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**History matters for the export decision and the volume exported: firm-level
evidence from French agri-food firms.**

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History matters for the export decision and the volume exported: evidence from French agri-food firms.

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Introduction

Hysteresis in export behaviour has often been highlighted in international economics. Firms entering an international market a given year are more likely to be an exporter the year after. This fact is traditionally interpreted as a consequence of sunk export costs at entry to the international market.

Is persistence substantial on all destination markets from the French agri-food firms' point of view? Are there several types of markets regarding this persistence? What is the origin of the persistence: state variable dependence, or unobserved heterogeneity? Is the behaviour on each market independent of the behaviour on the other market or is there a link?

This paper proposes to take into account both the complete behaviour of exporters (export decision and volume traded) and the destination markets (through the identification of several groups). We work on a balanced panel of continuously operating firms in France in agri-food sector from 1997 to 2005. The econometric specification leads to a multivariate dynamic panel model of French agribusiness firms' exports to two aggregate markets (EU and Rest of the World) is specified.

Data

Data concerning individual French agri-food firms for the years 1996 to 2005 from two main sources:

-The French National Institute of Statistics (INSEE): annual data collected in a survey which is compulsory for all firms located in France with more than 20 employees or with total sales of over 5 million €; a wide range of variables including the main activity of the firm (NACE code), total sales, the number of employees, investment, location and some accounting data.

The balanced panel is initially composed of 1518 firms operating for the whole period.

-The register of French Customs, which identifies the destination of exports per product (at the 8-digit level of the combined nomenclature) by value and quantity for each exporting firm. Each firm is identified by its identification number (SIREN code).

Empirical facts and persistence

Table 1 shows the persistence in value exported according to the destination. We have split our sample of exporters in 4 categories according to their export value and show the transition rates according to the category of exporters they belong to.

Table 1: French agri-food firm transition rates according to the value of exports to the EU and Rest of the World markets- 1996-2005

Year t-1	Year t	EU market Period 1996-2005	ROW market Period 1996-2005
First quartile of exporters	No export	280 (13.5%)	271 (22.4%)
	First quartile of exporters	180 (8.0%)	80 (6.6%)
	Second quartile of exporters	230 (11.3%)	127 (10.3%)
	Third quartile of exporters	11 (0.5%)	12 (1.0%)
	Fourth quartile of exporters	1 (0.0%)	0 (0%)
Total	1808 (100%)	967 (100%)	
Second quartile of exporters	No export	78 (4.9%)	85 (8.6%)
	First quartile of exporters	175 (9.5%)	87 (8.9%)
	Second quartile of exporters	132 (7.9%)	101 (10.2%)
	Third quartile of exporters	236 (14.6%)	141 (14.2%)
	Fourth quartile of exporters	749 (47.5%)	410 (40.9%)
Total	1242 (100%)	599 (100%)	
Third quartile of exporters	No export	15 (0.7%)	21 (2.3%)
	First quartile of exporters	20 (1.1%)	6 (0.6%)
	Second quartile of exporters	10 (0.5%)	12 (1.3%)
	Third quartile of exporters	145 (8.1%)	133 (13.7%)
	Fourth quartile of exporters	133 (7.3%)	97 (10.4%)
Total	189 (100%)	169 (100%)	
Fourth quartile of exporters	No export	1 (0.0%)	1 (0.1%)
	First quartile of exporters	1 (0.0%)	1 (0.1%)
	Second quartile of exporters	4 (0.2%)	1 (0.1%)
	Third quartile of exporters	4 (0.2%)	7 (0.7%)
	Fourth quartile of exporters	105 (5.8%)	15 (1.5%)
Total	119 (100%)	19 (100%)	

* out of 3943 observations of firms reporting to the ROW, and 7145 observations of firms reporting to the EU.

=>The size of the export the current year appears as linked to the size of export the year before.

From theory to econometrics

Based on Roberts and Tybout (1997) or Campa (2004), we propose two extensions for these models:

- we allow for taking into account the final destination of the export (subscript j included in the model) of firm i . According to the export market, the role of previous experience will be revealed.

