emergence of the funding on wholesale markets the relationship between interest rates and the supply of liquidity has been reduced.

For assessing GL conditions, changes in three price indicators could be combined:

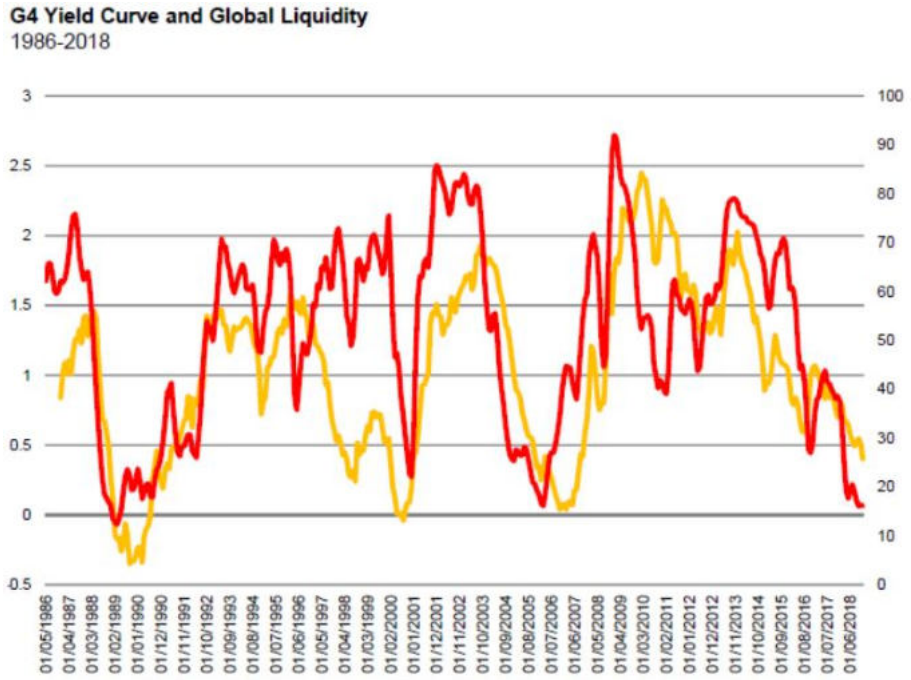
- maturity spreads or yield curves,
- creditworthiness spread, and
- interest rate swaps.

The first spread indicator is the yield curve comparing short-term monetary rates with the term premia (premium that investors prepared to pay for safe-asset long-term debt). It is noteworthy to mention that in the last two years, term premia have collapsed relative to monetary rates indicating a significant monetary tightening in global markets. On **Chart 4**, the nominal yield curve is aggregated for the four main monetary areas making clear the recent global tightening and the fact that monetary policy controls roughly the GL variations.

Calculating the yield curve in real terms for the US indicates that the change in the orientation of monetary policy started in 2014 (tapering) and led to negative real term premia leading the recent tightening of GL.

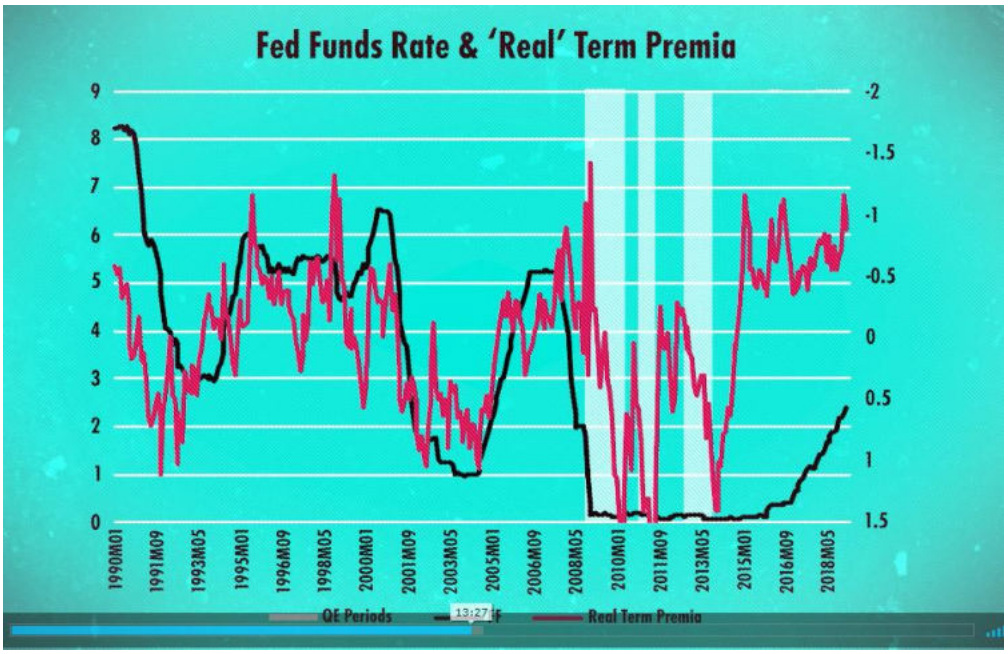
Low and negative real term premia indicate a tightening in GL conditions which forces investors into demanding more safe-assets, pushing up bond prices and simultaneously pulling down their yields and term premia. Thus, the general 'flatness' of yield curves across the major economies again testifies to generally scarce GL conditions. Therefore, QE does not lower bond yields because dominant government bonds are safe-assets, but, contrary to general opinion, a "reverse QE" causes lower yields i.e. QE raises bond yields. The reason behind this paradox is that term premia widen as the extra liquidity persuades investors to take more risks, so shifting asset allocation from "safe" bonds to "risky" equities.

