Worth the pain? Firms' exporting behaviour to countries under sanctions[1]

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How do exporting firms react to sanctions? We investigate this question for the extensive margin of trade — whether to serve a market — for four sanctions episodes using monthly data on the universe of French exporting firms. We draw on recent econometric advances in the estimation of dynamic fixed effects binary choice models. We find that the introduction of new sanctions in Iran and Russia significantly lowered firm-level probabilities of serving these sanctioned markets, while the (temporary) lifting of the U.S. sanctions on Cuba and the removal of sanctions against Myanmar had no or only small trade-inducing effects, respectively. Additionally, the impact of sanctions is very heterogeneous along firm dimensions and by case particularities.

Evidence on the firm-level reaction to the imposition of sanctions is scarce. Haidar (2017) shows that Iranian firms have in part been successfully avoiding the impact of sanctions by diverting their exports to non-sanctioning countries. Ahn and Ludema (2020) analyze the introduction of "smart sanctions" vis-à-vis Russia and the extent to which the Russian government intervened to shield specific firms from harm by these sanctions. Gullstrand (2020) and Crozet and Hinz (2020) estimate by how much Swedish and French firms, respectively, have lowered their exports to Russia in response to the sanctions. In fact, sanctions may lead to firms questioning their entire activity in these markets, i.e. to exit or not to enter to begin with. In a recent paper (Crozet, Hinz, Stammann, and Wanner, 2021), we analyze this so far entirely unexplored firm-level extensive margin: How much is the firm-level probability of serving a market lowered by the imposition of sanctions on these markets? Are firms that are active in the market before the imposition of sanctions differently affected? And are sanctions effects heterogeneous along sanction episodes and firm characteristics?

We explore these questions by relying on highly-detailed monthly customs data on the universe of French firms and making use of recent econometric advances in the estimation of binary choice models.

For the Iranian and Russian sanction episodes, we find that affected firms are on average 7.5 percentage points and 5.7 percentage points less likely to export to Iran and Russia, respectively, due to the sanctions imposed. Given these firms' average probability *levels* of serving the two markets of only 11.4% and 18.6%, these are strong effects! The drop in the probability also translates into a lower *number* of firms predicted to be active in Iran and

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Russia. This is illustrated in figures 1 and 2, which show the evolution of the observed (in red) and predicted (in green) number of firms exporting to Iran and Russia. Additionally, they plot the estimated counterfactual predictions if no sanctions had been imposed (in blue). The number of French exporters to Iran is estimated to have dropped by 39.2% and to Russia by 23.4%.

