

# The impact of import competition from China on firm-level productivity growth in the EU

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# Research Question & Motivation

- **How does the rise in Chinese imports affect the performance European firms?**
- Chinese imports have grown massively after entry into the World Trade Organization in 2001
- Different effects on industrial employment in the US and other economies (Autor et al. 2013 & 2016, Dauth et al. 2014, etc.)
- Empirical results on firm performance are rare
  - Bloom et al. (2016): growth enhancing effect in EU
  - Observation period ends before financial crisis in 2008/09
  - Emergence of Chinese firms as cost-competitive high-tech exporters not covered

## In a nutshell

- Impact of changes in labor productivity on changes in import intensities
- Changing relationship between import- and performance growth
  - Positive effect in initial periods
  - Effect on domestic firms' performance turned negative over time
- Changing effect of Chinese imports suggests a change in the nature of competition
  - Change in value chains due to `second unbundling´ (Baldwin 2011) of production and technological knowledge?
- Effects are not uniformly distributed across firms
  - Being a multinational helps
  - Fast-growing firms experience stronger impact

# Short Literature Review

- Ambiguous results about effects of import competition
    - New trade models: increase in productivity and innovation efforts in EU (Bloom et al., 2016)
    - Growth reducing effects in the US (Hombert and Matray, 2018; Bernard et al., 2006)
1. Changed nature of the international division of labour (Baldwin 2011)
  2. Uneven level-playing-field due to Chinese industrial policy (e.g. Barbieri et al., 2019; Tian, 2020)
  3. Adverse effects of import competition more prominent due to economic slowdown since 2008 (Timmer et al., 2016)
  4. Chinese export portfolio has undergone rapid technological upgrading
    - ➡ China competes with firms from high-income countries on a low-cost, high-tech basis

# Conjectures

1) *The impact of increasing import intensities from China on within-firm productivity growth has changed over time, turning from a growth-enhancing into a growth-decreasing effect over time.*

## **Firm heterogeneity ->**

2) *Productivity growth of MNEs is negatively affected by Chinese imports to a lesser extent.*

3)a) *The extent of the effect of high import growth from China varies with domestic firms' productivity growth rates.*

3)b) *The presumed contribution of Chinese imports to the productivity-growth of multinational firms varies with their productivity growth rates.*

# Estimation Strategy

- Basic regression

$$\Delta LP_{j,s,c,t} = \alpha_s + \alpha_t + \alpha_c + \beta_1 \Delta ImI_{s,c,t} + \beta_3 \Delta X_{j,s,c,t} + e_{j,s,c,t}$$

- **2SLS:** Import dynamics might be endogenous (Bloom et al. 2016; Dauth et .al, 2014)
  - Rise of China induced supply shocks for all its trading partners
  - Mean import intensities of extra-EU economies (e.g. Canada, Israel and Japan), which are comparable regarding economic wealth, but different in terms of competitive positioning
- **Quantile regressions** to allow the effect to differ across productivity growth distribution



# Data

- Multiple ten-year waves of cleaned **AMADEUS** data (Bureau van Dijk)
  - ~446k firms across the EU in an unbalanced panel
- Ownership information from **ORBIS** data (Bureau van Dijk)
- Harmonized trade data at the Nace Rev. 2 4-digit level obtained from **BACI**
- Period 2003-2016: use five three-year periods to smooth data
- **Labour productivity**
  - Firm specific value added divided by the number of employees
- **Import intensity**
  - Share of Chinese in total imports ( $IMP_C/IMP_{TOT}$ ) in a given country, year and Nace Rev. 2, 4-digit industry
- **MNE**
  - Dummy for being part of a multinational group

## Regression Results- Labour Productivity Growth

	(1)	(2)	(3)	(4)	(5)	(6)
Variable	OLS	IV	OLS	IV	OLS	IV
$\Delta$ Import intensity	-0.02	-0.08	0.28***	0.35***	-0.02	-0.13**
	(0.016)	(0.054)	(0.054)	(0.128)	(0.017)	(0.055)
$\Delta$ Import * Trend			-0.08***	-0.12***		
			(0.015)	(0.035)		
$\Delta$ Import * MNE					0.06	0.32***
					(0.042)	(0.112)
MNE					0.04***	0.04***
					(0.001)	(0.002)
$\Delta$ Capital	0.05***	0.05***	0.05***	0.05***	0.05***	0.05***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Distance, lagged	0.16***	0.16***	0.16***	0.16***	0.17***	0.17***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
Country, Sector, Time FE & Trend	Y	Y	Y	Y	Y	Y



## Quantile Regression- Labour Productivity Growth

	(1)	(2)	(3)
Variable	25%-perc.	50%-perc.	75%-perc.
$\Delta$ Import intensity	-0.00	-0.05***	-0.10***
	(0.014)	(0.011)	(0.017)
$\Delta$ Import * MNE	0.08*	0.12***	0.16***
	(0.045)	(0.035)	(0.043)
MNE	0.02***	0.04***	0.07***
	(0.002)	(0.001)	(0.002)
$\Delta$ Capital	0.04***	0.05***	0.07***
	(0.001)	(0.001)	(0.001)
Distance, lagged	0.17***	0.13***	0.13***
	(0.001)	(0.001)	(0.001)
Constant	0.15***	0.27***	0.38***
	(0.005)	(0.006)	(0.008)
Country, Time FE, Trend	Y	Y	Y

# Limitations

- No information about the welfare effects of trade as we estimate a partial equilibrium model
- Discussion on identification strategy not completed (Fischer, et al., 2021)
  - Isolate China-specific supply shocks from sector shocks that are common to all exporters
  - Demand elasticities are needed, which are not available
  - Results become stronger in the general equilibrium estimations, while the partial equilibrium results are hardly affected
- No use of entry-exit information like previous literature -> is likely to be biased with AMADEUS data
  - Good for studying within-firm dynamics, but limited w.r.t. sector dynamics

## Summary & Conclusion

- Effects of growth in Chinese imports on the within-firm productivity growth of firms in the EU between 2003 and 2016
- Change of nature of competition
  - Growth-enhancing effect of increasing import intensities prior to the financial crisis, but reversed effect afterwards
- An economy's competitiveness and firm demography shapes its aggregate capability to benefit from trade with China.
- Countries with more MNEs seem to be better equipped to cope with shocks from trade with China which pursues a low-cost high-tech export strategy.
- Competitive pressures expected to accelerate with industrial strategy 'Made-in-China 2025'
  - Further upgrade & independence from foreign suppliers in 'core products', such as semiconductors, IT or biotechnology

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## Thank you for your attention!

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## Robustness Checks

- Sample split into a period before (2003-2008) and after (2010-2015) the financial crisis
- Clustered standard errors at the treatment (i.e., Nace Rev. 2 4-digit) and the firm level
- TFP (Olley Pakes) instead of LP
- IV quantile regression (w/o interaction term)
- The results largely support the main results, with the positive effects in the pre-crisis period being insignificant in the 2SLS estimations.