Chart 4: Global monetary stance and Global liquidity creation



Source: Howell, M. *Why has global liquidity*…op. cit.

Chart 5: Tightening-loosening stance of Fed leading GL conditions



Source: Howell, M. *Countering the Global Liquidity Crunch* August 2019, op. cit.

Since there are two fundamental different categories of financial liquidity, two kind of price spreads could be useful for deeper analysis: for core liquidity the spreads between the interest rates on short-term deposits and the interbank rates could be used, as also for non-core liquidity the cost of its funding measured by spreads between rates in different market segments.

Implied market volatility measures (such as VIX for the S&P 500) are seen as a prime proxy for investor risk appetite, and a key indirect indicator of the willingness to provide funding.

Analysing price and quantity indicators together can help identify supply and demand factors driving the behaviour of liquidity. A positive demand shock (a surge in demand for credit) would result in an increase in quantity, accompanied by a rise in price, while a positive supply shock (monetary easing) would result in an increase in quantity but a decline in price. However, these relationships change over the cycle, or during periods of turmoil and with the interactions between QE and financial innovations according to risk assessments by financial operators on both sides of the market, which makes that demand and supply are not independent, creating a systemic instability with damaging effects on real economy (see section 5.3 below).

This complexity is also due to the interactions between national and global liquidity which has increased with the financial integration and financial innovation which multiply and diversify the cross-border flows of capital. Many empirical works demonstrate the spillover impacts generated by international liquidity (from advanced economies or from the US alone) on domestic financial and real results in emerging economies. These spillovers act traditionally through cross-border flows, funding costs, foreign reserve and exchange-rate changes, but also, as shown by H.S. Shin, current account imbalances do not reflect the influence of gross capital flows on global liquidity which is "*a banking sector phenomenon and that the financial stability implications of global liquidity are intimately tied to the*

leveraging/deleveraging cycle of the global banks"[11]. The gross cross-border banking and the fluctuating leverage of the global banks are the channels through which permissive financial conditions are transmitted globally. H. Rey[12] demonstrated that liquidity conditions in the rest of the world are directly influenced by the Fed monetary stance through the pre-eminent role of the dollar in global banks. The Fed policy amplifies the pro-cyclical movement in cross-border bank flows, in leverages and in spreads (depreciation of the dollar increases leverage outside and the reverse for appreciation).

