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# **Does input trade liberalization boost downstream firms' exports**

## **Theory and firm-level evidence**

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## Motivations

1. The agri-food sector is highly concerned by trade reforms in agricultural markets

*Between 1995 and 2007, tariff barriers for agricultural products at European borders decreased by 41% and French imports of agricultural commodities increased by 50%.*

2. Little attention has been devoted to the impact of *input* trade liberalization on the *final* good sector.

Trade theories predict that downstream industries would expand with a fall in tariffs in the intermediate inputs market.

*Lower input price, lower production costs and, in turn, higher export sales for all exporting firms and the emergence of new exporters.*

**BUT**, the real story is much more complex.

## WHY?

→ Firms differ greatly in *productivity*

→ Firms can manipulate its output prices (imperfect competition with *product differentiation*)

⇒ Depending on its productivity, each firm adjusts its output price differently in response to a change in input prices,

⇒ leading to reallocation of market shares across downstream firms.

As a result, *a priori* we do not know if lower input tariffs favor the entry or the exit of exporters or boost or reduce firms' exports.

We need some studies on the impact of input prices on downstream firms taking into account the heterogeneity of firms and competition on product market.

## Literature on the effects of input trade liberalization at the firm level

→ Due to lower *input tariffs*, domestic firms can import higher quality inputs, leading to higher productivity (Amiti and Konings, AER, 2007; Luong, 2009)

→ Lower *input tariffs* increases the number of products produced by domestic firms (Goldberg et al., QJE, 2010).

The impacts of lower input tariffs (agricultural products) on *export status* and *export sales* of the downstream (agrifood) firms?

## Our main results

When we take into account the heterogeneity of firms,

1. A decrease in tariffs on intermediate products favors the exit of small agri-food French firms from foreign markets.
2. Export sales of more productive exporting firms increases at the expense of less productive firms.

## Theory

Main assumptions: An industry where firms use the same intermediate good

Firms are mainly heterogeneous in labor productivity

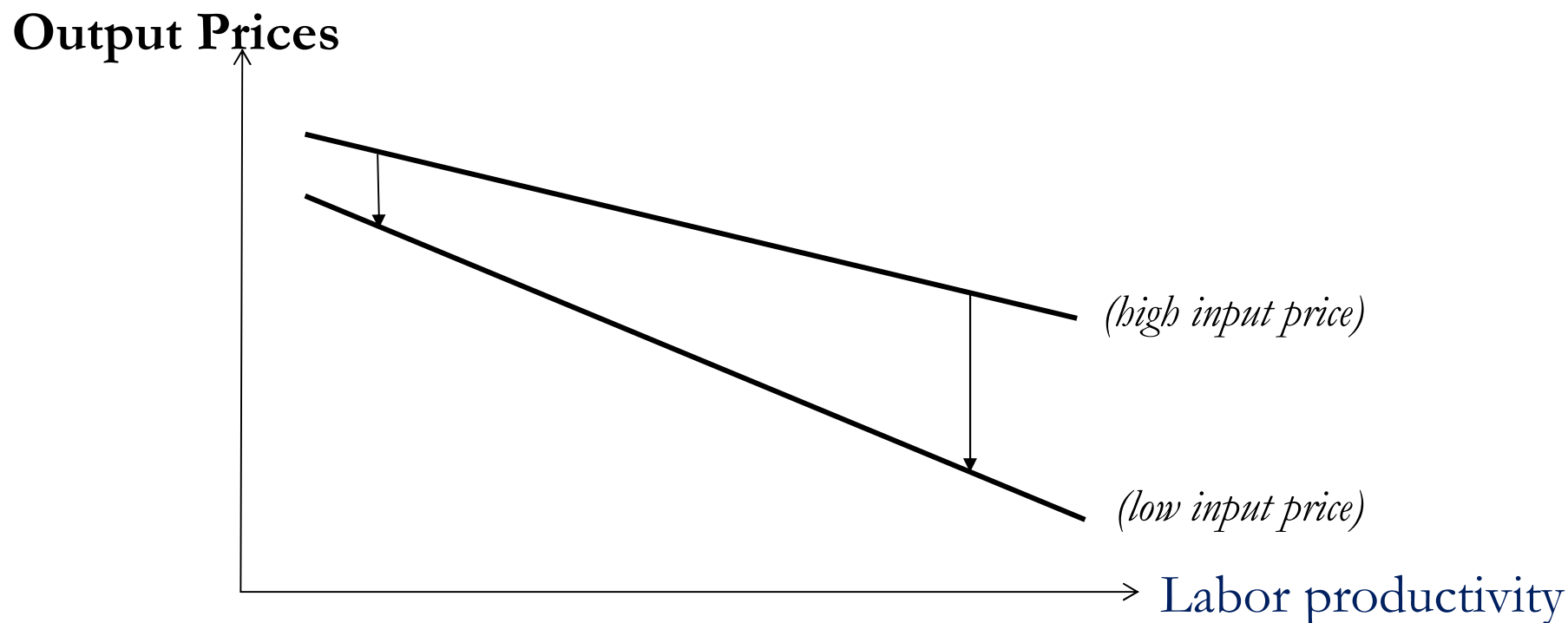
Imperfect competition (firms are not price taker)

