

Who should provide “liquidity services”?

Systemic risks, consumer protection and financial regulation.

Olivier Davanne

(Paris-Dauphine University and Sciences Po<sup>1</sup>)

March 27, 2014

This Draft: June 29, 2015

(Paper presented at the 5th International Conference of the Financial Engineering and Banking Society (F.E.B.S), 11th-12th-13th of June, 2015)

Abstract:

By liquidity services, we mean in this paper the whole set of key activities which permit that the final holders of financial claims may switch to cash when needed while nevertheless providing stable long term financing to companies and households. Secondary securities markets, financial institutions, collective investment vehicles and public entities, all participate in a complex way to this alchemy, sometimes in competition with each other. We stress that there is no level-playing field: this competition is heavily biased by two public distortions, i.e. the well-known unfortunate tax-bias which penalizes equity-based institutions and the refinancing backstops supplied at non-market conditions to banks by monetary authorities. These distortions contribute to the systemic vulnerability of the financial system by encouraging a complex circuit where credit risks may be driven outside an under-capitalized banking sector, while banks stay exposed to many liquidity risks. Contrary to a significant part of the literature, we see little convincing “market failures” to justify these large distortions which both penalize and subsidy different types of banking activities. In this context, reducing the maturity transformation role played by banks, either through direct regulations or hopefully following the correction of the current distortions, could make financial systems more stable. Yet, as their role should increase, we stress the importance to better regulate how collective investment funds provide, in competition with the banks, some of the liquidity required by investors. Due to “bounded rationality” and the public good nature of information, it is unlikely that investors alone can impose best practices as far as valuation and redemption policies are concerned.

Comments welcome: [olivier.davanne@dauphine.psl.eu](mailto:olivier.davanne@dauphine.psl.eu)

---

<sup>1</sup> This paper has its source in the course « Introduction to Financial Regulation » taught in the Master Financial Regulation and Risk Management at SciencesPo.

## **1/ Overview of liquidity providers**

There are two ways to hold a liquid portfolio of financial assets. One can buy long-term securities which are easy to sell on secondary markets, or one can invest in short-term assets, in which case there is no need of a very active secondary market since, in the absence of a credit default, the money will be reimbursed shortly at the agreed date.

As a result the financial sector can provide liquidity to investors through two main channels: by insuring that secondary markets exist and are active or by providing “maturity transformation services” which means that financial institutions may finance by short term liabilities the long term assets they hold on their balance sheet.

*The liquidity provided by secondary markets....with the help (or not) of collective investment vehicles*

Let's start by examining briefly how the financial sector may offer to the investors the benefits of “liquid” secondary markets, i.e. markets where investors may sell their assets with low transaction costs. A liquid secondary market needs (i) many participants active in the market and ready to transact and (ii) little difference of information between these participants concerning the fundamental characteristics of the assets which are traded. As it is well known, asymmetric information is indeed the worst enemy of liquidity in secondary markets since when an investor wants to sell, the potential buyers will fear that this selling decision may be based on superior information and as a result may rationally adjust downwards their own view on the fundamental value of the offered security. As stated by Tirole (2006): «The chief determinant of whether a claim can be easily traded in a secondary market (is “liquid”) is the symmetry of information among investors about the value of the claim” (page 81). In other words, market liquidity may greatly suffer from the difficulty for potential counterparties to differentiate orders based on new information from orders triggered by other reasons (sellers facing liquidity shocks and in need of cash, or sellers having changed their belief without any new information).

So the liquidity of a market depends very much on the quality of the shared information provided to most participants, either by the issuer's disclosures (interim reports, warnings...) or the widely distributed research of some analysts (rating agencies, sell-side analysts). Obviously, the size of the market matters greatly: when the outstanding amount of a given security (or a set of closely related securities) is large, many participants are likely to be active (market makers and other investors) and the information provided to the market as a whole (asymmetry-free) is likely to be of better quality (more sell-side analysts, better monitoring and control of the issuer disclosures....)<sup>3</sup>.

