### Host-Country Financial Development and Multinational Activity

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#### Motivation and Introduction

 Multinationals (MNCs) today manage complex global operations that serve multiple markets:

On average, US affiliates abroad sell 75% of their output in the host country, ship 7% back to the US, and 18% to other countries.

- This blends features of three FDI motives that the literature has traditionally treated in isolation:
  - Horizontal: local sales to the host-country market
  - Vertical: affiliate exports of intermediate inputs
  - Export-platform: affiliate exports of final goods to third-country markets
- Above stylized fact suggests that reality is much more complex.

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### Motivation and Introduction (cont.)

Pattern of MNC production and sales speaks to policy questions such as:

- How do host-country conditions affect MNCs' entry and sales decisions?
- How do MNC affiliates and local firms affect each other?

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- How do MNC affiliates and local firms affect each other?

#### This paper:

- Studies how host-country financial development affects US multinational activity abroad, in terms of:
  - Number of US affiliates
  - Levels of affiliate sales: In total, as well as to the local, US and third-country markets
  - Shares of affiliate sales: To the local, US and third-country markets
- Jointly, these patterns are consistent with two effects of host-country financial development: (i) Competition effect; and (ii) Financing effect.

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#### **Overview:** Findings

We use the comprehensive and confidential BEA data on the operations of US multinationals abroad, 1989-2009.

Better financial development in the FDI host country associated with:

- 1. A larger number of affiliates.
- 2. Higher levels of *aggregate* affiliate sales to the local, US and third-country markets.

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Better financial development in the FDI host country associated with:

- 1. A larger number of affiliates.
- 2. Higher levels of *aggregate* affiliate sales to the local, US and third-country markets.
- However, at the *individual* affiliate level, sales to the local market ↓, whereas sales to the US and third-country markets ↑.
- 4. In terms of *shares*: Share of affiliate sales to the local market ↓, whereas shares of return sales to the US and export-platform sales to third-country markets ↑. (Both at the aggregate and individual affiliate levels.)
- 5. (Effect on the share of platform sales is larger than that on the share of return sales to the US.)

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### Overview: Findings (cont.)

Establish these findings in a range of specifications:

- Estimating off the cross-country variation in financial development.
- Further exploiting cross-industry variation:

Stronger effects in industries with a greater dependence on external finance (Rajan and Zingales 1998)

Subsuming unobserved MNC characteristics with parent firm fixed effects

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### Overview: Findings (cont.)

Rationalize these patterns through a combination of two forces:

#### (i) Competition effect:

Financial development in the host country promotes entry of domestic firms

- $\Rightarrow$  Local market becomes more competitive
- $\Rightarrow$  MNC affiliates orient their sales away from serving the local market, towards other markets instead. (Matching facts 3 and 4.)

#### (ii) Financing effect:

If MNCs rely on host-country financing ....

- ⇒ Financial development in the host country facilitates entry of more MNC affiliates (extensive margin)
- $\Rightarrow\,$  In the aggregate, sales levels to all three markets increase. (Matching facts 1 and 2.)

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#### Related Literature

- Effects of credit constraints on economic activity and trade: (Rajan and Zingales 1998, Aghion et al. 2007, Amiti and Weinstein 2011, Manova 2013,...)
- 2. Host-country financial conditions and multinational activity:

(Desai et al. 2004, 2008, Feinberg and Phillips 2004, Manova et al. 2009, Bustos 2007, Antràs et al. 2009, Carluccio and Fally 2012)

3. Complex FDI strategies:

(Yeaple 2003, Helpman et al. 2004, Grossman et al. 2006, Markusen and Venables 2007, Ekholm et al. 2007, Irarrazabal et al. 2012, Ramondo et al. 2012, Ramondo and Rodriguez-Clare 2013, Arkolakis et al. 2012, Tintelnot 2012)

4. Interaction between foreign affiliates and domestic firms:

(Aitken and Harrison 1999, De Backer and Sleuwaegen 2003, Alfaro et al. 2004, Javorcik and Spatareanu 2009, Arnold et al. 2011)

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# Plan of Talk

- 1. Introduction and Motivation
- 2. Discussion of Mechanisms
- 3. Evidence from US Multinational Activity Abroad
  - Empirical Specification
  - Data
  - Results
- 4. Conclusions

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### Setting

Consider a FDI host economy where:

- There are two types of production entities: (i) domestic firms; and (ii) MNC affiliates
- Each firm/affiliate produces a distinct differentiated variety Think: Firm heterogeneity *a la* Melitz (2003), HMY (2004)
- Varieties are substitutes in consumption
- A separate entry margin for both domestic firms and MNC affiliates
- MNC affiliates in particular face a decision over how much to sell in the host (HOR(a)), home (RET(a)), and third-country markets (PLA(a)).