Product differentiation (output prices differ across firms)

Fixed export costs. To serve foreign markets, firms have to pay fixed costs, associated with

- establishing distribution channels,
- learning bureaucratic procedures,
- and adapting their products for foreign markets.

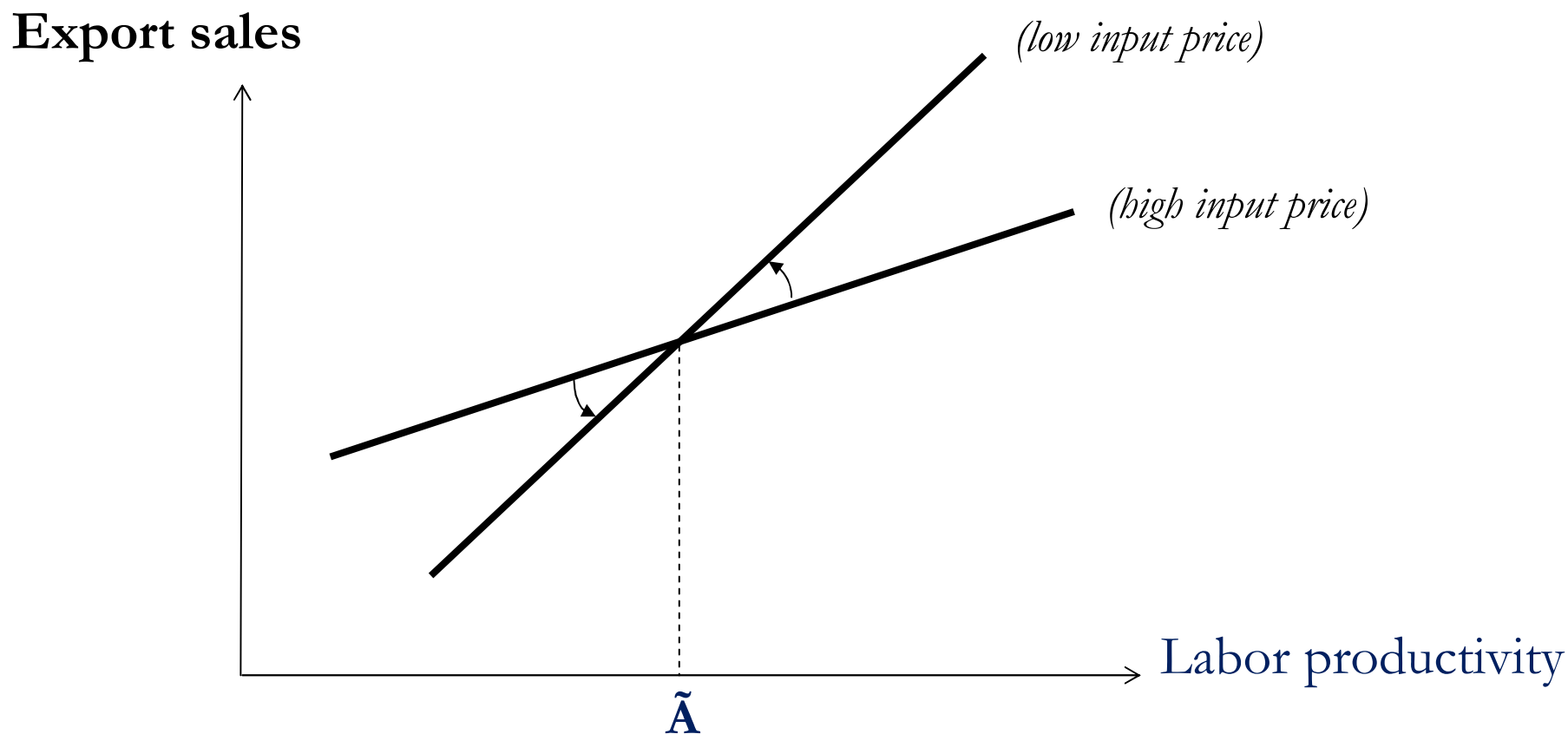
**Result 1:** For a same fall in input prices, the price of a firm reacts more than the price of a lower productivity firm.



