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## Do foreign demand shocks impact company sales in France?

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*This letter 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.*

*An interaction can be observed between a company's level of exports and its domestic sales. Estimates made using data on French companies show that a 10% increase (decrease) in exports is accompanied, in the same year, by a 1% to 3% increase (decrease) in domestic sales. This strong interaction between sales in different markets can result from short-term funding constraints that make companies more sensitive to changes in their international environment. During the crisis, the sharp contraction in demand recorded in some of the euro area markets could therefore have had a negative impact on the activity of French companies in the domestic market, in particular for the most vulnerable.*

The recent experience of the euro area crisis suggests that changes in foreign demand have a substantial impact on the activity of French firms in particular given the very high concentration of exports on European markets.<sup>1</sup> This macroeconomic transmission channel partly explains the stronger synchronisation of business cycles between countries, which are often geographically close and have intense trade relations (Frankel and Rose, 1998; Baxter and Kouparitsas, 2005).

At the microeconomic level, the variations in firms' exports, caused by foreign demand shocks, have an impact for example on firms' wage setting decisions (Hummels *et al.*, 2014. Carluccio *et al.*, 2015.). This is a direct transmission channel of changes in foreign demand on the national economy. In a recently published article,<sup>2</sup> we highlight that changes in foreign demand also affect the sales of French companies on their domestic market. Estimates obtained using firm data point to the existence of a relationship of complementarity between changes in firms' exports and changes in their domestic sales. In other words, company sales interact in their various markets due to the demand shocks that affect each one of them (and therefore irrespective of companies' long-term strategy in these markets).

This microeconomic transmission channel could amplify, under certain conditions, the transmission of foreign demand shocks on the domestic economy.

### **Relation at firm-level between exports and sales on the domestic market**

In most international trade models (for example Melitz, 2003), foreign demand shocks cannot be transmitted to the domestic market. This result stems from the (questionable) assumption of constant marginal cost. When the marginal cost changes with total production, the sales of firms in one market can affect the sales in other markets. For example, when the marginal cost rises with production (increase in the hourly wage or the unit cost of goods used in production) companies may be forced to reduce their sales in certain markets to meet

<sup>1</sup> The EU-28 accounted for over 60% of French exports in value terms in 2014.

<sup>2</sup> Nicolas Berman, Antoine Berthou and Jérôme Héricourt, "Export dynamics and sales at home", *Journal of International Economics*, 96(2), July 2015, pp. 298-310. See also the working paper of the Banque de France No. 408.

an increase in demand in other markets.<sup>3</sup> On the contrary, in the presence of liquidity constraints, an increase in sales in one market can help companies finance the development of their activities in other markets, including in the short run, by enabling them to pay their suppliers.

Our work on French firms' data, covering the period 1995-2001, confirms the existence of a relationship of complementarity between the variations in the exports and the variations in the sales in France of manufacturing companies. The data used describe both the company's balance sheet, including the sales for each market, and the exports of each company by product and destination, which gives an indication of the structure of its exports.<sup>4</sup> The latter, once it has been included in the detailed matrix of world trade by country pairs, products and years, can be used to construct a foreign demand that is specific to each company on its export markets.

Our empirical approach first consists in estimating an export equation, the main determinant of which is the foreign demand addressed to each company. We also introduce as determinants of exports, in alternative estimations, customs duties paid by importers on goods imported from France, as well as shocks related to financial instability (financial crises) or political unrest (civil wars). All these determinants affect the export performance of French companies, but have *a priori* no direct effect on their sales on the domestic market. Our empirical scenario then consists in linking the domestic sales of French companies to the changes in their exports, predicted by these different determinants, while taking into account the dynamics of domestic demand.

Our estimations show that the changes in exports and domestic sales of French companies are complementary: a 10% change in exports leads to a complementary variation in sales in France between 1% and 3%, the same year. This relationship of complementarity is observed both during episodes of growth and decline in exports and foreign demand.

## An illustration during the Asian crisis (1997-1998)

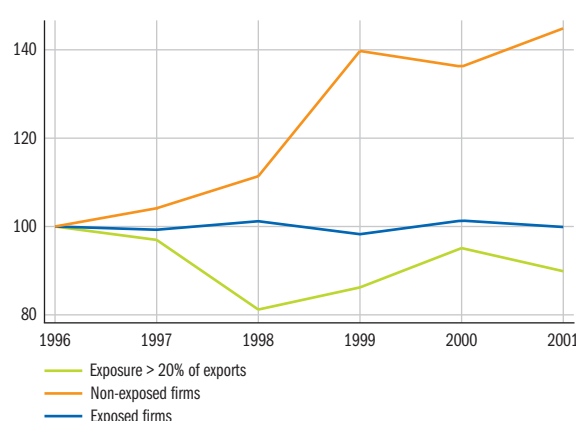
The episode of the Asian crisis in the 1990s was characterised by a sharp depreciation in the effective exchange rate of the most vulnerable countries (Thailand, Philippines, Indonesia, South Korea and Malaysia), which greatly reduced the competitiveness of French exports in these markets. We use this crisis episode to compare the variations in the sales in France of the most exposed

companies, through their exports, with those of the least exposed companies.