(Note: See the paper for a formalization in a stylized three-country setting.)

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#### Illustration: Affiliate sales



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#### Credit constraints in the host country

- Assume domestic firms need external finance for the fixed cost of operations in each period.
- In the presence of financing frictions: A margin of firms denied access to credit, e.g., due to an inability to credibly commit to repayment.
- Improvements in host-country financial development therefore facilitate entry by these domestic firms.

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### **Empirical Hypotheses**

Competition Effect: Improved financial development in the host country induces entry of domestic firms

- $\Rightarrow$  Increased competition in the host market
- $\Rightarrow\,$  MNCs re-orient sales away from the local market towards other markets.
- $\Rightarrow$  A decrease in each individual affiliate's horizontal sales, both in levels and in shares; converse response for return and platform sales.

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#### Hypothesis

When only the competition effect is operative, better host-country financial development is associated at the level of the individual affiliate with:

- (i) a decrease in HOR(a), an increase in PLA(a), and an increase in RET(a); as well as
- (ii) a decrease in  $\frac{HOR(a)}{TOT(a)}$ , an increase in  $\frac{PLA(a)}{TOT(a)}$ , and an increase in  $\frac{RET(a)}{TOT(a)}$ .

# **Empirical Hypotheses**

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- $\Rightarrow$  A decrease in each individual affiliate's horizontal sales, both in levels and in shares; converse response for return and platform sales.

#### However:

- A more competitive host-country market would prompt exit by some MNC affiliates.
- ▶ If this extensive margin adjustment is sufficiently large, *aggregate* affiliate sales to all three destinations would decline.
- Upshot: Competition effect alone is not sufficient to fully rationalize the patterns in the data.

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#### Introducing the financing effect

Well-documented that MNCs seek host-country financing:

- Feinberg and Phillips (2004): About two-thirds of US MNC affiliate debt comes from local borrowing
- Independently verified this in the 1999 and 2004 benchmark BEA surveys.
- Moreover: Desai et al. (2004) and Antràs et al. (2009) show that the share of local vs parent financing obtained by affiliates responds to host-country financial development.
- While parent firms clearly also raise finance in the home country...

... Host-country financing is still necessary, e.g., if there are transactions costs associated with moving funds across borders, or if home-country creditors cannot effectively monitor affiliate activity abroad.

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# The Financing Effect

# Empirical Hypotheses (cont.)

Financing Effect: More affiliates enter as credit constraints are alleviated

- $\Rightarrow$  Aggregate levels of MNC activity increase on the extensive margin.
  - But: Competition effect remains relevant for new and surviving affiliates on the intensive margin.

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# The Financing Effect

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Financing Effect: More affiliates enter as credit constraints are alleviated

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  - But: Competition effect remains relevant for new and surviving affiliates ► on the intensive margin.

#### **Hypothesis**

When both the competition and financing effects are present, the responses to improved host-country financial development at the individual affiliate level are similar. Moreover, aggregating across affiliates in the host country, if the financing effect is sufficiently strong, one observes:

- (i) an increase in the number of affiliates:
- (ii) an increase in HOR, PLA, RET, and TOT; as well as
- (iii) a decrease in  $\frac{HOR}{TOT}$ , an increase in  $\frac{PLA}{TOT}$ , and an increase in  $\frac{RET}{TOT}$ .

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#### Baseline estimating equation

Examine the variation in MNC activity across host countries with different levels of financial development, FD:

$$MNC_{ikt} = \alpha + \beta FD_{it} + \Gamma X_{it} + \varphi_k + \varphi_t + \varepsilon_{ikt}, \qquad (1)$$

- ▶ *i*: country; *k*: industry; *t*: year.
- Outcome measures, MNC<sub>ikt</sub>:
  - 1. Number of foreign affiliates;
  - 2. Aggregate affiliate sales levels: HOR<sub>ikt</sub>, PLA<sub>ikt</sub>, RET<sub>ikt</sub>, TOT<sub>ikt</sub>;
  - 3. Aggregate affiliate sales shares:  $\frac{HOR_{ikt}}{TOT_{ikt}}$ ,  $\frac{PLA_{ikt}}{TOT_{ikt}}$ ,  $\frac{RET_{ikt}}{TOT_{ikt}}$ ;
  - 4. Individual affiliate sales levels: HOR<sub>ikt</sub>(a), PLA<sub>ikt</sub>(a), RET<sub>ikt</sub>(a), TOT<sub>ikt</sub>(a);
  - 5. Individual affiliate sales shares:  $\frac{HOR_{ikt}(a)}{TOT_{ikt}(a)}$ ,  $\frac{PLA_{ikt}(a)}{TOT_{ikt}(a)}$ ,  $\frac{RET_{ikt}(a)}{TOT_{ikt}(a)}$ .