**WHY?** Firms with high labor productivity use *relatively* more intermediate products (*key result*)



**Results 2:** For a same fall in input price, the export sales of more productive firms increase at the expense of less productive firms.

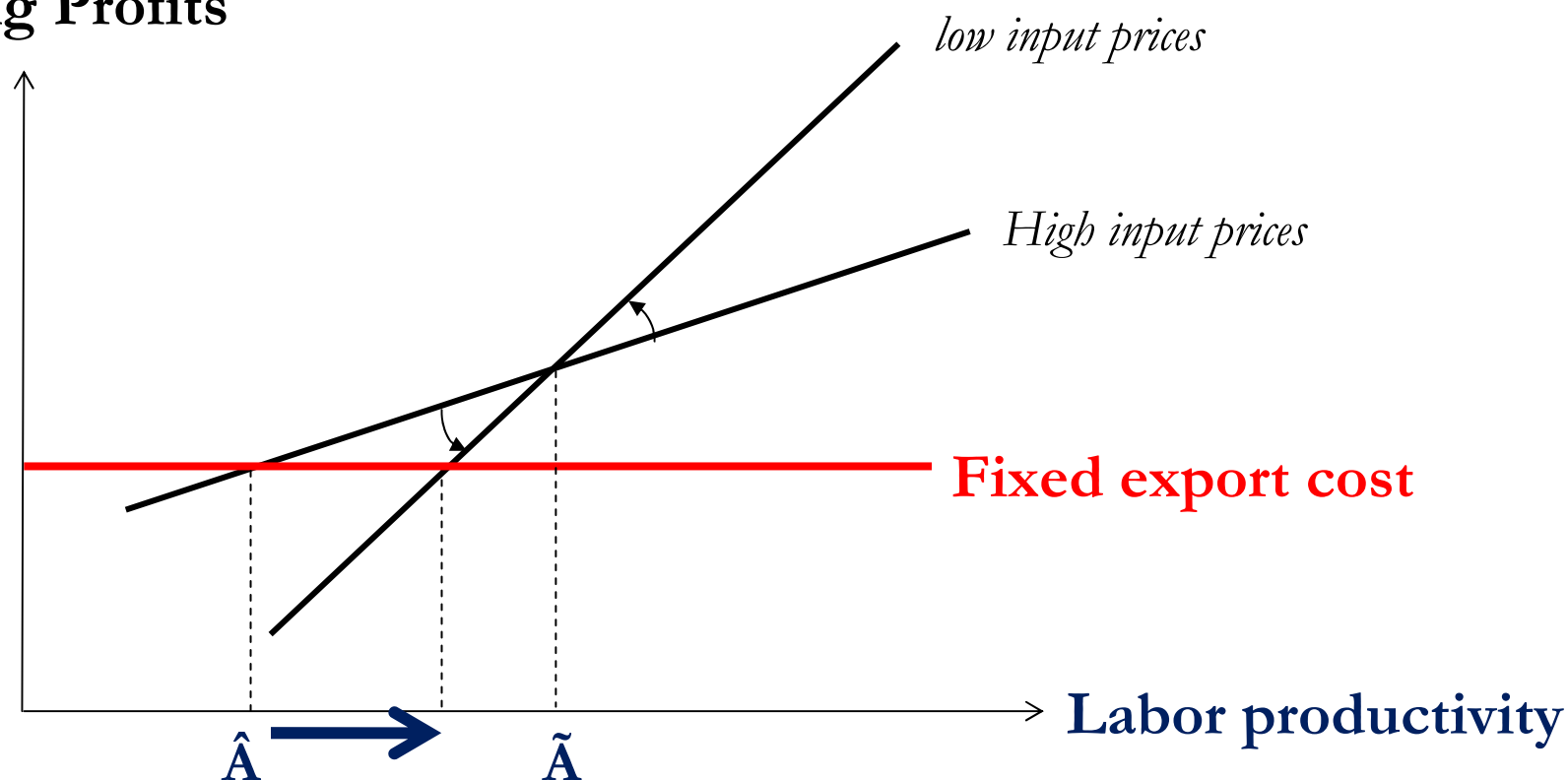


$\tilde{A}$ : the limit value of labor productivity above which export sales increase with lower input prices

**WHY?** Prices of high productivity firms fall much more than prices of low productivity firms ( $\Rightarrow$  reallocation of demand across firms)

**Result 3a:** For a same fall in input price, the share of exporting firms decreases when fixed export costs are relatively low.