The role of collective investment vehicle is important as professional fund managers, contrary to retail investors, have a permanent presence in markets and may be ready to exploit prices opportunities. Moreover Da, Gao and Jagannathan (2011) explain that *"since fund managers often hold an inventory of stocks in order to track their performance benchmarks, they have a natural advantage in making a market in those stocks. Moreover, the superior knowledge about the stocks covered by a manager will help in the market-making activities by minimizing potential losses that may arise from trading with those having an information advantage"*<sup>4</sup>.

But collective investment vehicles can provide liquidity services to investors in a much more radical way than simply being active counterparties in the secondary securities markets. Very often, open-ended mutual funds do not fully pass on to the investors who buy or sell shares in the funds the full costs of dealing in secondary markets. In many cases (the majority?), there is a single Net Asset Value (NAV) per share based on the mid-quote prices of securities held by the fund, with no entry or exit fees. These valuation rules coupled with the possibility to redeem the shares at short notice bring a lot of liquidity to investors. Indeed, this is one of the key competitive advantages of the mutual fund industry. As John Bogle (1994), founder of Vanguard explains, *"the third principle of mutual fund investing is liquidity. Mutual fund shares may be acquired or liquidated at a moment's notice at the fund's next determined net asset value per share. What is more, there is no direct cost of market impact, wherein buying securities tends to drive prices higher and selling securities tends to push prices lower. Nor is there a charge when shares are liquidated (although in some cases a 1% redemption fee is charged and in other cases a contingent deferred sales load may be assessed). Owning securities individually, of course, is also apt to provide a reasonable level of liquidity. However, mutual funds can easily be converted into cash at a fraction of the cost you would incur in selling individual stocks or bonds. More, the ability to switch easily among different investment options provides remarkable flexibility in building a diversified portfolio, especially considering the costs involved in exchanging individual securities"* (page 53).

There is in general no free lunch in financial markets and it is important to understand how this liquidity boost is economically made possible. One of the possible views is that the current investors in the fund are implicitly subsidizing the entry and exit into and out of the fund since they transact

---

<sup>3</sup> We'll not discuss in this paper how various types of secondary markets (OTC versus centralized trading mechanism) manage to match buyers and sellers. See Duffie (2012), chapter 1, for an overview of the key conceptual questions raised by this competition between different types of markets.

<sup>4</sup> However, this information advantage is a mixed blessing for the market liquidity since it may dissuade less informed investors to trade. Indeed, Da, Gao and Jagannathan (2011) found that funds with consistently high performance are more likely to be liquidity-absorbing impatient traders than liquidity providers. In this respect, sell-side research, the analysis of fundamentals widely distributed to market participants, is much more conducive to liquidity than buy-side research (the proprietary internal research produced by investors). We return to this issue later.

with the new and the leaving investors at non-market prices. Within this view, there is no reason why the more stable investors in the fund should not be paid for the liquidity service they provide to the others. Thus, this may justify what is called a dual pricing system with two different prices based not on the mid-quote prices but respectively on the bid and ask prices of each security. However, it should be clear that with such a system stable investors in the fund could be over-compensated for the service they provide. As long as outflows and inflows are broadly balanced, the liquidity provided by a single pricing at mid-quote has no cost for the stable investors since the fund manager does not have to transact on their behalf in secondary markets to rebalance the fund portfolio. With a full dual-pricing system based on bid-ask prices, the cross-subsidies between stable and instable investors may well be in favor of the former as they would gain from offsetting inflows and outflows. Indeed, from a theoretical perspective, the problem with a full dual-pricing system based on bid-ask prices is that making markets in a bundle of securities – which is what fund managers are really doing on behalf of the stable investors when they process buy and sell orders – is not the same as making markets in each of the securities making the portfolio. In normal times, it is much more difficult to get an informative advantage on a bundle of diversified asset than on a specific security. So, in normal times, most of the inflows and outflows in a mutual fund are not based on information asymmetry but on pure liquidity shocks which can be accommodated by the fund at no or little cost.

