

## Dollar funding and French exports to the United States: lessons from the 2011 dollar crunch

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*This Rue de la Banque presents the findings of research carried out at the Banque de France. The views expressed in this post are those of the authors and do not necessarily reflect the position of the Banque de France. Any errors or omissions are the responsibility of the authors.*

*This Rue de la Banque analyses the effects of a lesser availability of dollar funding on the export performance of French companies on the US market. It shows that the sudden drying up of cross-border dollar funding of French banks in the summer of 2011, triggered by the euro area sovereign debt crisis, led to a relative decline in exports of goods to the United States for at least a year. The effect of this shock is equivalent to that of raising tariffs by two to five percentage points. This study highlights the importance of supply factors related to bank financing from the perspective of France's export competitiveness.*

**T**he cost of foreign currency financing of exporting firms is a major factor in their competitiveness on non-euro area markets. However, this cost is particularly sensitive to the financing conditions on the currency market.

In order to quantify the role of foreign currency financing costs on competitiveness, we analyse the effects of a drying-up of dollar funding in the second half of 2011 on the export performance of French firms on the US market.

We used several sources of microeconomic data on French firms, their exports and their bank-credit relationships between 2010 and 2012. The study (Berthou, Horny and Mésonnier, 2018), summarised in this *Rue de la Banque*, brings to light an economically significant effect of this “dollar funding crunch”. Depending on the chosen specifications, the estimated impact over a one year period on the exports of the affected companies appears equivalent to that of raising tariffs by two to five percentage points.

### Exports and foreign currency funding needs

Exporting firms sometimes have to agree to be paid in the currency of the importer. This is particularly the case for exports to the United States: according to Gopinath et al. (2010), 87% of French goods exported to this country are priced in US dollars.

When the US importer settles its purchases in its own currency, the French exporter is potentially exposed to a foreign exchange risk while its current expenses (purchases of raw materials or local services, wages, taxes) remain, to a large extent, denominated in euro. This currency risk is particularly large as payment periods are longer for export sales than for domestic sales.<sup>1</sup>

<sup>1</sup> A report by the Trade Credit Observatory (2013) shows that the days sales outstanding of exporting firms is ten days higher than that of non-exporting firms. More generally, Ahn (2015) documents the very frequent recourse in international trade to payment delays for purchased goods, a practice that considerably lengthens payment periods.

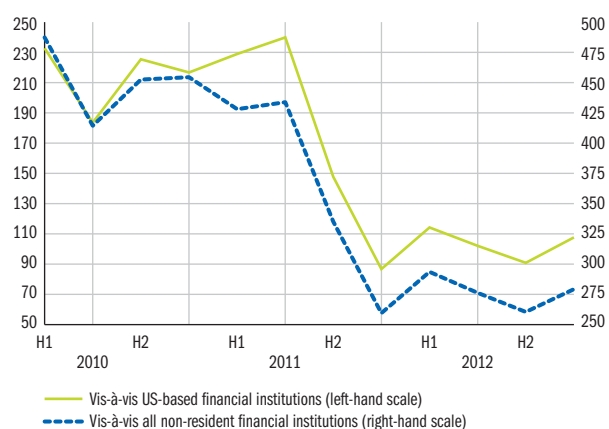
To hedge against currency risk, in this case the risk of a depreciation of the dollar against the euro over the payment horizon, the exporter usually turns to a bank. It either asks for a loan in dollars<sup>2</sup> or a hedging product (such as a US dollar futures contract at a fixed exchange rate or a foreign exchange option, which will be activated if the exchange rate falls below a certain threshold<sup>3</sup>). In any case, the bank's ability to finance itself in dollars at a reasonable cost is a determining factor in its dollar funding supply to the exporter.

