“Carry-Along Trade”

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Exports, Production, and Productivity

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  - About 3/4 of exported products and 30% of export value are in goods that are NOT produced by the firms exporting them – **carry-along trade (CAT)**.
- CAT is positively correlated with **productivity**.

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$\Rightarrow$ work out a model that rationalizes these facts. Desired predictions:

1. More productive firms sell more products and have higher sales volumes;
2. More productive firms sell more CAT products and have higher CAT sales volumes;
3. The total number of varieties sold by a firm rises faster with firm productivity than the non-CAT ("regular") number of varieties.

This Discussion

- BBVV provide a very **general**, parsimonious model generating both regular and CAT exports:
  - the baseline version of the model is unable to generate (1)-(3).
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- This discussion works out a particular case of the model (monopolistic competition and CES preferences), to show that:
  - the BBVV framework is NOT robust to CES preferences (but it can easily be adapted to it);
  - the solution of the model identifies the key parameters generating predictions (1)-(3).

A Special Case: CES Preferences

Two key equations in BBVV:

$$c(j,i) = \hat{c} \tag{1}$$

solved for i, determines the "regular" scope of firm j, and

$$\tilde{\pi}^{CAT}(j,i) = [p_{ji}(q_{ji}) - \hat{c} - \delta(i)]q_{ji} = 0 \tag{2}$$

solved for i determines the total scope of firm j.

With monopolistic competition, constant marginal cost, and CES preferences:

$$p_{ji}(q_{ji}) > \hat{c} + \delta(i), \quad \forall\ (j,i)$$

so one cannot solve for the total scope of firm j.

Easy fix: assume that the **distribution cost** $\delta(i)$ is a **fixed cost** (makes sense?).

A Special Case: CES Preferences (Parameterized)

Make some functional assumptions:

- Regular production cost: $c(j,i) = je^{\lambda i}$, for $\lambda > 0$;
- Distribution cost: $\delta(i) = e^{\mu i}$, for $\mu > 0$;
- CES preferences with elasticity $\eta > 1$.

From equation (1), the "regular" scope of firm j ($j < \hat{c}$) is:

$$\hat{k}(j) \equiv i = \frac{1}{\lambda} \log\left(\frac{\hat{c}}{j}\right)$$

$\Rightarrow$ more productive firms ("low" j) produce more goods. ✓

From equation (2), the total scope of firm j is:

$$k(j) \equiv i = \frac{1}{\mu} \log(A\hat{c}^{1-\eta})$$

(where A is an "aggregate demand" term).[1]

$\Rightarrow$ total firm scope is independent of firm productivity!!!

[1] $A \equiv \left(\frac{\eta}{\eta-1}\right)^{-\eta} \frac{1}{\eta-1} P^{\eta} Q.$

CES Preferences with Heterogeneous Sourcing Costs

Need π_{ji}^{CAT} to depend on j!
Add firm-dependent sourcing costs: $\hat{c}(j) = j^{\alpha}\hat{c}$, for $\alpha \in (0,1)$.

- The "regular" scope of firm j ($j^{1-\alpha} < \hat{c}$) is:

$$\hat{k}(j) \equiv i = \frac{1}{\lambda}\log\left(\frac{\hat{c}}{j^{1-\alpha}}\right)$$

$\Rightarrow$ more productive firms ("low" j) produce more goods. ✓

- The total scope of firm j is:

$$k(j) \equiv i = \frac{1}{\mu}\log[A(j^{\alpha}\hat{c})^{1-\eta}]$$

$\Rightarrow$ more productive firms ("low" j) sell overall more goods. ✓

- The CAT scope of firm j is (for $\lambda = \mu$):

$$k(j) - \hat{k}(j) = \frac{1}{\mu}\log(A\hat{c}^{-\eta}j^{1-\alpha\eta})$$

$\Rightarrow$ more productive firms ("low" j) do more CAT exports iff $\alpha\eta > 1$.

CES Preferences with Heterogeneous Distribution Costs

Alternatively, add firm-dependent distribution costs: $\delta(j,i) = j^{\beta} e^{\mu i}$, for $\beta > 0$.

- The "regular" scope of firm j ($j < \hat{c}$) is like in the baseline model:

$$\hat{k}(j) \equiv i = \frac{1}{\lambda} \log\left(\frac{\hat{c}}{j}\right)$$

  $\Rightarrow$ more productive firms ("low" j) produce more goods. ✓

- The total scope of firm j is:

$$k(j) \equiv i = \frac{1}{\mu} \log\left(\frac{A\hat{c}^{1-\eta}}{j^{\beta}}\right)$$

  (isomorphic to the previous case).
  $\Rightarrow$ more productive firms ("low" j) sell overall more goods. ✓

- The CAT scope of firm j is (for $\lambda = \mu$):

$$k(j) - \hat{k}(j) = \frac{1}{\mu} \log(A\hat{c}^{-\eta} j^{1-\beta})$$

  $\Rightarrow$ more productive firms ("low" j) do more CAT exports iff $\beta > 1$.

Thoughts: Sourcing Costs *versus* Distribution Costs

Do we know anything about how sourcing costs and distribution costs vary across firms?

About Distribution Costs

- Is there information in the data about retail/distribution expenditures? (direct calibration of β)
- One could calibrate $\hat{c}$, $\lambda = \mu$, β to match: 1) the share of firms doing pure CAT, 2) the (average or total) % of CAT products sold, and 3) average CAT export sales as a share of total exports. Is the implied $\beta > 1$?

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About Sourcing Costs

- In principle, same as above, but... who do these firms source CAT products from? Sourcing costs depend on the **prices charged by the suppliers** of those products.
- Missing market here: depending on how one models suppliers' behavior, endogenous sourcing costs may go in favor/against the result sought.
- I did this in Garetto (2012?) and the result goes against: higher productivity $\Rightarrow$ lower volumes of sourced products.

Conclusions

In this paper:

- New data improves our understanding of the operations of large, multi-product firms: not all goods exported are produced by their exporters.
- New model attempts to rationalize the patterns of carry-along trade across firms.

Still to be worked out:

- Clarify the generality of the model: are there other cases (like the CES) that require special assumptions?
- Can we run a horserace among the possible explanations? (maybe putting the parameterized model fully at work?)

"Regular" and Total Scope - Figures