

# Competitive Effects of Trade: Theory and Measurement

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## Starting Point: Selection and Competition Effects of Trade

- In models with producer heterogeneity, trade induces many different reallocations across firms and products:
  - Selection effects (extensive margin):
    - Which products are sold where (domestic and export markets)
    - Which firms survive; which firms export (and where)
  - But also competition effects (intensive margin):
    - Conditional on selection (same products sold in a given market) – trade affects the relative market shares of those products  
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  - Trade elasticities
  - Productivity
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# Outline

- Micro-level evidence on intensive margin re-allocations
- Theory: Connections with endogenous price elasticities, markups, and pricing-to-market
  - Flexible framework to jointly capture selection and competition effects from trade
- Evidence for productivity and innovation
- Consequences for welfare gains from trade

# Direct Evidence: Prices, Markups, and Pass-Through

## Firms

- Larger, better performing firms set higher markups
- Incomplete pass-through of cost shocks to prices
  - 'More' incomplete for larger, better performing firms (Berman et al, 2012)

## Products within Firms

- Similar pattern for multi-product firms:
  - India (DLGKP, 2016)
  - Brazil (Chatterjee et al, AEJ EP 2013)
  - China (Li et al, JIE 2015)

Also consistent with direct evidence on endogenous trade elasticities:

- Novy (JIE, 2013) and ACDR (NBER 2015)
- Helpman et al (QJE, 2008) and Bas et al (JIE, 2017)

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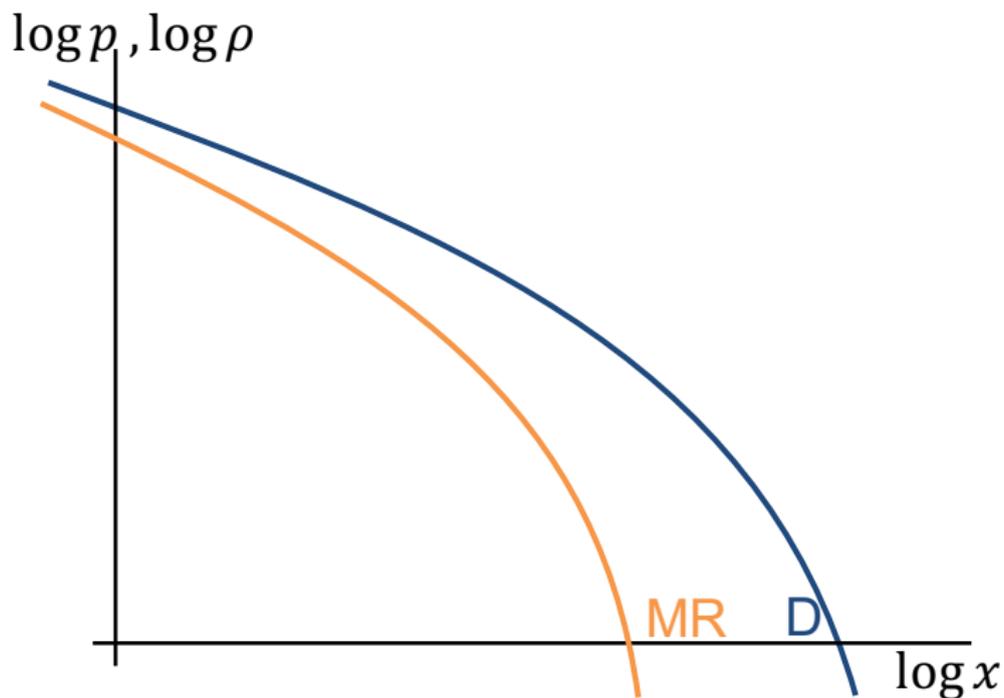
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# Implications for Shape of Residual Demand under Monopolistic Competition