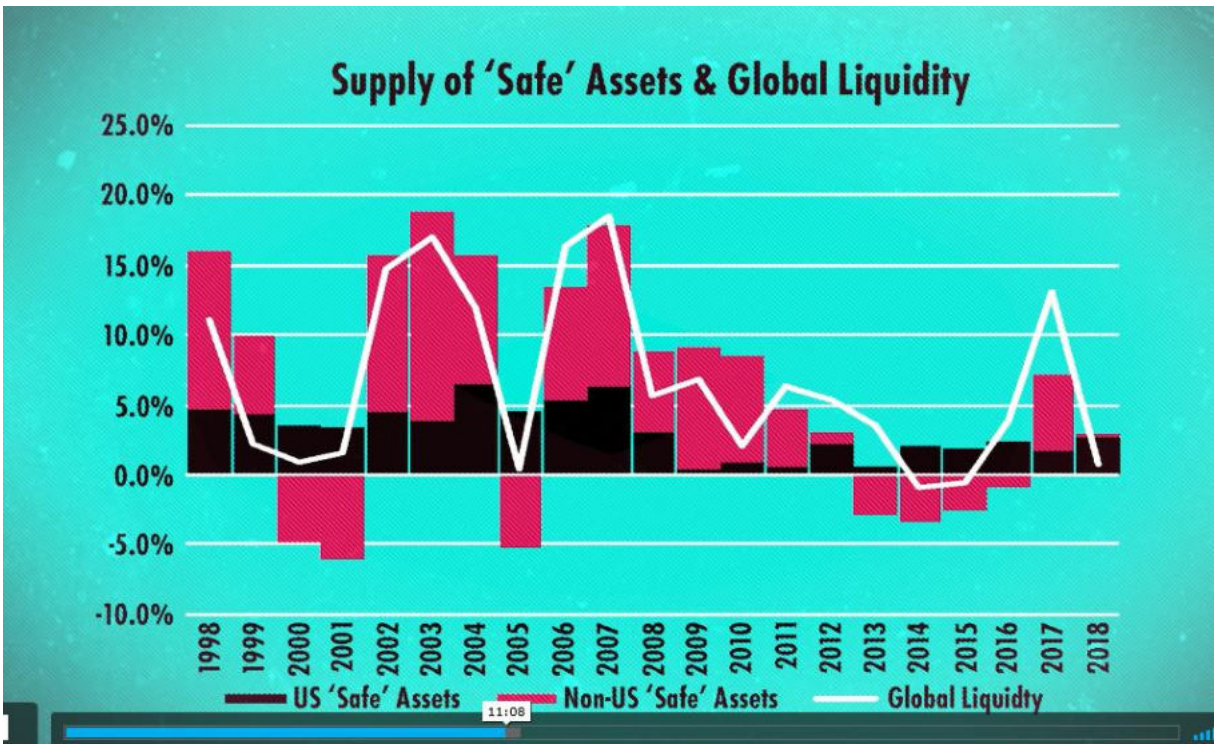
2.3. Synthetic analogy for representing GL dynamics: there is no pilot in the plane

Global liquidity has to be seen as a double or multi-tier hierarchical pyramid with three main structures of assets:

- first the reserves in dollar or safe-assets (cash deposits, T-bills and certificates of deposits),
- second the few other reserve-currencies as second-best safe-assets endowed with a lower degree of moneyness for not having the full character of an international reserve currency,
- third a broad hierarchy of components of a huge but instable total amount of cyclical private liquidity mainly based upon collaterals and derivatives.

In case of global crisis, the rush to dollar liquidity and some T-bills as safe-assets issued by US and German Treasuries implies a strong disequilibrium since the supply of safe-assets is insufficient with respect to the flows out of private liquidity, creating a safe-asset shortage, exactly as a XIXth century banking crisis with a rush for cash in traditional bank panics when national central banks did not exist.

Chart 6: Safe-assets shortage and GL conditions



[11] Shin, Hyun Song, "Global Banking Glut and Loan Risk Premium", 12th Polak Annual Research Conference, 2011

[12] Rey, Hélène, Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence, Federal Reserve Bank of Kansas City Economic Policy Symposium (2013).

Let's remark again that the global level remains voluntarily or dogmatically in this primitive XIXth century situation exposing the world economy to recurrent financial crisis. Furthermore, the hierarchical structure among reserve currencies dominated by the role of the dollar in the international cross-border operations has developed additional risks of liquidity shortage in dollar on the offshore markets, as the GFC made very visible, but which seems to remain poorly understood and not tackled systemically by authorities. The fact that the dollar is the currency underpinning global banking increases the role of the dollar as the bellwether for global financial conditions.