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- >  $X_{it}$ : Other host country controls, including: GDP, GDP per capita, K/L, H/L, distance from the US, RTA dummies, rule of law, tax rate etc.
- $\varphi_k$ : Industry fixed effects (NAICS 4-digit).
- $\varphi_t$ : Year fixed effects. (Controls for all home country characteristics.)
- Cluster standard errors by country of affiliate.

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$$MNC_{ikt} = \alpha + \beta FD_{it} + \Gamma X_{it} + \varphi_k + \varphi_t + \varepsilon_{ikt}, \qquad (1)$$

Expect:

- ▶ For aggregate or affiliate sales *shares*:  $\beta_{HOR} < 0 < \beta_{PLA}, \beta_{RET}$
- If host-country financing matters, for the number of affiliates and the aggregate sales *levels*: β<sub>HOR</sub>, β<sub>PLA</sub>, β<sub>RET</sub> > 0
- Key source of variation here is cross-country.
- Reverse causality less likely given the range of dependent variables we consider, including: (i) individual affiliate outcomes; and (ii) shares of sales by destination market.

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#### Second estimating equation

Further exploit cross-sectoral variation:

$$MNC_{ikt} = \alpha + \beta FD_{it} + \gamma FD_{it} \times EFD_k + \Gamma X_{it} + \varphi_k + \varphi_t + \varepsilon_{ikt}.$$
 (2)

- ▶ *EFD<sub>k</sub>*: Share of capital expenditures not financed by internal cash flow
- Rajan and Zingales (1998) argue that this is an inherent and plausibly exogenous feature of industries, determined by technological factors
- Isolates the role of the financing mechanism: To rule out that FD<sub>it</sub> may be proxying for other forms of institutional reform.
- ► Calculated from Compustat: Median firm, between 1996-2005.
- Advantages of using US data: Orthogonal to host-country outcomes; results valid insofar as *EFD* is a sectoral characteristic with a stable rank-ordering across countries.

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#### Data overview

#### MNC<sub>ikt</sub>: BEA Survey of US Direct Investment Abroad

- Confidential and comprehensive information on US MNC activity abroad
- Aggregate-level regressions: Based on universe of US MNCs and their majority-owned affiliates in survey benchmark years (1989, 1994, 1999, 2004, 2009)
- ▶ Affiliate-level regressions: Unbalanced panel, 1989-2009

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#### MNC<sub>ikt</sub>: BEA Survey of US Direct Investment Abroad

- Confidential and comprehensive information on US MNC activity abroad
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- ▶ Affiliate-level regressions: Unbalanced panel, 1989-2009
- Breakdown of sales reported at the affiliate level: (i) local, HOR(a); (ii) export-platform, PLA(a); and (iii) return, RET(a).
- Affiliates that report selling to all three destinations account for over 52% of US global MNC sales.
- ▶ In 2009: 1,892 parents operated 14,804 affiliates in 142 countries.
- On average, each parent has about 4 foreign affiliates.

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### Data overview (cont.)

Largest share of affiliate sales designated for host country, but substantial variation in all three MNC sales shares.