## Measuring Reallocations Within Multi-Product Firms

## Why Within Multi-Product Firms?

- It is very hard to measure the reallocation effects across firms at the country/industry level:
  - Shocks that affect trade (institutions, technology, ...) are also likely to affect the distribution of market shares across firms
- Recent theoretical models of multi-product firms highlight how trade induces a similar pattern of reallocations **within** firms as it does **across** firms
  - Also fewer impediments to resource reallocation **within** firms
- When measuring reallocations within multi-product firms, can:
  - Isolate trade shocks that are exogenous to individual firms – controlling for country/industry effects
  - Control for firm-level technology changes
  - Look at same set of (narrowly defined products) sold by same firm across destinations or time
- Aside: Multi-product firms dominate world trade

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# Similar Reallocations Across Firms and Within Multi-Product Firms

## Firms

- Stable performance ranking for firms based on performance in any given market (including domestic market) or worldwide sales
- Better performing firms export to more destinations
- Worse performing firms are most likely to exit (overall, or from any given export market)

## Products within Firms

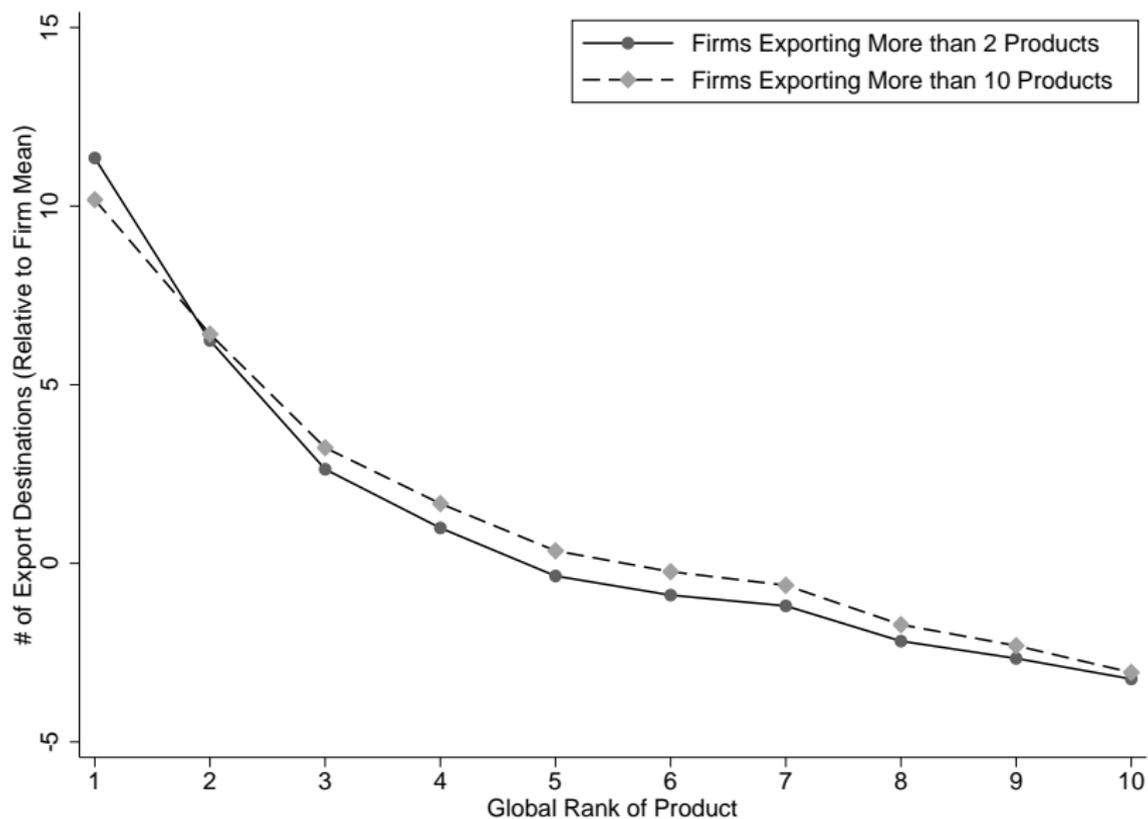
- Stable performance ranking across destinations (and for worldwide sales)
- Better performing products are sold in more destinations
- Worse performing products are most likely to be dropped from any given market