Therefore, one can defend that part of the liquidity services provided by mutual funds do not come from cross-subsidization between different categories of investors but is indeed explained by a sort of free lunch : thanks to the mutual fund industry, many final investors efficiently trade some bundles of assets instead of individual securities. Tirole (2006) made a similar point with respect to other bundles of assets: *“This flight to low-information-intensity securities takes multiple forms, and debt is only one of these. Another way of limiting costly trade with speculators is to buy bundles of indices on the grounds that they are less exposed to asymmetric information ‘thanks to the law of large numbers’: stock index futures, closed-end mutual funds, real-estate investment trusts, etc..”* (page 460).

However, it is probably not without reasons that Tirole did not mention open-ended funds. The lunch here is not completely free and this provision of liquidity is not without risks. When the flows become unbalanced, single mid-quote pricing will trigger costs for the stable investors as the fund will have to buy or sell assets in the secondary market at prices non consistent with the NAV per share. In particular, when there are some significant outflows in a fund invested in assets not perfectly liquid, the fund manager has the choice between two unpalatable solutions. The first one is to keep the structure of the fund unchanged and sell the securities without taking into consideration whether they are liquid or not. Remaining investors will take an immediate hit as they will support the full difference between the selling price and the mid-quote price used to calculate the NAV. The second is to sell only the liquid securities to minimize the dealing costs. However, the structure of the fund can become unbalanced and remaining investors may be encouraged to leave since it will become more and more difficult for the fund manager to sell the remaining illiquid assets.

As a result, open-ended funds which provide liquidity in normal times may be exposed to runs when securities markets become less liquid. As soon as there is a risk of significant outflows, there is an incentive to leave the fund first to avoid subsidizing those who sell their shares. Obviously, this risk of

run is very much aggravated if there is a bias in the valuation process and if the NAV per share is not estimated at mid-quote prices, but at higher prices to avoid showing losses<sup>5</sup>.

In order to avoid this risk, open-ended collective investment vehicles may choose to reduce the liquidity they provide:

- Those who sell shares may have to give notice some significant time before the chosen redemption date. Moreover, so-called “gates” can limit the amount of withdrawals from the fund during a given redemption period. Notice and gates, which in some way destroy some liquidity, are widely used by hedge funds.
- The valuation process may try to suppress any subsidy in favor of those who sell their shares. As discussed before, this can be done through the use of dual prices. But, in normal times when outflows and inflows are broadly balanced, this liquidity reduction may be considered as unnecessary from a welfare point of view. A popular alternative to dual pricing is full or partial “swing pricing” which keeps in normal time a single price calculated using the mid-market value of the fund's investments, but allows the manager to swing the price up (or down) to protect the investors from the costs of buying (or selling) investments as others join (or leave) the fund. These alternative valuation techniques seem to become more popular following the 2007-2009 financial crisis. The reason seems to be less the systemic fears than the desire to protect the shareholders from the costs of inflows and outflows. Swing pricing should improve the funds' performance over time. We will come back to this issue in section 4 when we discuss some policy implications.

*“Transformation” by financial institutions....with the help (or not) of the Lender of Last Resort*

Secondary markets are obviously a key source of liquidity for investors, but financial institutions other than mutual funds also play a key role through two channels on top of their market-making activities.

---

<sup>5</sup> Indeed, this was the main reason why US Money Market Funds suffered a run after Lehman's failure. US Money market funds seek a stable NAV (generally \$1.00). If a fund's NAV drops below \$1.00, it is said that the fund "broke the buck". Fund managers try to avoid at all cost to break the buck to preserve their reputation. But there is a strong incentive to run if the true market-to-market NAV per share is significantly below \$1.0.

### **3/ Information as a public good and bounded rationality**

---

<sup>21</sup> Current open market operations by the ECB do not respect these conditions and can be considered in part as LRR operations.