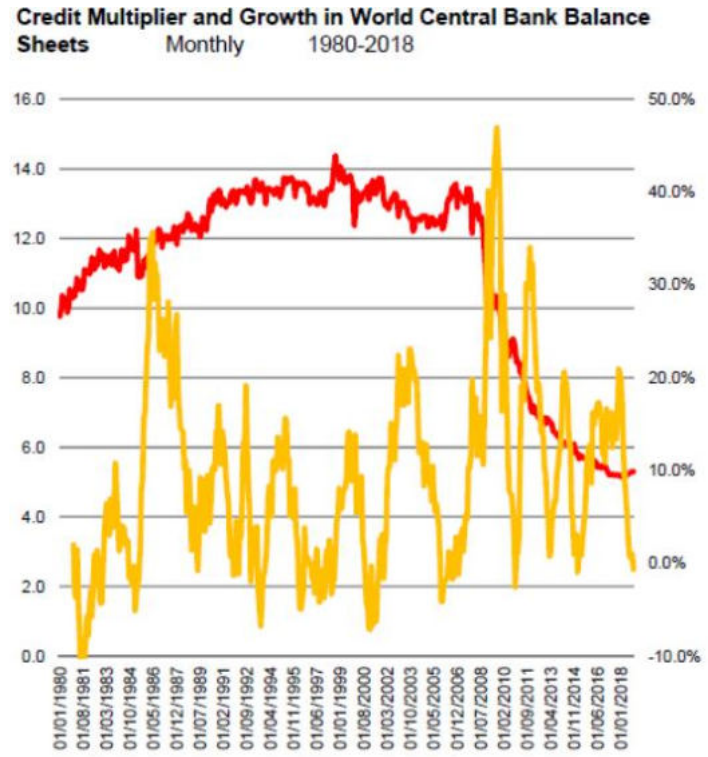
Therefore, we consider interesting the analogy representing the GL issue as a double reversed pyramid explaining the quantitative difference between private and official liquidity and the inner variability of GL. As it is the case for any monetary system:

- there is first a monetary base that a credit multiplier (defined as the ratio between total credit and the official monetary base) transforms into a total amount of GL.
- But the monetary base is itself structured as a second reversed pyramid since official reserves are not homogenous: there is some hierarchical order among official reserves since the dollar role is asymmetrical, giving it a status of "superior-high powered money". Variations in the dollar monetary base creates two-ways spillover effects (amplifying the global ups-and-down) upon both other currency monetary bases as well as upon private bank leverages and domestic multipliers; this second pyramid is even more difficult to forecast and to represent.

The global liquidity pyramid has three major features:

- monetary policies affect directly the size of the basis of the pyramid (Open market policies and cross-border net flows) and the components of the monetary stock through the yield changes inducing substitution effects;
- regulation policies affect the multiplier;
- but this GL multiplier has its own dynamics reflecting the degree of confidence of financial agents in the macroeconomic outlook, in the financial system, and in the issuing economy or currency, with a clear pro-cyclical nature and even the capacity to dominate the macroeconomic cycle.

Chart 7: Global liquidity multiplier (ratio of total broad credits to global monetary base)



Source: Michael Howell op. cit.

4) <u>Operational observations</u>

Liquidity could suddenly vanish when a run towards official reserves occurs since liquidity requires counterpart for buying with cash the less liquid assets or even for buying the safe-assets of some economies. The market willingness to buy these assets could disappear suddenly in case of a global crisis or in the case of an idiosyncratic deep crisis therefore, interventions of LOLR are crucial but as figure 1 shows, they don't seem to correspond to any rational global management. In fact, there is no pilot in the plane….

The liquidity multiplier could be seen as a function of fluctuating "degree of moneyness" of all the non-cash and non-safe assets. These fluctuations follow a large financial cycle reflecting general confidence combined with the market assessment of some specific economies and contagion effects. The international safe-assets are those accepted universally on the market i.e. the monetary base of economies issuing the reserve-currencies and some limited T-bills issued by the benchmarking economies with a peculiar dominant role for dollar-assets which is strengthened in case of global crisis.

Therefore, the core of the issue of global liquidity and its control relies in <u>understanding the variations in this multiplier,</u> its determinants and the possible tools for managing it through safe-asset supply and LOLR. It is highly probable that the absence of a global LOLR regulating the supply of liquid safe-assets increases the instability of the degree of "moneyness" of assets, both private and official.

In particular, liquidity is influenced by the inner herding behaviour of financial operators, which depends upon global business cycles and is affected directly by the perceptions of counterparty risk or, more

generally, the degree of confidence in the financial system, which is very pro-cyclical, and upon which the systemic improvement of introducing a global LOLR could provide a stabilizing effect, like putting a genuine pilot in the plane.

But the pilot is not necessarily sufficient for facing turbulences and he needs more tools. Leveraging and deleveraging affect respectively the creation and destruction of private liquidity and the cross-border capital flows act directly upon credit conditions. The inner characteristic of financial markets and behaviours of their agents makes liquidity to be self-fulfilling and quickly reversible. In deep crisis private liquidity uses to vanish suddenly in a run towards official liquidity, as observed spectacularly after the Lehman Brothers collapse that paralyzed the interbank market and crashed down the domestic money multipliers, calling for emergency official interventions swaps across central banks and SDRs issuance. Each crisis makes more visible the absence of a systemic arrangement for fulfilling the mission of a global LOLR which should also get a role in financial regulations.