## Multi-Product Firms: Stable Performance Ranking

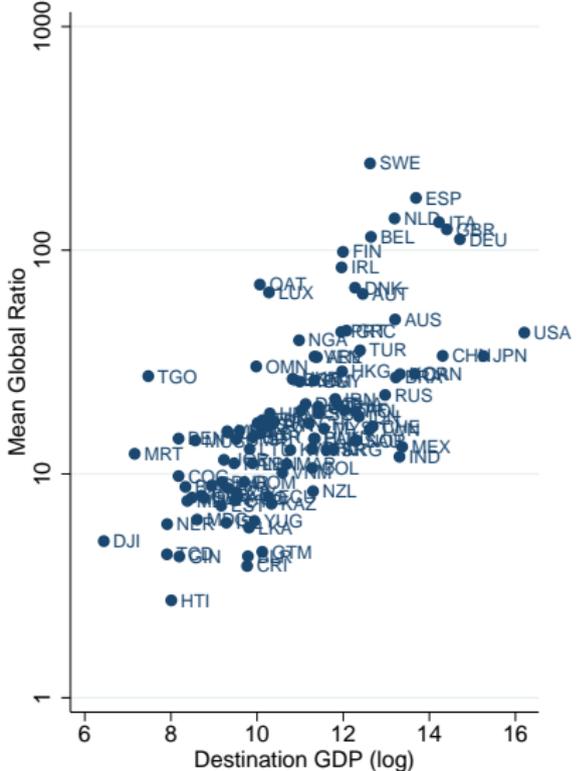
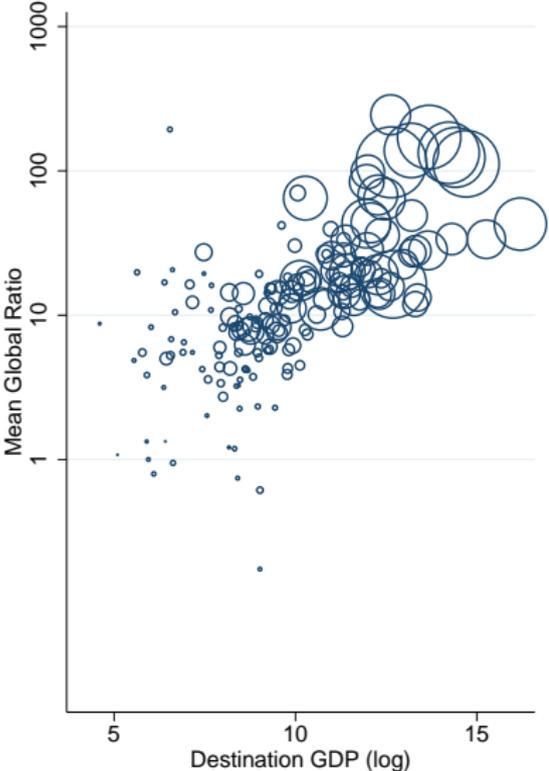
- Spearman rank correlation between global and local product rank across destinations
  - Global rank: based on worldwide export sales
  - Local rank: based on local export sales in destination

Firms exporting		# products				
at least:						
to # countries	1	2	5	10	50	
1	67.93%	67.78%	67.27%	66.26%	59.39%	
2	67.82%	67.74%	67.28%	66.28%	59.39%	
5	67.55%	67.51%	67.2%	66.3%	59.43%	
10	67.02%	67%	66.82%	66.12%	59.46%	
50	61.66%	61.66%	61.64%	61.53%	58.05%	