## The summer 2011 dollar funding shock

The euro area sovereign debt crisis intensified during the summer of 2011, spreading from Greece to Spain then to Italy, whose sovereign bonds were heavily devalued. European banks were both holders of such securities and exposed to greater credit losses due to the recession in Europe. All of these factors could weaken their solvency. Concerned about the potential effects of the crisis, US financial institutions, in particular US money market funds, sharply cut back their dollar lending to European banks, including major French international banks. As shown in the chart below, the dollar-denominated cross-border outstanding debt of banks in France vis-à-vis financial institutions based in the United States collapsed in the second half of 2011, sliding from roughly EUR 250 billion to about EUR 100 billion. This contraction of dollar-denominated liabilities of French banks vis-à-vis the United States was not offset by loans from other geographical areas, such as the London financial centre.

### The 2011 dollar funding shock

(USD billions)



Source: Banque de France, authors' calculations

Note: Dollar-denominated cross-border liabilities of French banks vis-à-vis financial institutions (FIs) in the United States (left-hand scale) and vis-à-vis all non-resident FIs (right-hand scale).

At the same time, tensions on the EUR / USD foreign exchange market resulted in significant differences in the covered interest rate parity. As a result of the difficulties encountered by the arbitrageurs of the currency markets, the EUR / USD "base swap" increased sharply, reaching almost two percentage points in the autumn of 2011.<sup>4</sup>

In the face of this exceptional rise, French banks, already confronted with a reduction in the supply of international funds in dollars, had no incentive to finance themselves in "synthetic" dollars on the foreign exchange futures market, unless they were able to pass the extra cost onto their clients. At the same time, banks' dollar refinancing conditions with the Eurosystem remained relatively dissuasive, at least until early 2012.<sup>5</sup> Overall, the dollar funding conditions for French exporters targeting the US market tightened considerably in the second half of 2011. This tightening was linked neither to the characteristics of exporters, nor to those of their clients in the United States.<sup>6</sup>

- 2 Supplier credit with debt discounting, advance in foreign currency, etc. This export credit may be guaranteed by a public agency, such as Coface, or by an insurer.
- 3 Alternatively, the exporter may ask its bank to extend a dollar-denominated loan directly to the US importer ("buyer credit" transaction), which will then be able to pay its supplier without any delay. These buyer credits are widespread for large projects (rail, energy, aeronautics for example).
- 4 The FX swap basis represents the implicit premium paid for financing in "synthetic" dollars, via the foreign exchange market, as compared to direct dollar financing at the LIBOR rate of the same maturity. Synthetic financing combines a loan in euros and a foreign exchange swap (simultaneous purchase and sale of spot and forward dollars). The price of this swap increases notably when the risk-taking ability of arbitrageurs declines (because of an erosion of their capital for example).
- 5 The ECB's one-week and three-month dollar refinancing facility, backed by the May 2010 dollar liquidity swap line re-established with the US Federal Reserve, could have helped mitigate the effects of a rise in the FX basis swap by enabling European banks to borrow dollars directly from the ECB. This was not the case before the start of 2012 and probably for two reasons: the fear of a stigma by banks that borrowed via this facility from the lender of last resort on the one hand, the high price of this facility (OIS rate + 100bp) on the other. At end-November 2011, the swap line rate was lowered to OIS + 50bp. For more details, see ECB (2014) and Miu et al. (2012).
- 6 At the time, several institutional reports expressed concern about this "dollar crunch" and its consequences for French exports (see in particular the General Inspectorate of Finance, 2012). More generally, Ivashina et al. (2015) showed that European global banks, exposed to this financing stress, were compelled to cut back their dollar lending, in the United States and in Europe, but not their euro lending. This reduction was more pronounced for banks that were more dependent on US money market funds.

The originality of our work consists in exploiting this exogenous tightening of the dollar funding conditions for French exporters. Our objective is : (i) to identify a specific financial cost of international trade for a particular destination (the United States) and (ii) to quantify its impact on export flows.

## **Measuring exporters' exposure to the dollar funding shock**

There is a large amount of empirical literature on the link between finance and international trade. However, the question of the financial costs of international trade induced by the denomination of exports in foreign currencies has remained a blind spot of research. The reason for this is undoubtedly the empirical challenge of determining the effects on exporting firms of foreign exchange market stress, by looking at the difficulties faced by banks regarding their foreign currency financing.