|  | Ν       | Mean    | Standard<br>Deviation |
|--|---------|---------|-----------------------|
| Country-Industry-Year Level                |         |         |                       |
| Total Affiliate Sales (thousand USD)       | 17,811  | 561,256 | 2,450,158             |
| Local Affiliate Sales (thousand USD)       | 17,811  | 363,112 | 1,502,995             |
| 3rd country Affiliate Sales (thousand USD) | 17,811  | 147,074 | 1,009,672             |
| US Affiliate Sales (thousand USD)          | 17,811  | 51,070  | 626,707               |
| Local / Total sales                        | 17,811  | 0.78    | 0.32                  |
| 3rd country / Total sales                  | 17,811  | 0.16    | 0.27                  |
| US / Total sales                           | 17,811  | 0.06    | 0.17                  |
| Number of Affiliates                       | 17,811  | 4.08    | 6.56                  |
| Affiliate-Year Level                       |         |         |                       |
| Total Affiliate Sales (thousand USD)       | 227,089 | 192,812 | 845,844               |
| Local Affiliate Sales (thousand USD)       | 227,089 | 121,663 | 532,596               |
| 3rd country Affiliate Sales (thousand USD) | 227,089 | 52,490  | 421,167               |
| US Affiliate Sales (thousand USD)          | 227,089 | 18,659  | 228,768               |
| Local / Total sales                        | 227,089 | 0.75    | 0.36                  |
| 3rd country / Total sales                  | 227,089 | 0.18    | 0.31                  |
| US / Total sales                           | 227,089 | 0.07    | 0.20                  |

Image: Image:

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## Data overview (cont.)

#### Host-country financial development:

- Primary measure: Private credit by banks over GDP (Beck et al. 2009)
- Avg 0.51; Std dev 0.44
- Cross-country variation in 2009 has std dev of 0.62; compared with within-country std dev of 0.15 across 1989-2009 for the average country
- Results robust to using: Table 7
  - (i) private credit by banks and other non-bank financial institutions over GDP
  - (ii) stock market capitalization over GDP
  - (iii) financial reform index (Abiad et al. 2010)

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#### Effect on the number of affiliates

Host-country financial development has a positive effect on the probability of operating an affiliate, and the number of affiliates.

| Dependent variable:                     | Indicator<br>N > 0  | Log N     | Log N,<br>local sales | Log N, 3rd<br>ctry sales | Log N,<br>US sales | Indicator<br>N > 0 | Log N              | Log N,<br>local sales | Log N, 3rd<br>ctry sales | Log N,<br>US sales |
|---|---|-----------|-----------------------|--------------------------|--------------------|--------------------|--------------------|-----------------------|--------------------------|--------------------|
|   | (1)   | (2)       | (3)                   | (4)                      | (5)                | (6)                | (7)                | (8)                   | (9)                      | (10)               |
| Fin Development                         | 0.101   | 0.220     | 0.191                 | 0.130                    | 0.149              | 0.122              | 0.223              | 0.191                 | 0.117                    | 0.129              |
|   | (3.11)***   | (2.28)**  | (2.01)**              | (1.53)                   | (2.00)**           | (3.19)***          | (2.19)**           | (1.90)*               | (1.23)                   | (1.51)             |
| Fin Development x<br>Ext Fin Dependence |   |           |                       |                          |                    | 0.007<br>(2.62)**  | 0.039<br>(3.90)*** | 0.033<br>(2.92)***    | 0.036<br>(3.09)***       | 0.038<br>(4.23)*** |
| Log GDP                                 | 0.073   | 0.272     | 0.279                 | 0.227                    | 0.214              | 0.093              | 0.306              | 0.314                 | 0.260                    | 0.258              |
|   | (7.93)***   | (7.37)*** | (7.64)***             | (6.29)***                | (6.07)***          | (8.93)***          | (7.67)***          | (7.84)***             | (6.54)***                | (6.55)***          |
| Log GDP per capita                      | 0.080   | 0.589     | 0.605                 | 0.599                    | 0.512              | 0.090              | 0.620              | 0.653                 | 0.615                    | 0.547              |
|   | (1.69)*   | (2.89)*** | (2.94)***             | (2.92)***                | (2.30)**           | (1.60)             | (2.69)***          | (2.82)***             | (2.58)**                 | (2.02)**           |
| Log Distance to US                      | -0.090  | -0.125    | -0.127                | -0.024                   | -0.153             | -0.102             | -0.121             | -0.128                | -0.043                   | -0.186             |
|   | (-2.63)**   | (-2.33)** | (-2.40)**             | (-0.60)                  | (-3.38)***         | (-2.61)**          | (-2.14)*           | (-2.37)**             | (-1.00)                  | (-3.63)***         |
| Controls                                | Controls K/L, H/L, Rule of Law, Tax Rate, RTA Dummies, Industry FE, Year FE |           |                       |                          |                    |                    |                    |                       |                          |                    |
| # Obs                                   | 78,916  | 15,531    | 14,991                | 8,845                    | 6,896              | 41,630             | 10,435             | 10,109                | 6,565                    | 5,049              |
| R <sup>2</sup>                          | 0.44  | 0.53      | 0.53                  | 0.47                     | 0.44               | 0.48               | 0.56               | 0.56                  | 0.50                     | 0.47               |