In concrete terms, GL includes all cross-border effects and extends beyond traditional financial sector for including corporate cash flows and wholesale money and repo markets.

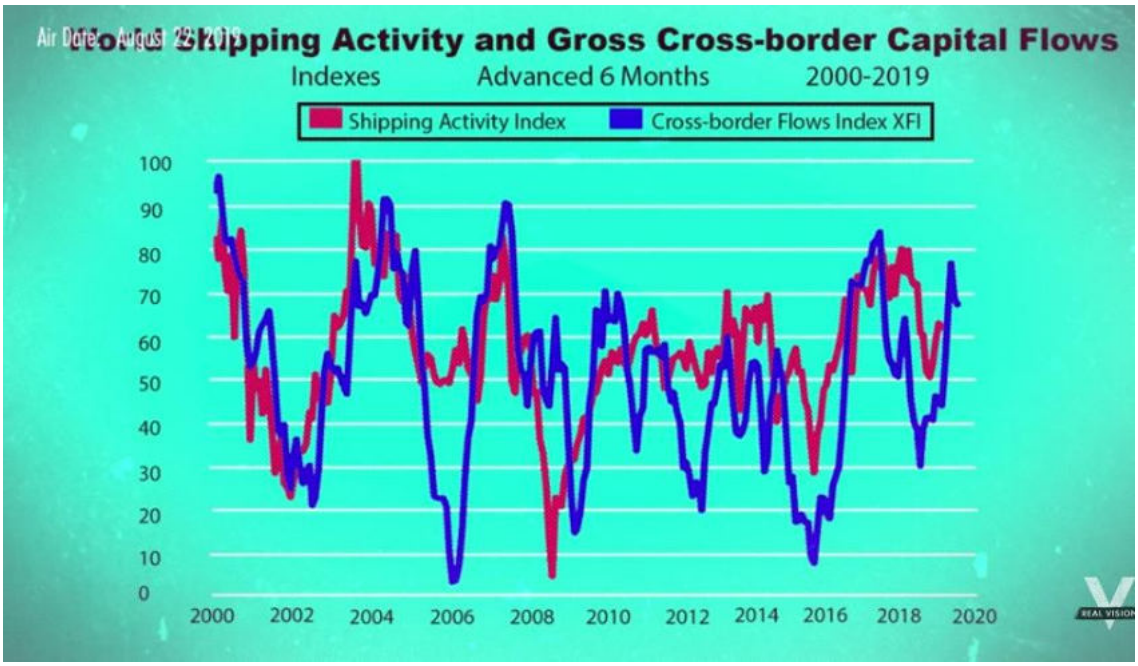
GL changes through two categories of liquidity but three channels:

- Primary liquidity that means which pass through the central banks liabilities in tow sub-categories: (i) Official liquidity via Central Bank actions on the monetary base (liquidity injections or withdrawal through repo and debt markets) which act on credit potential and (ii) Cross-border capital flows: all forms of foreign net investment affecting also monetary bases, like foreign currency borrowings, e.g. Eurodollars, which are often used as collateral and levered up by domestic credit providers;
- Secondary liquidity resulting from private sector credit creations and from financial regulations: all forms of cash generation by banks and shadow banks including household and corporate savings flows in retail and, particularly, wholesale markets (financial engineering); a peculiar channel is due to the role of global banks operating in dollar, making the leverage dependent upon exchange rate of the dollar.

In terms of policy tools, it is necessary to control primary liquidities at Central Banks level but also as far as possible secondary liquidity through regulations acting upon the multiplier.