<sup>22</sup> This easy way of free-riding may make impossible to have a fully informationally efficient market, since they may be no incentive to be an active investor and produce costly buy-side research. See Grossman and Stiglitz (1980).

### *Regulation of the provision of liquidity by mutual funds*

The same line of reasoning can be applied to the contractual relationships between collective investment vehicles and their investor base. We discussed in section 2 the way mutual funds are producing liquidity services depending on their redemption and valuation policies. We make it clear that there is a sort of trade-off between the benefits of immediate liquidity (daily redemption, NAV per share based on mid-quote prices) and the risk of runs if the liquidity in secondary markets dries up. A run is very costly for everyone, except for the very few who are lucky enough to escape at the very beginning, since a fire sale of the assets held by the fund would penalize everyone.

Why not let investors choose freely the kind of funds that best suits their needs and let them make their own choice between immediate liquidity and future fire sales risks<sup>26</sup>? However, most investors have neither the information nor the understanding of how financial markets work to make this choice. Moreover, even if the risk of runs is high, it is not sure that the smartest investors will choose to invest in funds who manage well their liquidity and don't make implicit promise they will not be able to keep. The smartest investors who understand the nature of the tradeoff will probably anticipate that they may be the first to leave the fund whenever a risk of illiquidity appears. In other words, they may benefit from the bounded rationality of other investors who may accept to subsidy for a while the liquidity provided by the fund. As a result, due to bounded rationality, "bad products" may well continue to dominate the market even if a significant proportion of the participants are fully rational. This bad product trap is very similar to the mechanism described by Gabaix and Laibson (2006)<sup>27</sup>. Yet, as we mentioned, there seems to be a spontaneous trend in many countries towards the implementation of various anti-dilution techniques that protect the funds against the costs of both outflows and inflows (see for example the survey commissioned by the Association of the Luxembourg Fund Industry, ALFI(2011)). In this case, "bad products" seem to suffer from the visible impact on performance of the dilution costs triggered by inflows and outflows. However, this optimistic view should be qualified as only the funds operating in asset classes which are never highly

---

<sup>25</sup> Investing in money market funds may be the first step towards more participation in financial markets (for better or for worse!). Another worry is that, paradoxically, banks deposits may destroy some of the liquidity so-much desired by investors. The return on bank deposits depends on their term and there are some significant contractual penalties if the depositors need their money sooner than expected. With mutual funds, you may have daily liquidity, but with an offsetting risk of losses (again no free lunch!).

<sup>26</sup> Or complete illiquidity if the fund manager chooses with the approval of the regulator to suspend the redemptions whenever outflows become hard to manage.

<sup>27</sup> Here the shrouded attribute of the mutual funds is their vulnerability to runs. Sophisticated investors avoid to be penalized by this shrouded attribute while enjoying the benefits of the liquidity provided by the funds in normal times.

liquid – small capitalizations, high yield credit – have a sort of discovery mechanism related to the risk of run (the visible impact of flows on the fund observed performance even in normal times). The bad product trap and the incentives to maximize artificially the liquidity provided by the fund concerns mostly the funds invested in asset classes supposed to be liquid – i.e. no visible dilution costs in normal times - and which would be threatened by a risk of run only in exceptional circumstances. We'll come back in the last section to the need for more regulation of the liquidity provided by mutual funds.

---

<sup>28</sup> It is important to note that from a welfare/pareto optimality point of view, the key point is not that Mr. X is much richer than others. Mr. X is talented and may have been rich as well as a doctor, a lawyer or an internet entrepreneur. And if the society believes that talents are too much rewarded, it may decide to increase the taxes on the riches. The problem is that Mr. X wastes many resources in this process. His trading talents, which are producing purely redistributive effects, are not used a few minutes per day, but probably full time. They are not available for another activity.