## Operating Profits

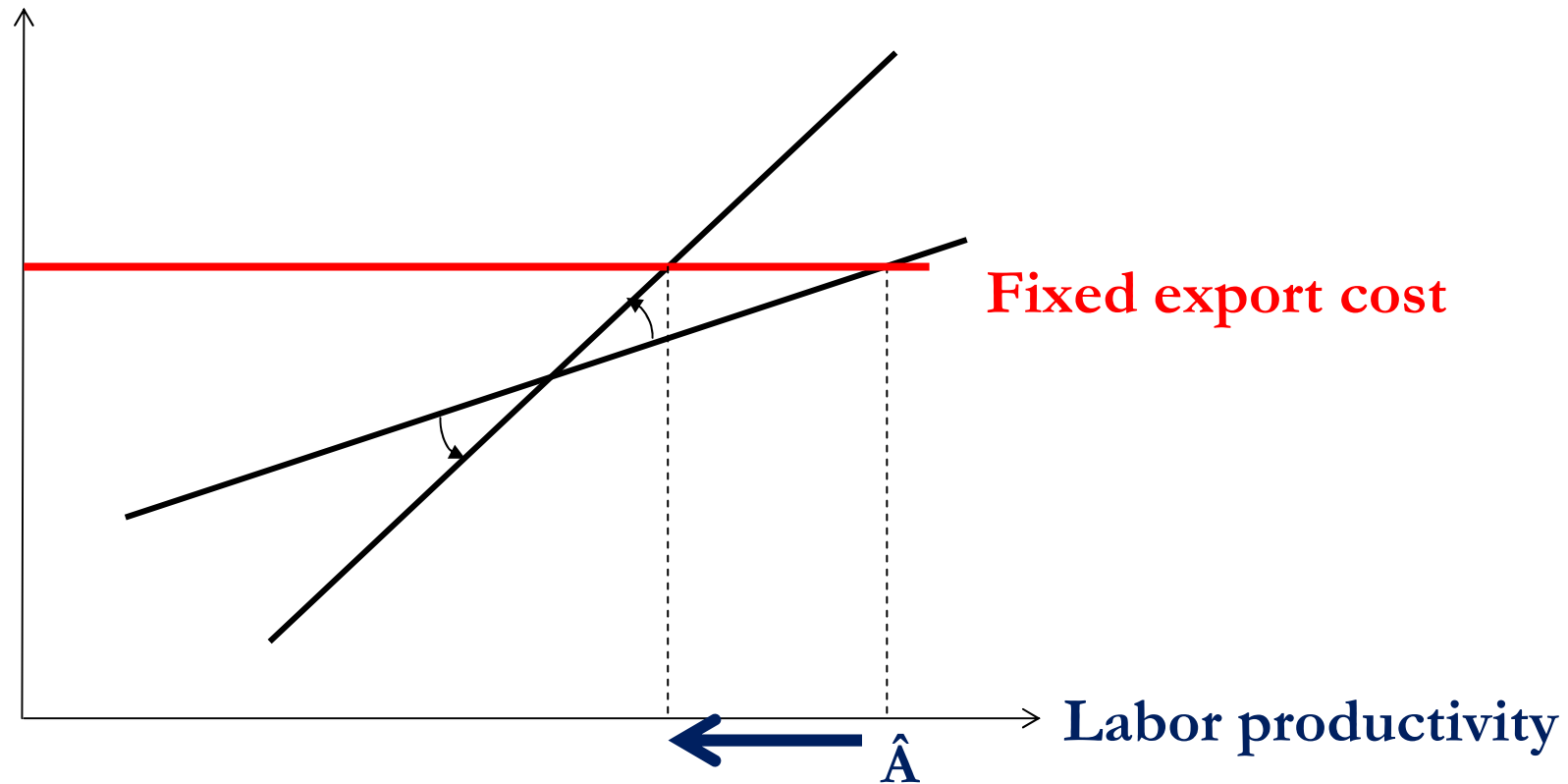


$\hat{A}$ : the limit value of labor productivity (above which firms can profitably export) increases

**WHY?** The operating profits of low productivity *exporting* firms decline

**Result 3b:** For a same fall in input price, the share of exporting firms increases when fixed export costs are relatively high.

## Operating Profits



All exporting firms gain from falling input price

## To sum up,

Our predictions are:

1. Declining input prices lead to reallocation of export sales from low productivity firms to high productivity firms
2. A fall in input tariffs *increases* the probability of exporting and export sales, provided that fixed export costs are *high*,

BUT, if fixed export costs are relatively *low*, a fall in input tariffs *decreases* the probability of exporting and increases export sales of more productive firms at the expense of less productive firms (their export sales decline).

## DATA

the annual survey of firms (EAE) provided by the French National Institute of Statistics.

All firms located in France with more than 20 employees (*3,716 agri-food firms*)

A wide range of variables **at the firm level** including *total sales*, *total export sales*, *added value*, *number of employees*, *capital*, *investment*, *expenditures for intermediate products*, the main activity of the firm at the 4-digit industry level (36 agrifood sectors).

We can calculate for each firm

- Share of export sales of each firm in total export sales within 4-digit industries

- Labor productivity (the ratio of added value to the number of workers).

- Total Factor Productivity (labor and capital) by using Olley and Pakes methodology

## Input Tariff (from 2001 to 2004)

From TARIC database (European Commission), we compute an ad-valorem equivalent tariff at the 8-digit level per country of origin (for each year).