Table 2: Number of Multinational Affiliates

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### Effect on aggregate sales levels (HOR, PLA, RET, TOT)

Positive effect on aggregate sales levels, consistent with the predictions of the financing effect.

| Dependent variable:                     | Local<br>sales   | 3rd ctry sales | US<br>sales | Total<br>sales | Local<br>sales     | 3rd ctry<br>sales  | US<br>sales        | Total<br>sales     |  |
|---|--|----------------|-------------|----------------|--------------------|--------------------|--------------------|--------------------|--|
|   | (1)  | (2)            | (3)         | (4)            | (5)                | (6)                | (7)                | (8)                |  |
| Fin Development                         | 0.233  | 0.376          | 0.756       | 0.350          | 0.148              | 0.403              | 0.684              | 0.298              |  |
|   | (1.49)   | (1.51)         | (3.20)***   | (2.30)**       | (0.95)             | (1.50)             | (2.61)**           | (1.92)*            |  |
| Fin Development x<br>Ext Fin Dependence |  |                |             |                | 0.058<br>(2.70)*** | 0.103<br>(4.16)*** | 0.188<br>(6.47)*** | 0.089<br>(4.78)*** |  |
| Log GDP                                 | 0.716  | 0.337          | 0.324       | 0.601          | 0.769              | 0.387              | 0.419              | 0.646              |  |
|   | (10.33)**'   | (3.58)***      | (3.54)***   | (9.02)***      | (11.18)**'         | (3.99)***          | (4.46)***          | (9.69)***          |  |
| Log GDP per capita                      | 1.120  | 1.520          | 1.240       | 1.046          | 1.275              | 1.335              | 1.116              | 1.058              |  |
|   | (2.96)***  | (3.16)***      | (2.41)**    | (2.87)***      | (3.03)***          | (2.57)**           | (2.01)**           | (2.60)**           |  |
| Log Distance                            | -0.265   | 0.169          | -0.508      | -0.259         | -0.278             | 0.152              | -0.531             | -0.233             |  |
|   | (-2.71)***   | (1.22)         | (-3.34)***  | (-2.93)***     | (-2.90)***         | (1.14)             | (-2.90)***         | (-2.52)**          |  |
| Controls                                | K/L, H/L, Rule of Law, Tax Rate, RTA Dummies, Industry FE, Year FE |                |             |                |                    |                    |                    |                    |  |
| # Obs                                   | 14,991   | 8,845          | 6,896       | 15,531         | 10,109             | 6,565              | 5,049              | 10,435             |  |
| R <sup>2</sup>                          | 0.44   | 0.33           | 0.26        | 0.42           | 0.47               | 0.35               | 0.28               | 0.45               |  |

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Table 3: Level of Multinational Affiliate Sales, Aggregate Level

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# Effect on aggregate sales shares $\left(\frac{HOR}{TOT}, \frac{PLA}{TOT}, \frac{RET}{TOT}\right)$

Negative effect on the local sales share, but positive effect on the platform and return shares, consistent with the competition effect.

| Dependent variable:                     | Local sales | 3rd ctry sales   | US sales       | Local sales          | 3rd ctry sales     | US sales          |
|---|-------------|------------------|----------------|----------------------|--------------------|-------------------|
|   | Total sales | Total sales      | Total sales    | Total sales          | Total sales        | Total sales       |
|   | (1)         | (2)              | (3)            | (4)                  | (5)                | (6)               |
| Fin Development                         | -0.057      | 0.033            | 0.023          | -0.058               | 0.037              | 0.021             |
|   | (-2.81)***  | (1.88)*          | (3.53)***      | (-2.87)***           | (1.99)**           | (3.27)***         |
| Fin Development x<br>Ext Fin Dependence |             |                  |                | -0.013<br>(-3.67)*** | 0.010<br>(3.02)*** | 0.003<br>(2.28)** |
| Log GDP                                 | 0.033       | -0.027           | -0.007         | 0.035                | -0.030             | -0.005            |
|   | (4.50)***   | (-4.31)***       | (-2.97)***     | (4.15)***            | (-4.27)***         | (-2.05)**         |
| Log GDP per capita                      | -0.005      | 0.012            | -0.008         | 0.028                | -0.011             | -0.017            |
|   | (-0.14)     | (0.37)           | (-0.58)        | (0.70)               | (-0.31)            | (-1.28)           |
| Log Distance                            | -0.011      | 0.020            | -0.009         | -0.017               | 0.025              | -0.008            |
|   | (-0.70)     | (1.98)*          | (-0.95)        | (-1.05)              | (2.10)**           | (-0.96)           |
| Controls                                | K/L,        | H/L, Rule of Lav | v, Tax Rate, R | TA Dummies, I        | ndustry FE, Yea    | ar FE             |
| # Obs                                   | 15,531      | 15,531           | 15,531         | 10,435               | 10,435             | 10,435            |
| R <sup>2</sup>                          | 0.22        | 0.23             | 0.13           | 0.24                 | 0.24               | 0.15              |