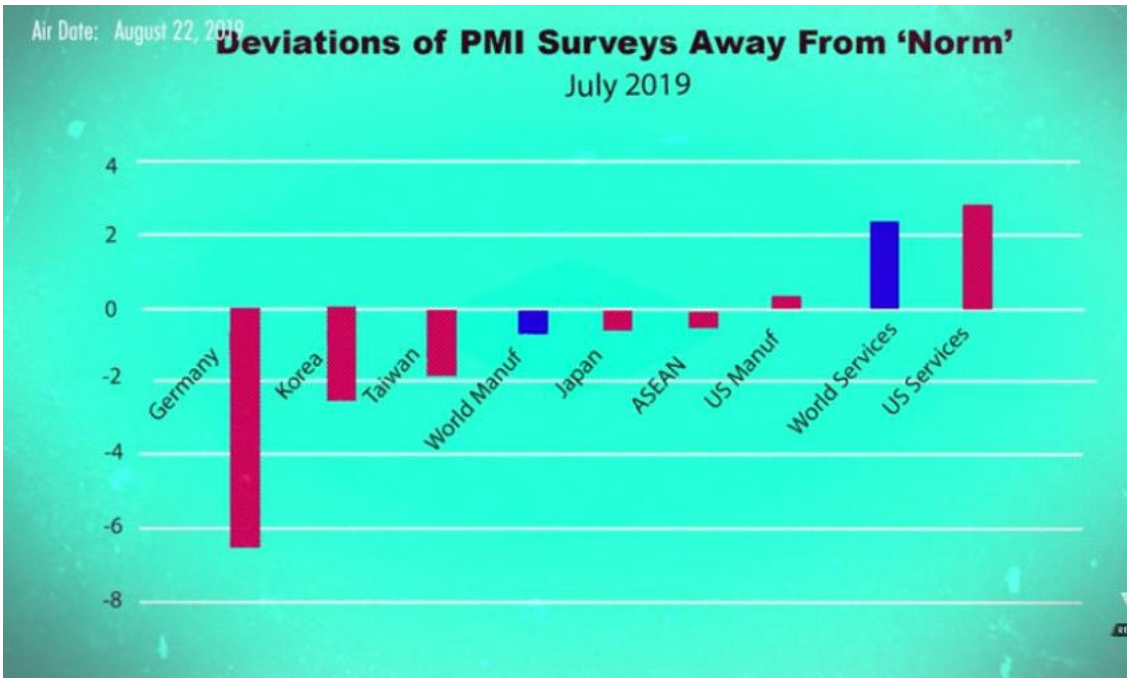
As already shown in **Chart 1**, GL variations determine Global activity. In particular, the channel of cross-border capital flows affects strongly trade measured through shipping activity (**Chart 8**) and the Global Value Chains (**Chart 9**) which have increased the spillovers. European and Asian output networks being the most hurt by the 2018 liquidity squeeze.

Chart 8: GL effect on Trade



Source: Howell, M. *Countering the Global Liquidity Crunch* August 2019, op. cit.

Chart 9: Global Value Chains affected by the recent liquidity squeeze



5) The Central Bankers paradoxical inability to deliver global financial stability

As explained in section 2, the instability of the GL multiplier makes it difficult to manage GL without global LOLR, especially since the deregulation of financial markets in which retail deposits are not the main funding source. But in fact, central banks should have a higher potential of control of liquidity since what matters most in the new structure of financial markets is the ability to re-finance positions and at the margin Central Banks are the marginal suppliers of liquidity. Their interventions into the money markets significantly affect more the elasticity of the financial system than in the past: in short, as underlined by Michael Howell, "*quantities matter and Central Banks increasingly determine the volume of funding liquidity and often directly impact the amount of market liquidity*" in deregulated financial systems. Therefore, the Central Bankers potential power looks bigger than ever although they are more than ever vulnerable to global liquidity conditions and the spillovers. In terms of applied political economy this sounds paradoxical and demonstrates the systemic weakness of the international financial architecture but also the responsibility of policymakers in refusing to even consider the necessary transition towards a systemic change allowing a genuine management of global liquidity as a global public good.

Indeed, the high sensitivity of private liquidity makes it not only difficult to measure quantitatively GL (contrary to national aggregates) but rather points to a paradoxical inability of national policymakers and central bankers to promote the systemic solution under which they could deliver their mandate of stability: their reluctance to cooperate, with the short term objective of preserving their own national prerogatives prevents them from accomplishing their very core-mission and reaching their official goal: ensuring stability by controlling liquidity conditions which are directly influenced by GL. They fail to control what has become one of the heaviest determinants of national economic activity for the sake of an illusionary domestic power. This irrationality could be explained in terms of "prisoner dilemma" but precisely by refusing the only option (a global LOLR) which allows to break the lack of mutual trust through a collegial objective management (technical indicators) and a pure macro-monetary solution which preserves their national and monetary autonomy, national monetary authorities cannot even invoke this excuse and are effectively missing their mission.

6) Understanding better the fundamental instability in global private liquidity and therefore the systemic instability of the global financial system

Existing prevention measures and policies, in spite of some progresses, are clearly not sufficient to moderate the financial instability and the risks of liquidity shortages created by the long financial cycle fed by the huge QE. The instability of global private liquidity and its domination upon the global economic cycle is a major fact of the last four decades. This systemic issue required a systemic analysis and response.