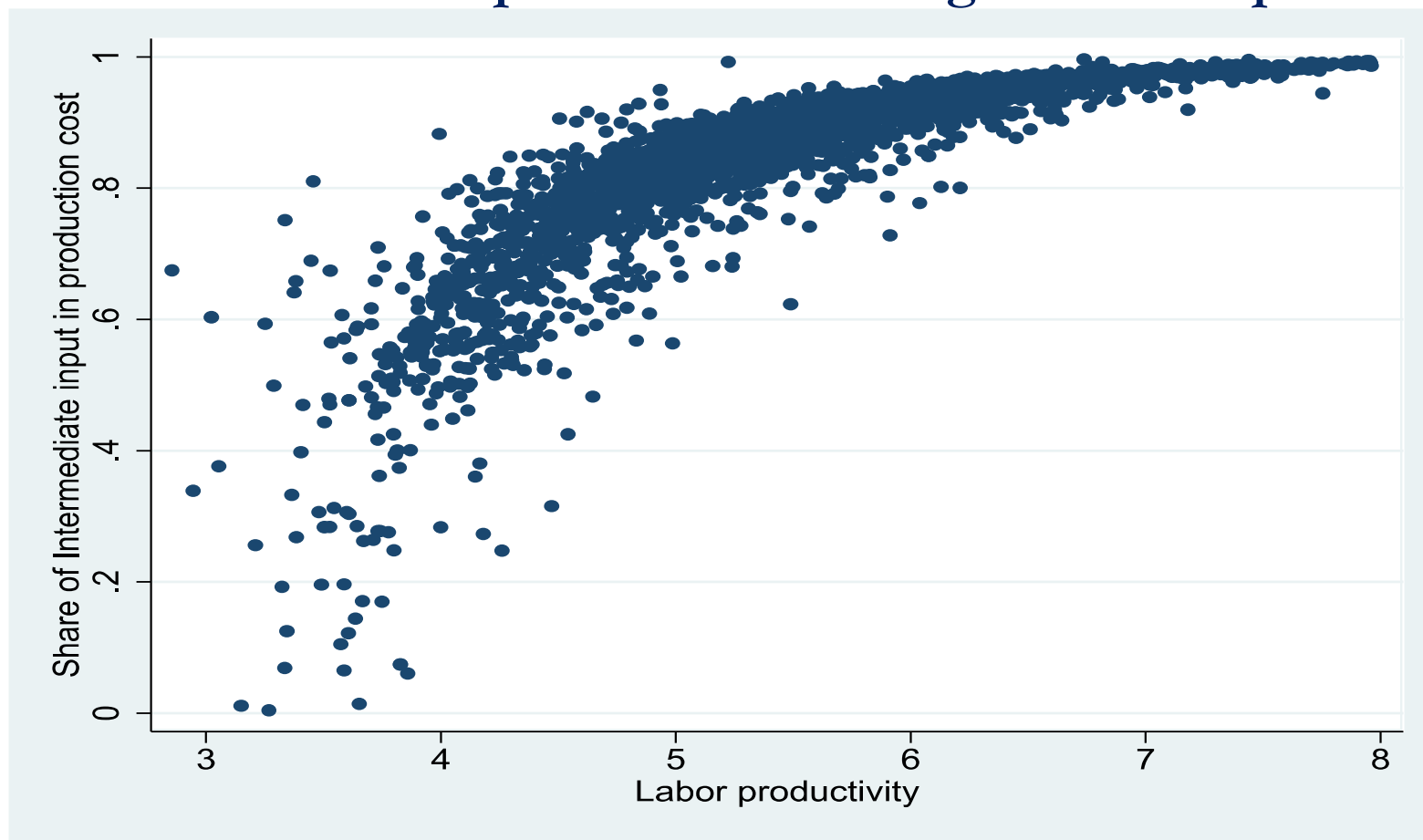
BUT, we don't know the structure of intermediate consumption for each firm.

HOWEVER, we can identify the different inputs used and their proportion for each 4-digit industry (36 agrifood sectors).

⇒ We compute for each firm the input tariff associated with each bundle of intermediate products processed by its 4-digit industry