#### 4/ Policy implications<sup>31</sup>

---

<sup>30</sup> There is sometimes this temptation as far as credit research is concerned. It is often said that investors should have their own assessment of credit risk and not rely too much on the rating agencies. Certainly, investors should keep their ability to judge what is produced by rating agencies, but there is a strong public good dimension and it is very important that rating agencies produce a work of the highest quality for the “Coasian community” which pays for it.

<sup>31</sup> This section only addresses issues related to the regulation of “liquidity services”. It only looks for broad first principles and does not enter into complex issues of implementation. Moreover, it avoids all the regulatory questions related to the actual structure of secondary markets (OTC versus centralized trading mechanism).

<sup>32</sup> Han, Park and Pennachi (2014) study the complex outcome of this competition in a model in which banks are penalized by the tax system, but have a credit screening/monitoring advantage over other intermediaries (e.g. SPVs involved in securitization) and have access to low-cost short-term retail deposits.

<sup>33</sup> Obviously, other aspects of the working of financial markets may also have contributed to this unbalanced financing circuit. Let’s mention two of them. Firstly, the way traders and managers are paid may have

## The regulation of the mutual funds' liquidity risk

As discussed previously, open ended mutual funds could be subject to runs if their valuation policies and the redemption conditions give strong incentives to be the first to leave the boat in times of outflows. This risk should be carefully analyzed since collective investment vehicles will probably see their role increases in the provision of liquidity services, with banks constrained either by new regulations or better incentives<sup>56</sup>. One has to remember that the real beginning of the 2007-2009 financial crisis was the announcement on August 9, 2007 by the French bank BNP-Paribas that it would freeze withdrawals from three of its investment funds.

Indeed, a lot of attention has been given recently to the liquidity policy of money market funds, both in the US and in the Eurozone, since some of them played a significant role in the 2007-2009 financial crisis. Other categories of funds have escaped new regulations so far.

It seems that regulators find it difficult to forge a doctrine about the right amount of liquidity funds should be allowed to provide. This should not come as a surprise taking into account the conceptual difficulties to establish what exactly their economic function is. Indeed, it is possible to take a sort of D&D view and to argue that the provision of liquidity by stable investors to investors entering or exiting the funds constitutes a sort of welfare-enhancing pooling of risk<sup>57</sup>.

---

become extremely important too-big-to-fail institutions. Indeed, Coeuré (2014) called them “super systemically relevant” institutions and, as stated by Duffie (2012), “CCPs can themselves be sources of inappropriately high systemic risk in the absence of sound CCP risk management, capital, collateral, regulatory supervision, and backstop sources of liquidity form lenders of last resort such as central banks” (page 9). Some contingency planning is necessary. In this specific case, the idea of a “put” sold by the government which guarantees a quick and clean process of recapitalization would probably be a good idea.

<sup>55</sup> One should note that governments already support a lot of investment risk as mentioned in Appendix A. Through the tax system, their receipts depend a lot on the performance of investments. It may look as a free lunch since taxes based on capital income certainly fluctuate with the business cycle, but there is no doubt that over the long term the government earns a lot by taxing not only the risk-free rate, but also the volatile risk premium received by investors. In some respect, without having to bear the difficulties related to mark-to-market accounting, the government already helps unsophisticated households to benefit from the fact that in the very long term the equity excess return is positive with a very high probability.

<sup>56</sup> In this respect, one can wonder what would be the consequences of following Admati and Hellwig (2013) recommendations as far as the regulation of banks' leverage is concerned. In their book, they stress that, among many other benefits, more equity would improve how liquidity services are provided. They argue convincingly that more equity would lead to a diminution of the risks of traditional bank runs. Yet, requiring much more equity may accelerate the shifting of risks outside the banking sector for two reasons. Firstly, the tax bias makes equity financing rather costly. Admati and Hellwig (2013) are well aware of this distortion which penalizes banks and, indeed, they advise a tax reform. Secondly, equity may be expansive because of the dominance of risk-averse investors. They don't discuss the potential implications.