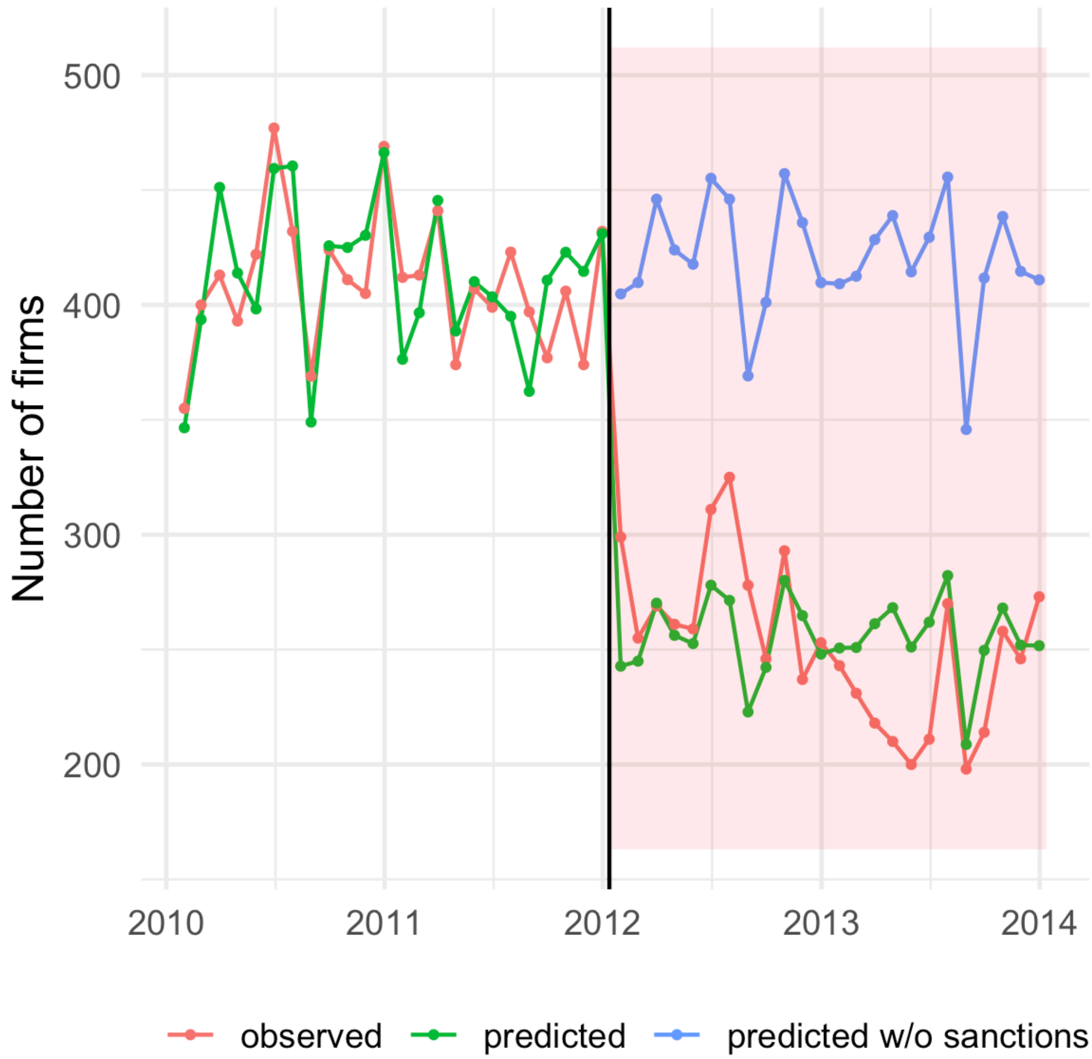

Figure 1: Number of firms exporting to Iran. Source: Crozet, Hinz, Stammann, and Wanner (2021)