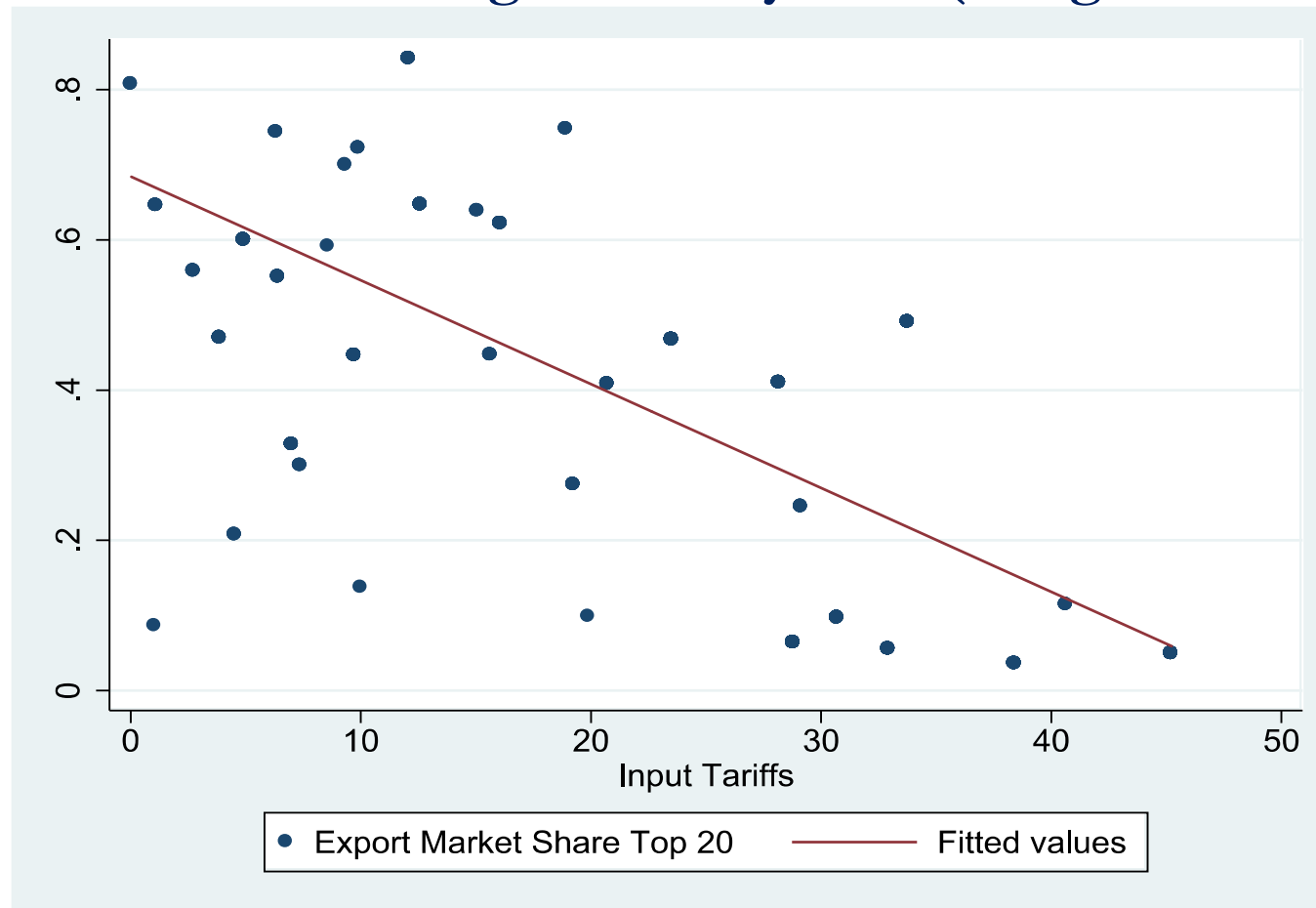
## SOME DESCRIPTIVE STATISTICS

Share of intermediate inputs in total cost against labor productivity



As expected,  
high productivity firms use *relatively* more intermediate products

## Export market share of the top 20 percent most productive exporters against input tariffs at the 4-digit industry level (36 agrifood sectors)



As expected, the market share of the top 20% firms increases with falling input tariffs (→ intra-industry reallocation of market share)



## RESULTS (Heckman procedure)

	Proba of exporting	ln <i>Export sales</i>
ln <i>Input Tariff</i>	0.493***	1.119***
ln <i>Labor productivity</i>	0.455***	1.429***
ln <i>Input Tariff</i> x ln <i>Labor productivity</i>	ns	-0.222***
<i>Import dummy</i>	0.411***	0.498***
Other variables <sup>(a)</sup>		

(a) Output tariff (at the European border), 3-digit industry fixed effect, Year fixed effect, Herfindhal Index (French market). Standard errors are corrected clustering at the 4-digit industry-Year level. 12,337 obs (share of exporting firms: 44%)