- the previous experience considered is not only the status of the firm regarding export to a specific market (I_{ijt}), but it also includes the value traded to this foreign market y_{ijt} , through $l(y_{ijt,t})$ catching the knowledge of the network the previous year in this country

The participating condition becomes :

$$\pi_{ijt}(y_{ijt}) + \theta \left[E \left[Y_{ijt+1}(\Omega_{ijt+1})' y_{ijt} = y_{ijt} \right] - E \left[Y_{ijt+1}(\Omega_{ijt+1})' y_{ijt} = 0 \right] \right] \geq F_{ijt} - (F_{ijt} + G_{ijt}) I_{ijt+1} + l(y_{ijt,t})^{\beta} I_{ijt}$$

With F_{ijt} fixed costs to become exporters, F_{ijt} fixed costs of entry and G_{ijt} fixed costs of exit specific to market j .

Econometric specification:

Y_{ijt} represent the observed exports of firm i ($i=1, 2, \dots, N$), to export market j ($j=1, 2, \dots, J$), in year t ($t=1, 2, \dots, T$). Hence we observe the following y_{ijt} :

$Y_{ijt} = 0$ if firm i does not export to country j in time t
 $Y_{ijt} = y_{ijt}$, the value of export of firm i toward country j in time t
 To fully account for the lagged observed value, we introduce function $g(\cdot)$, a vector function defined as follows:

$$g(y_{ijt,t}) = (1 \{ y_{ijt,t} \neq 0 \} ; 1 \{ y_{ijt,t} \neq 0 \} \log(y_{ijt,t}))$$

A multivariate dynamic panel model of French agribusiness firms' exports to two aggregate markets (EU and Rest of the World) is specified.

The model accounts for both zero level and positively skewed exports by adopting the Cragg (1971) logarithmic Tobit model. Unobserved firm-level heterogeneity is accounted for by introducing random effects which may be correlated across export markets.

The initial conditions problem is treated by assuming that a component of the unobserved firm effect is conditional on initial values and exogenous variables (Wooldridge, 2005).

Main results

• Role of initial conditions

=>the value exported in the initial year plays an important role. The dummy variable indicating export to a specific market is not significant.

• Role of firm specific variables:

Among firm characteristics variables, current employment and wages appear as the main determinants of export to both the EU and the ROW. Current investment or capital or cross product have no impact on current export, whatever the destination.

• The interdependence of export on both market:

The random effects are correlated (parameter for h12 is highly significant in table 4) showing an interrelation between exporting to the EU market and exporting to the ROW market

Main results (ctnd):

• The unobserved persistence:

The temporal correlation of the composite error term is not negligible. This confirms as in (as Roberts and Tybout, 1997) that the permanent unobserved firm effects are at play in the persistence we observe. Unobserved heterogeneity is substantially larger for exports outside EU.

• The previous export experience in both markets: key determinant of the current export (decision and volume).

From the estimation, a threshold below which the export is not persistent appears.

Table 2: Exit rate computed from our estimations

Thresholds (Dollars in 1996 euro)	Exit rate from estimates	
	Observations below the thresholds	Number of observations
EU	85.43	249 (2.22%)
ROW	80	108 (0.92%)

• Computations of predicted probabilities and value exported:

	Probabilities of Exporting Given Lagged Export status			
	1st Quartile of Exporters	2nd Quartile of Exporters	3rd Quartile of Exporters	4th Quartile of Exporters
EU	0.49	0.80	0.93	0.99
ROW	0.29	0.54	0.73	0.83

Table 3: Predicted proba. and value exported according to the destination

Is there a different impact of export experience on the current export behaviour according to the destination markets?

=> the impact of the lagged export behaviour appears as varying according to the type of exporters. For the first quartile of exporters, the average firm (i.e. all state variables at the mean of the first quartile sample), has a relatively lower probability to export to the ROW than to the EU.

=> persistence is stronger for the EU markets than for other markets.

=> the persistence of the size of the export is confirmed.

Conclusions:

=>important state dependence in exports
 We confirm the existence of both observed (through firm characteristics and previous export history of the firms) and unobserved components (through random effect and temporal correlation of composite error term) in the export persistence.

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