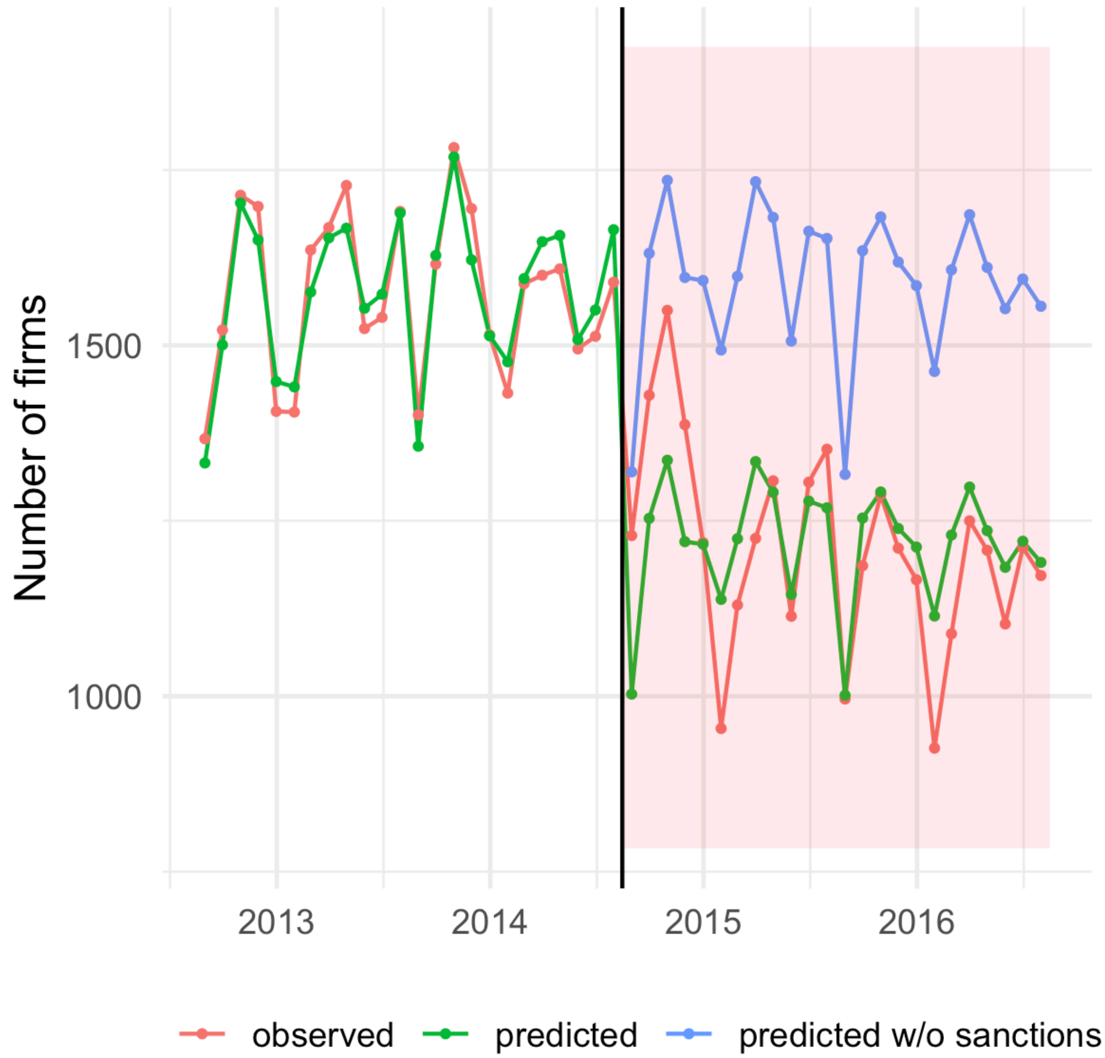

Figure 2: Number of firms exporting to Russia. Source: Crozet, Hinz, Stammann, and Wanner (2021)

We also consider whether the (temporary) lifting of the US embargo against Cuba in 2015 and the abolition of international sanctions against Myanmar in late 2012 made French exporting firms more likely to serve these markets, finding no effects for Cuba and only a very small recovery for Myanmar.

These average numbers, however, gloss over significant heterogeneities in the applied policies, as well as reaction by targeted countries. We therefore analyze how the effects vary along a number of different dimensions:

1) Previous experience: We find that firms with recent records of exporting to the sanctioned country tend to be more resilient, e.g. in the case of Iran the impact of the sanctions is 1.6 percentage points lower for experienced firms. This indicates that the sanctions resulted in increased entry costs in the targeted market.

2) Firm size and multi-product firms: Larger firms (and multi-product firms) were much more likely to leave or not to enter the Iranian market due to the imposition of the sanctions than smaller firms. Interestingly, in the case of the Russia sanctions there is no significant difference in the firms' behaviour.

3) Trade finance intensity: In both sanctions regimes, Russia and Iran, where significant financial sanctions were imposed, firms that export products that make greater use of trade finance instruments are much more affected. This mirrors results from the intensive margin of trade (Crozet and Hinz, 2020).

4) Product mix: Firms selling consumer products were much more severely affected than others in the case of the Russia sanctions — as at least some Russian consumers were staging a general boycott against Western consumer products. In the case of Iran, those firms exporting intermediate products were more affected, possibly linked to some French firms previously operating joint ventures in the country.

5) Specialized firms: Firms exporting to other "tough" markets, as indicated by the French foreign ministry issuing travel warnings, fare significantly better in the sanction-targeted countries. Those firms that reported sales to neighboring countries of the sanctioned economy previously, on the other hand, appear to leave (or not enter) much more frequently, which may be suggestive evidence for circumvention of the sanctions policies.

Sanctions are policy tools that should be used cautiously: They have strong effects on trade, on its intensive and, importantly, extensive margin, and it is generally hard to know who will be hit, how and for how long. We find various sources of heterogeneity in the impact of sanctions on firms' exporting behaviour, along the lines of idiosyncracies and particularities of the respective sanctions case. While certain sanctions measures are styled as surgical and precise, the results suggests that it is hard to have reliable regularities allowing to predict who will be hit the most. The design of the sanctions, pre-existing trade relationships, the counter party's policy response and the public's reaction matter a lot.

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