Our results show a fall in exports of the most exposed French companies, together with a decline in sales in France. This response of domestic sales is illustrated in Chart 1, on which French exporters are broken down into three categories: companies with no exposure to Asian markets before the crisis, i.e., which do not export to these countries; companies with a positive exposure; and companies with an exposure above 20% of their total exports. The chart clearly shows that the domestic sales of the companies that were the most exposed to the 1997-1998 Asian crisis posted slower growth than those of the companies that were not exposed *ex ante*. For highly exposed companies (more than 20% of total exports), the chart shows a very sharp decline in sales in France, during the two years of the crisis. These descriptive statistics are confirmed by the estimations made during this period: the

### C1 Domestic sales of French firms during the Asian crisis

(domestic sales: index= 100 in 1996)



Sources: French Customs and Insee.

Note: The measure of the exposure to the Asian crisis is calculated as the share of total exports of each company to countries in crisis (average in 1995 and 1996). Only companies present in the database throughout the period are used for the calculation.

- 3 In extreme cases, production is fixed every year, and the company allocates its production among its different markets. In the case of champagne or certain luxury products for example production changes little each year and increasing exports requires cutting sales in the domestic market.
- 4 The balance sheet data are taken from the Bénéfices Réels Normaux (BRN), provided by the DGFIP and Insee. Data on company exports are provided by the Customs Department. Lastly, the matrix of world trade is taken from the BACI database developed by the CEPII.

domestic sales of French companies that exported to Asia before the crisis, over the period 1997-2001, are 3.5% lower than the domestic sales of French companies that did not previously export to these destinations. These results confirm that there is a relationship of complementarity between companies' exports and domestic sales during a crisis on foreign markets.

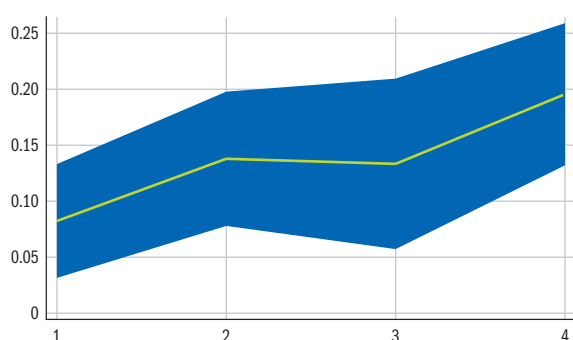
## Companies' liquidity constraints as transmission mechanism

We look at the role of the liquidity constraints that companies face in the short term to finance their activity. Indeed, production requires paying, upstream in the process, certain fixed costs and variable costs related for example to the purchase of materials and intermediate goods from suppliers. In the presence of financial constraints that limit companies' ability to obtain bank financing in the short term (liquidity constraints), the earnings derived from exports help to finance their activity in other markets. This need for financing depends both on the characteristics of the companies and the business sectors in which they operate.<sup>5</sup>

Our approach consists in testing the existence of a financing constraints channel by introducing, in our main econometric strategy, the liquidity constraint measures calculated at firm level, at the start of the period. The results show that the transmission of foreign demand shocks on the domestic sales of French companies is more pronounced for small firms (less than 100 employees) and firms for which we identify a higher short-term liquidity constraint (in particular, a higher working capital requirement, see Chart 2).

### C2 The role of working capital requirement

(x-axis: quartiles of working capital requirement ratio;  
y-axis: elasticity of domestic sales relative to exports)



Sources: French Customs, Insee and authors' calculations.

Note: Elasticities by quartiles of working capital requirement and short-term debt ratio, obtained by means of estimations at the level of French firms.

Other factors could contribute to this complementarity, in particular the existence of increasing returns to scale. The empirical validation of the significance of these alternative channels, however, requires further research. It is also possible that the capacity constraints experienced by certain firms give rise to a substitution relationship between exports and domestic sales. Our empirical work, however, shows that on average these capacity constraints do not determine the relationship between exports and domestic sales of French companies.

## Euro area crisis and macroeconomic transmission of demand shocks

In the context of the euro area crisis, our estimations predict that the decline in demand addressed to the most exposed French companies contributed to the slowdown in sales in France.

The macroeconomic implications of this result are nevertheless ambiguous. For the most exposed French firms on euro area markets, a decline in domestic sales, explained by lower exports, could for example be offset by an increase in the market share of the non-exposed companies (for example certain non-exporting companies or companies mainly exporting to other markets than the euro area). Furthermore, our estimations do not identify a complementarity between exports and domestic sales for large French enterprises. Yet these account for a very large share of production within each sector,<sup>6</sup> which implies that their short-term reaction to external shocks also determines macroeconomic dynamics (Gabaix, 2011).

Conversely, the greater cash flow difficulties encountered by companies during the crisis, caused notably by the decline in the profit margin of non-financial corporations,<sup>7</sup> may have strengthened the role played by the financial channel in transmitting shocks at the microeconomic level. Lastly, in the longer term, the weakness of foreign demand in certain euro area markets could reduce the growth of young exporting SMEs which mainly trade with neighbouring markets.

<sup>5</sup> The importance of financial frictions on firm dynamics has for example been modeled by Cooley and Quadrini (2001).

<sup>6</sup> See for example the study by Berthou and Sandoz (2014) on French corporate data in 2005.

<sup>7</sup> See Insee data: [http://www.insee.fr/fr/themes/tableau.asp?reg\\_id=0&id=180](http://www.insee.fr/fr/themes/tableau.asp?reg_id=0&id=180)

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