5.1. Two major systemic flaws

We distinguish two major systemic caveats in the present international financial system:

- the first one is the absence of a global Lender-of-Last-Resort issuing the n+1th currency to be used as the official multilateral reserve currency (n= number of national currencies), allowing for managing GL in a symmetrical way, compatible with the existence of n sovereign monetary policies. As developed above, the Triffin dilemma explains that the present system based upon the use of a national currency as the major reserve currency creates asymmetries and a "built-in destabilizer" for the global economy and especially for the international banking system

- The second one is the inner instability of liberalized financial markets under the unfounded dogma that free financial markets would necessarily be as efficient as any product market by fixing competitive asset prices and yields in function of their fundamental value.

Both flaws correspond to denying basic economic principles:

- without a LOLR, any banking system issues liquidity spillovers that lead to crisis in case of absence of liquidity management
- financial markets operators are not independent, being under mimetic competition and self-fulfilling assessment of liquidity conditions that move together demand and supply curves for liquidity impeding a self-regulation of liquidity by credit price adjustments, creating thus a destabilizing financial cycle.

5.2. A Lender-of-Last-Resort is able to prevent a repeat of the safe-assets shortage in dollar

The first issue is the simplest to solve with the ideal solution we introduced in section 1. The already accumulated risks until now need urgently a significant official safety net credibly organized or, the first best option, to upgrade directly the IMF to a multilateral lender-of-last-resort for cushioning the impact of the new global crisis and providing a solution to the risks of dollar shortage on the offshore markets since this upgraded IMF would mean the creation of an external system of liquidity management for any reserve currency, restoring coherence in the global economy. Indeed, only an external n+1th currency could make national choices globally coherent by reducing spillovers.

5.3. The financial market inner instability requires specific regulation (still to conceive and to agree upon)

The second systemic failure is much more complex that the first one, and will be more difficult and will take longer to be tackled. This comes from an epistemological mistake that triggers new mechanisms of additional macroeconomic imbalances transmitting and amplifying the asymmetrical power of the dollar due to the first systemic failure. The paradigm of financial market efficiency plays a complementary role in the "built-in destabilizer" of the dollar system. The reason is merely that financial markets do not operate in the same way as product and service markets because the behaviours of financial operators are not independent but linked through mimetic competition to their assessment of liquidity conditions which tends to be self-fulfilling. This absence of operators' independence impedes financial markets efficiency and explains their inherent instability. Contrary to other markets, demand and supply of credit move together with liquidity conditions impeding yields and interest rates to play the equilibrating role of "objective" market prices. As shown by Michel Aglietta[13] in Minsky's[14] line of Keynes' interpretation, financial market behaviours are not ruled as other markets by objective fundamental value of assets with a symmetry of information but by liquidity which is mainly self-fulfilling and makes financial operators mutually dependent: liquidity reflects intrinsically this interdependency because financial markets operate under "mimetic competition"[15] when forming expectations of asset values and debt sustainability: credit providers tend to expect the same kind of valuation change in asset prices as borrowers do expect too. This link biases the credit market indicators in a one-way bet. Therefore, demand and supply of credit cannot ensure a stable equilibrium through yield changes as other markets

[13] Aglietta, Michel, Finance and Macroeconomics: The Preponderance of the Financial Cycle, OFCE « Revue de l'OFCE » 2018/3 N° 157 | pages 197 à 22

[14] Minsky, H. P., 1982, "The Financial Instability Hypothesis, Capitalist Processes and the Behavior of the Economy", in C.P. Kindleberger et J.P. Laffargue (eds.), Financial crises, Theory, History and Policy, Cambridge University Press.

[15] Orléan, André, Le Pouvoir de la Finance, Odile Jacob, 1999.