**In accordance with our framework,**

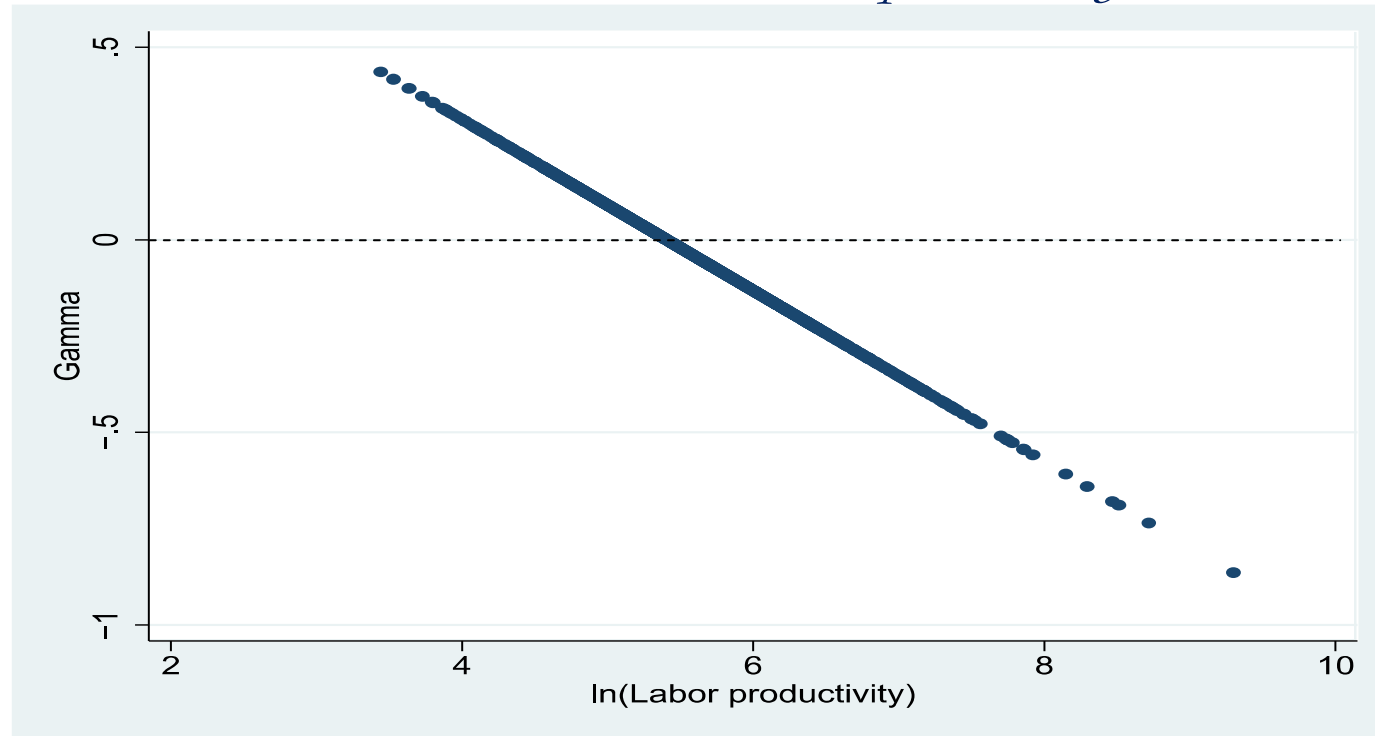
**Lower input tariffs reduces significantly the probability of exporting**

**The impact of input tariffs on export sales depends on labor productivity:**

$$1.119 - 0.222 \times \ln \textit{Labor productivity}$$

The marginal impact of a change in input Tariff on export sales:

$$1.119 - 0.222 \times \ln \text{Labor productivity}$$



An additional *fall* in Input Tariffs

would reduce export sales for 45% of agrifood firms

but increases total export sales (at the agrifood sector level)

## CONCLUSIONS

Even if lower input prices increase total export sales,

Liberalization of agricultural trade

- favors the exit of small agrifood firms from foreign markets
- increases the export sales of more productive firms at the expense of less productive firms.

Next step:

It would be interesting to explore the impact of *input price* on firm entry/exit and allocation of market share in the *domestic* market.