We were able to conduct this analysis by merging rich data sets, collected from the Banque de France and the French Customs. We combined several pieces of information: (i) detailed data on the cross-border dollar liabilities of French banks, (ii) quasi-exhaustive data on individual credit relationships between these banks and French exporters, and finally (iii) detailed data on individual firms' exports to the United States, product by product.

This very rich microeconomic information enabled us to build an original measure of exporters' exposure to the 2011 dollar funding shock, via their banks. We proceeded in two stages. First, we measured the exposure of French banks to the dollar shock by calculating the ratio of their cross-border liabilities vis-à-vis financial institutions in the United States to their total assets. Banks' exposure to the dollar shock of July 2011 is measured using bank balance sheets of June 2011, i.e. before the shock. The underlying assumption is simple: the higher the ratio, the more dependent the bank was on such financing before the shock, and the more it is expected to be affected by the crisis.<sup>7</sup>

Second, we derived a measure of the individual exposure of each exporter to the dollar shock. This exposure is calculated as the average of the exposures of banks from which an exporter borrows, weighted by the outstanding loans received from these banks before the shock.<sup>8</sup>

A preliminary analysis conducted at the level of the bank-company relationship shows that our working assumption is valid. More specifically, we regress credit

growth between each bank and each exporter on the bank's dollar shock exposure.<sup>9</sup> We find that exposed banks cut back their credit supply to exporters active in the US market, but not to exporters active solely in euro area markets. This exercise confirms that the 2011 dollar shock was transmitted to exporters via their banks, and only when these exporters targeted a market whose main currency is the dollar.

## **Empirical model**

Based on our exogenous measure of companies' exposure to the 2011 dollar funding shock, we assess the effect of the additional financial cost of trading with the United States on the growth of exports to that country. To do this, we compare two periods: before the shock (July 2010 to June 2011) and after the shock (July 2011 to June 2012).<sup>10</sup> More specifically, we regress the period-over-period growth in exports to the United States of each good sold by each firm on its exposure to the dollar funding shock.<sup>11</sup>

Although our measure of financial cost, i.e. exposure to the dollar shock, is by construction reasonably exogenous, we need to control other factors that could potentially

<sup>7</sup> We only consider the French banks for which this liability item is positive in June 2011. Indeed, when this cross-border liability is zero, the bank may still routinely obtain dollar financing from another entity of the same group in France. This would then distort our measure of the shock exposure. After having been cleaned up, our sample of banks thus includes 22 banks affiliated to 6 groups (including the 5 main French banking groups). These 22 banks account for 99% of cross-border bank liabilities in dollars vis-à-vis the US financial sector and close to 60% of total credit to resident companies in June 2011.

<sup>8</sup> As a measure of the bank-company relationship, we use the average (drawn and undrawn) loan outstanding over 12 months (between July 2010 and June 2011) to smooth out the effects of seasonal variations.

<sup>9</sup> We control the bank's other major characteristics (capitalisation, size, etc.) and all the company's characteristics using company fixed effects. For this preliminary regression, we therefore only consider companies linked to several banks.

<sup>10</sup> Our empirical model is based on a theoretical model of oligopolistic competition between firms in each foreign market, a standard in international trade (see Amiti et al., 2016). This enables us to calculate a tariff equivalent, see below.

<sup>11</sup> We observe exports by product at a detailed level (HS4 in the nomenclature of the World Customs Organization – WCO). For example, in the “vehicles other than railway or tramway rolling stock” sector (chapter 87), the HS4-level distinguishes tractors, motor vehicles for the transport of less than ten persons, motor vehicles for the transport of ten or more persons, motorcycles and cycles fitted with a motor, bicycles and other cycles, etc.

simultaneously affect export performance and shock exposure in order to correctly identify the studied effect. We first measure the growth of exports of a good to the United States in relative terms (i.e. relative to the total growth of exports of this good by the firm worldwide). By doing so, we eliminate from the outset the effects of possible unobserved shocks at the firm-level (such as productivity shocks that would affect the firm's exports to all its destinations). We also ensure that the effect of potential demand shocks on the US market (shocks specific to each good exported) does not distort our measure.<sup>12</sup> Finally, we also use as control variables the firm's observable characteristics (size of exporters in terms of export sales or jobs, etc.) and its relationships with banks (number of banks, their average size).<sup>13</sup>