use to do because demand and supply move together. Contrary to non-financial markets where the two sides of the market have opposing interests with regard to prices since demand is subject to saturation condition (i.e. demand slope is negative), financial markets are inherently unstable and generate inevitably a succession of euphoria and panics in function of their subjective common perceptions of liquidity, which link demand and supply of credit: credit demand slope could be positive when the expected change in asset value is higher than the costs of borrowing, but this expectation being shared by both borrowers and credit suppliers, the expected yields cannot have the stabilization role of normal competitive market prices. Free financial markets trigger inevitably pro-cyclical mechanisms through the common assessment of asset price changes by both sides of the market which makes liquidity self-fulfilling: in the cyclical upwards phase, optimistic expectations increase the demand for credit even with interest rates increases, while lenders increase also their supply of credit as they perceived less business risks and as their collaterals take more value. Paradoxically indebtedness tends to contract risk premium. When the cyclical bubble bursts, the same cumulative process is in motion on the negative side: asset values decrease while debt values remain (or even increase in real terms) moving back supply and demand for credits. The deterioration of debtors does affect directly those of creditors and lenders, triggering a deleverage adjustment process which has macroeconomic depressing effects (balance-sheet recession). The motor of this inevitably unstable financial cycle damaging the real macroeconomic cycle is the differential between the market assessment (on both sides) of debt value and asset value that mimetic competition necessarily biases toward a pro-cyclical behaviour impeding a self-regulation of liquidity by credit price adjustments.

Here the market price distortion comes from the fact that financial prices are auto-correlated through liquidity perceptions by both sides of financial markets amplifying the destabilizing financial cycle created by the asymmetries generated by the dollar system. Nothing new but the weight of financial activities with respect to real output sector has increased significantly with the liberalization/globalization. In the last thirty years, the size of global finance in the world economy has been moving from 280% of GDP up to 430%[16] and the causality relation between real cycle and financial cycle has been reversed: financial cycle explains real cycle in the period 1996-2018 while the contrary was true from 1980 to 1995. Except for emerging economies, the size of finance is not favourable to growth. Furthermore, Patrick Artus[17] shows that the gravity of recession increases with the size of finance in GDP and the "allocative efficiency" of savings has been worrying since 1990 in the sense that savings were oriented to inefficient uses like real estate or public consumption and not to productive investments.

These economic contradictory results should put into question the paradigm of financial market efficiency. Facts show that market incentives are biased towards a hyper-development of financial capitalism. Distortions in market incentives induced non-financial business to reduce its deficit (dissaving) to become a surplus (saving) sector in almost all industrial countries: real investments were reduced in favour of financial investments, the stock of real assets has been declining relative to financial assets, job creation and economic growth slowed down, unemployment rose so that even stability-oriented countries like Germany have been running budget deficits most of the time. Given the positive interest-growth-differential, the public debt-to-GDP ratio has risen strongly leading to over-indebtedness. At the same time and as a consequence of the easiness to "make money with money" in financial capitalism a process of growing income inequality has started to increase the gap between

[16] Artus, Patrick, Discipliner la Finance, Odile Jacob, Paris, 2019 ; based upon Natixis data : Finance weight is measured as the total of outstanding loans, bonds, stock market capitalization and monetary stock M2 divided by world GDP at current prices

[17] Artus, P. ibid

political and economic power, strengthening the incoherence in the economic rationality. This feature is at the very centre of the political, economic and moral crisis facing our societies: economic power – ownership of financial resources in the hands of few – tends to become immune to economic democracy, contrary to the three first decades of the post-war period. During the 1950s, 60s and 70s in the Western world, economic power remained sufficiently coherent with democratic power, economic growth allowing for reducing inequality through welfare state and other public goods, not as a market result but as government policy actions. This period shows a development of market economies oriented to real output and quasi-full employment.

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Almost thirty years ago, at the end of his life and half century spent on defending the need for a multilateral LOLR, Robert Triffin observed sadly "*the incomprehensible lack of awareness of [built-in destabilizer of the international dollar-system] defect by virtually all economic analysts*". It is to hope that Dornbusch sentence could prove to be actually true and eradicate suddenly the amazing paradox in economist corporation which otherwise could conduce to a new GFC with worrying socio-geopolitical consequences. If Economics is effectively a rational and rigorous discipline, why do most economists seem so irrational when dealing with the IMS issues and stability of financial markets? Why do they consider managing the status quo as the only possible recipe?

There is an interesting parallel to draw between the way economists deal with the costs resulting from the uncontrolled spillovers provoked by the conjunction of an asymmetric IMS and wild-free financial markets and the damages caused by the excessive emission of CO2. It is not just a similarity but an intertwined cumulative process based upon the same kind of sociological mechanism explaining the denial for facing rationally unsustainable situations. More importantly, the required changes by the unsustainability of both the dollar system and burning too cheap fossil combustibles are mutually dependent: in concrete, positive terms, for reaching the neutral Carbon output required for our survival as living specie, crucial changes are simultaneously necessary in the IMS and the financial markets as well as in the relative prices of CO2 footprint in order to ensure the (very) huge financial flows required for making possible on time and directly profitable the output changes towards a low-carbon system in the emerging economies and other LDCs.