# Multi-Product Firms: Stable Performance Ranking

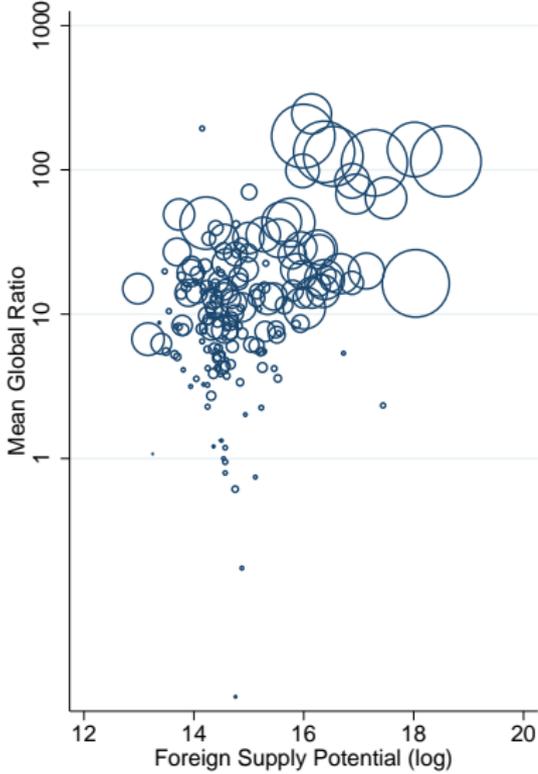


# Competition Effects: Evidence Across Destinations

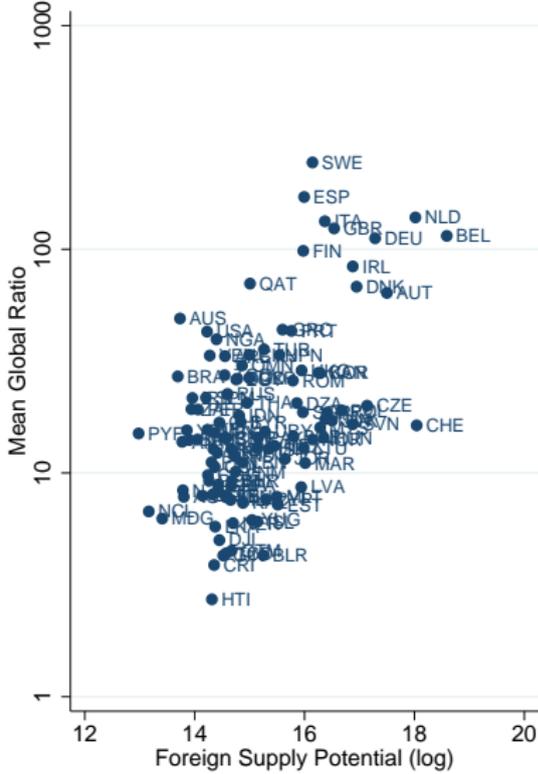


Mean Global Sales Ratio and Destination Market Size

# Competition Effects: Evidence Across Destinations



All countries (209)



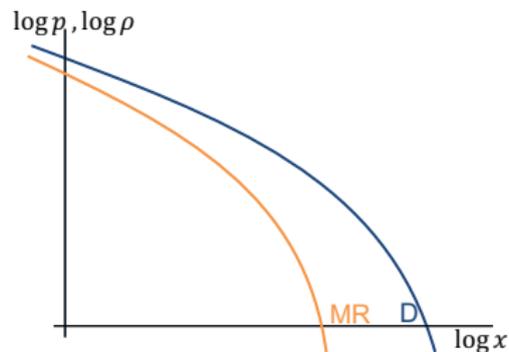
Countries with more than 250 exporters (112)

Mean Global Sales Ratio and Foreign Supply Potential

# Impact of Trade Shocks on Reallocations Over Time

Destination-level over time:

- Trade shock strongly predicts increased skewness of firm's product mix
- Theoretical connection with preferences satisfying previous evidence on markups and pass-through:



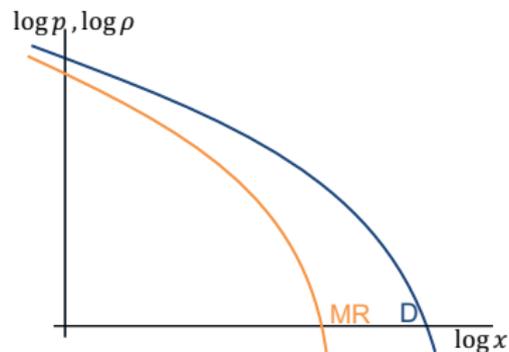
Aggregating up to firm-level:

- Use (lagged) firm-destination export shares
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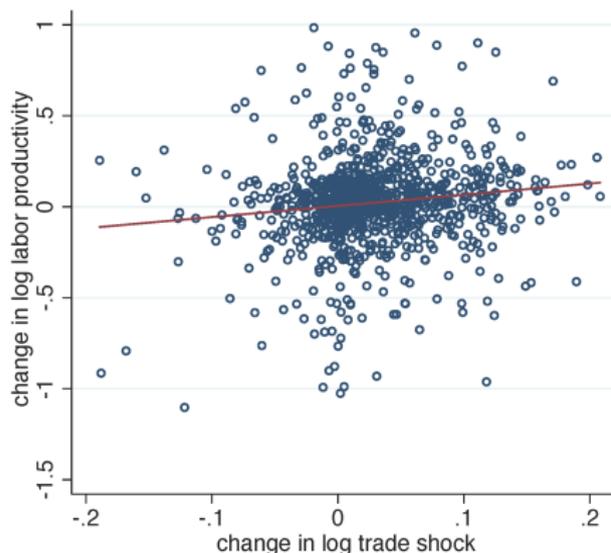


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## Impact of Trade Shocks on Firm Productivity

# Impact of Demand Shocks on Firm Productivity: Largest French Exporters



regression line: coef = .614, se = .174, N = 977  
sample: 168 firms representing 50% of French exports in 1996  
standard errors clustered by firm



regression line: coef = .756, se = .23, N = 974  
sample: 168 firms representing 50% of French exports in 1996  
standard errors clustered by firm

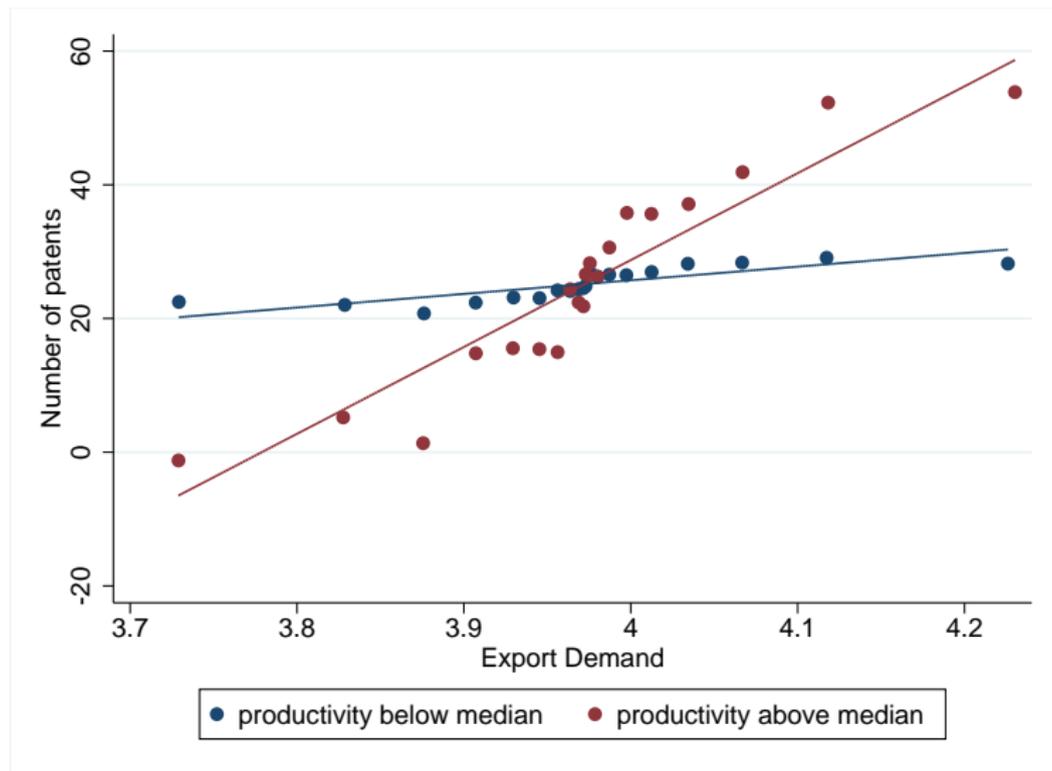
## Counterfactual: Sector and Aggregate Productivity Effects of Trade Shocks