## Results

We find that the 2011 dollar funding shock did lead to a relative decline in exports of goods to the United States at the micro level. On average, a one standard deviation increase in shock exposure (2.5 points) is associated with a 3.6 percentage point decrease in the relative growth of exports to that country. This effect is also strongly non-linear: the third most exposed companies react on average nine times more than the third least exposed. Finally, the probability of continuing to export to the United States after the shock is lower when the company is more exposed ex ante to the dollar shock because of its banks. These results prove to be robust to several standard tests, which we present in detail in the full study.

Finally, we conduct a series of additional analyses to understand how the shock is transmitted to companies' exports. We show that it does not result from a negative impact on companies' imports. On the contrary, companies that naturally benefit from currency hedging because they both import from and export to the United States (with prices being set in dollars) are relatively immune to the shock.<sup>14</sup>

We also find that firms with greater market power are more affected by the dollar funding shock. This result is consistent with other studies conducted using microeconomic data. In particular, companies with more market power - generally the larger and more profitable one - are more likely to set their prices in local currency and therefore tend to hedge more against currency risk using financial instruments.<sup>15</sup> We can therefore expect them to be more penalised when these instruments are lacking.<sup>16</sup>

To conclude, based on the calibration of an international trade model using our estimates and trade elasticities

estimated in another study,<sup>17</sup> we show that the effect of the 2011 dollar funding shock on exporters is equivalent to that of an average increase in tariffs of between two and five percentage points.<sup>18</sup>

## Implications in terms of economic policies

The implications of this study in terms of economic policy recommendations are twofold. First, our study confirms and quantifies the direct negative impact on French exports of a shock limiting the ability of French banks to finance their clients in US dollars.<sup>19</sup> Our results back up the recommendations to extend export financing support programmes to dollar funding. More generally, our work contributes to highlighting the role played by the financial system in supporting French competitiveness.<sup>20</sup>

Second, our study contributes to assessing the effectiveness of foreign currency refinancing facilities with the ECB via swap agreements between central banks. Indeed, our results suggest that a faster adjustment in the price of this refinancing in the face of deteriorating hedging conditions against EUR/USD foreign exchange risk could have reduced the negative impact of the dollar funding shock on French exports to the United States in 2011-2012.

<sup>12</sup> To do this, we include product fixed effects among the regressors.

<sup>13</sup> This latter type of control is important because the largest exporters, which are more likely to purchase currency hedges, also tend to "connect" to the largest international banks. They themselves are among the most exposed to the dollar funding shock. In our study, we took particular care to demonstrate that our results were not just a reflection of this non-random ex ante pairing.

<sup>14</sup> Of course, a firm may pay in US dollars for imports (of raw materials, oil, etc.) from countries other than the United States. However, we do not have direct access to the currency denomination of imports, hence our choice to examine this particular case.

<sup>15</sup> See in particular the work of Lyonnet, Martin and Méjean (2016).

<sup>16</sup> We crossed our data with information from a pre-2011 survey of European firms on their currency risk hedging strategy (EFIGE). We noted that the decline in exports was more pronounced in the case of firms that report being regular users of currency risk hedging instruments. This observation confirms our interpretation.

<sup>17</sup> We assume that the elasticity of French exports to US tariffs is consistent with the usual values in the literature. See Berthou and Fontagné (2016).

<sup>18</sup> The estimate varies according to the exact specification of the model and the type of regression method used. We define as "exposed" the 50% of exporters in the sample with the highest ex ante exposure (above the median).

<sup>19</sup> See the aforementioned reports by the General Inspectorate of Finance and the Trade Credit Observatory.

<sup>20</sup> Price competitiveness in the framework of our theoretical model, but which can also be non-price competitiveness if we consider the facilitated extension of buyer credit to the importer as a "plus" of the exported good.

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