<sup>57</sup> This is maybe a way to reframe theoretically the ongoing discussion in the US between regulators who want money market funds NAV per share to fully reflect the variability of the underlying assets (variable NAV) and the industry which believes that the traditional model of extreme liquidity is welfare enhancing.

As a result of these conceptual ambiguities, except for the money market funds, regulations have not been very prescriptive. For example, we read in the March 2013 IOSCO « Principles of Liquidity Risk Management for CIS » that « *Good liquidity risk management is a key feature of the correct operation of a CIS. Its fundamental requirement is to ensure that the degree of liquidity that the open-ended CIS manages will allow it, in general, to meet redemption obligations and other liabilities* ». The mention “in general” leaves a lot of freedom to the national regulators and the funds industry.

We find the same kind of not very constraining principles in the new European regulation regarding alternative funds (the AIFMD directive). There is a strong insistence on the need to implement procedures to manage the liquidity risks, but they tend to be more general principles than actual rules fixing the redemption rules of various types of funds.

Taking into account the risks of runs and the “bounded rationality” of investors previously discussed, we tend to believe that a more prescriptive approach may be warranted. The key subject seems to be how the NAV per share should be set to avoid any incentive to run<sup>58</sup>. The traditional mid-quote pricing without any exit fee seems rather dangerous in times of market stress. We already presented the dual pricing system which appears as a possible alternative, but may reduce too much the liquidity provided by mutual funds. Swing pricing looked like a better option since it seemed to properly allocate the true trading costs induced by significant inflows and outflows. Yet, there are two drawbacks:

- Swing pricing leads to an increase in the apparent volatility of the NAV per share, since without changes in the market situation, the NAV will change depending on the direction of flows (whenever inflows or outflows are large enough to trigger swing charges). This volatility may be hard to understand by some investors.
- There is a kind of lottery going on, since when an investor buys shares, the price he pays depends on the direction of the flows. He will get a good price if he is lucky enough to buy when others are selling. And he will pay the full trading costs if he buys with others (in both cases if the flows are strong enough to trigger swing charges). In terms of risk sharing, it may make sense to have this uncertainty born by the community of investors, rather than by only the buyers.

Another option is to keep the traditional mid-quote pricing for the single NAV, while simply adding an asymmetric anti-dilution levy, i.e. a variable exit fee kept by the fund, which depends on the liquidity of the assets in which the fund is invested (taking also into account the redemption rules and the time left to the fund manager to sell assets). Broadly speaking, the community of investors would subsidize the new entrants each in turn. Investors who exit would pay the full price in a very transparent manner: maybe this is not completely fair while outflows and inflows are broadly balanced, but is probably the best way to protect the fund against the risk of run. In period of markets’ stress, this should stop the outflow and, if really needed, gives some time to the Investor of Last Resort to stabilize markets.

---

<sup>58</sup> Rigid redemptions constraints used by hedge funds (long notice, gates) obviously make sense for some quite illiquid investments, but they have two drawbacks. They destroy some liquidity from the investors’ point of view and they may trigger some kind of “soft runs”: if you believe that limits will be imposed to the redemptions in the future, you have an incentive to take rapidly your place in the queue.

Many systems are possible and it is probably not the regulators' responsibility to choose specifically one. However, it would make sense to make compulsory in all open-ended funds the existence of at least one embedded protection against the risk of runs. Currently, this is not the case: "Mutual funds generally would not be able to impose redemption fees to counter sudden heavy redemptions under existing regulations. In contrast, private funds are often structured to permit temporary suspensions of redemptions or the imposition of redemption fees or gates that limit redemptions in times of stress" according to the Office of Financial Research, OFR (2013). This question should be urgently addressed. Indeed, as recently stressed by the IMF, systemic risks have maybe shifted from the banking sector to collective investment funds: "A central concern is the market liquidity risk arising from the mismatch between the liquidity promised to mutual fund owners in good times and the cost of illiquidity when meeting redemptions in times of stress", IMF (2014).

## **Conclusion**