Industry	prod.	trade shock	% high exp.intens.	% mfg. emp.
Radio, tv & communic.	1.8	4.94	59.77	4.31
Motor vehicles & trailers	1.62	9.8	52.39	7.82
Machinery	1.32	5.54	45.4	9.12
Chemicals	1.15	6.58	40.55	9.63
Fabricated metal	.94	7.04	17.41	8.81
Medical & optical instrum.	.85	5.84	46.82	3.53
Rubber and plastics	.8	5.75	36.97	7.18
Electrical machinery	.73	5.83	53.12	5.17
Basic metals	.7	6.27	58.91	4.06
Food and beverages	.66	6.2	14.12	11.88
Other transport equip.	.65	7.25	69.14	4.3
Coke, refining & nuclear	-.18	5.12	25.54	.93
<b>Agg. Manufacturing</b>	<b>1.17</b>	<b>6.2</b>	<b>36.66</b>	<b>100</b>

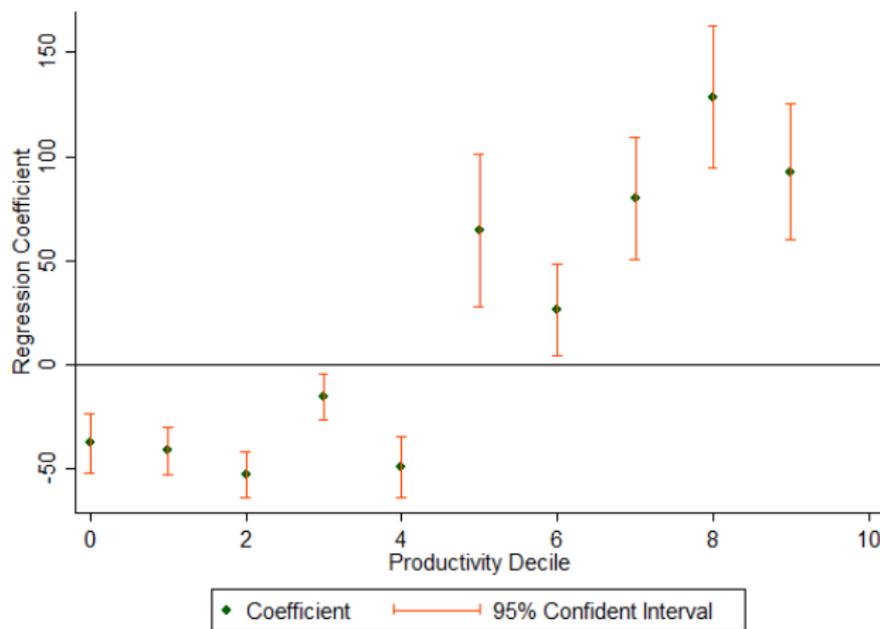
Note: Yearly averages based on 1995-2005 sample

## Impact of Trade Shocks on Firm Innovation

# Patenting Response to Trade Shock



## Heterogeneous Response Across Productivity Deciles



- 2.9 slower patent growth for lowest decile (relative to sector trend)
- Each additional decile increases patent response by .9 patents
- 4.7 higher patent growth for highest decile

# Endogenous Productivity Changes and Gains From Trade

**Do productivity changes generated by reallocations contribute to aggregate gains from trade?**

# Endogenous Productivity Changes and Gains From Trade

- Theoretical comparative static experiment: change the *degree of firm heterogeneity holding all other structural parameters constant*
- CES preferences case (Melitz & Redding, 2015):
  - Compare a heterogeneous firm model to a model with a degenerate productivity distribution for exporters and non-exporters
  - → Welfare gains from trade liberalization are strictly higher in model with endogenous selection (generated by the endogenous productivity response)
  - Holds for general productivity distributions under firm heterogeneity
- VES preferences case (Dhingra & Morrow, 2015):
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## Endogenous Productivity Changes and Gains from Trade

- No longer in first-best monopolistic competition C.E.S. world  
... with 2nd order welfare effects
- Case of additively separable preferences: Dhingra & Morrow (2015):
  - No clear prediction for excess/too little entry
  - Robust predictions for welfare impact of market share reallocations  
→ 1st order effects
- Likely important interactions with innovation policy

## Conclusion

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