#### Table 4: Composition of Multinational Affiliate Sales, Aggregate Level

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### Size of effects: Aggregate multinational activity

For a one std dev increase in private credit, get on average:

- a 10.6% increase in the number of MNC affiliates
- a 17.4% increase in aggregate affiliate sales
- ▶ a 2.5 percentage-point decrease in the local sales share; a 1 and 1.5 percentage-point increase in the return sales share to the US and the platform sales share respectively.

Effects are bigger in more external finance dependent industries:

- Effect on number of affiliates is 4.3% higher...
- Effect on aggregate affiliate sales is 10.2% higher...
- ... at the 75th relative to the 25th percentile industry.

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### Effect on affiliate sales levels (HOR(a), PLA(a), RET(a), TOT(a))

In contrast to the aggregate level results, horizontal sales respond negatively to financial development at the affiliate level.

| Dependent variable:                     | Local<br>sales   | 3rd ctry sales | US<br>sales | Total sales | Local<br>sales    | 3rd ctry sales     | US<br>sales        | Total sales     |  |  |
|---|--|----------------|-------------|-------------|-------------------|--------------------|--------------------|-----------------|--|--|
|   | (1)  | (2)            | (3)         | (4)         | (5)               | (6)                | (7)                | (8)             |  |  |
| Fin Development                         | -0.153   | 0.237          | 0.470       | -0.033      | -0.231            | 0.215              | 0.419              | -0.092          |  |  |
|   | (-2.27)**  | (1.84)*        | (2.95)***   | (-0.64)     | (-3.13)***        | (1.58)             | (2.51)**           | (-1.69)*        |  |  |
| Fin Development x<br>Ext Fin Dependence |  |                |             |             | -0.001<br>(-0.07) | 0.044<br>(2.69)*** | 0.126<br>(4.35)*** | 0.014<br>(1.38) |  |  |
| Log GDP                                 | 0.301  | -0.088         | -0.080      | 0.143       | 0.363             | -0.100             | -0.073             | 0.181           |  |  |
|   | (7.66)***  | (-1.46)        | (-1.21)     | (4.96)***   | (9.45)***         | (-1.67)*           | (-1.07)            | (7.51)***       |  |  |
| Log GDP per capita                      | 0.048  | 0.520          | 0.421       | -0.017      | 0.122             | 0.445              | 0.180              | -0.014          |  |  |
|   | (0.29)   | (1.86)*        | (1.41)      | (-0.11)     | (0.78)            | (1.56)             | (0.58)             | (-0.11)         |  |  |
| Log Distance                            | -0.149   | 0.189          | -0.184      | -0.087      | -0.141            | 0.144              | -0.224             | -0.077          |  |  |
|   | (-3.73)***   | (1.71)*        | (-1.56)     | (-2.35)**   | (-3.42)***        | (1.21)             | (-1.63)            | (-2.65)***      |  |  |
| Controls                                | K/L, H/L, Rule of Law, Tax Rate, RTA Dummies, Industry FE, Year FE |                |             |             |                   |                    |                    |                 |  |  |
| # Obs                                   | 198,154  | 103,908        | 71,160      | 215,173     | 148,575           | 85,349             | 58,439             | 161,423         |  |  |
| R <sup>2</sup>                          | 0.12   | 0.18           | 0.16        | 0.11        | 0.13              | 0.18               | 0.16               | 0.11            |  |  |

Table 5: Level of Multinational Affiliate Sales, Affiliate Level

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Introduction Theoretical Mechanisms Evidence from US Multinational Activity Abroad Empirical specification and Data Baseline Findings Additional Checks

# Effect on affiliate sales shares $\left(\frac{HOR(a)}{TOT(a)}, \frac{PLA(a)}{TOT(a)}, \frac{RET(a)}{TOT(a)}\right)$

Similar results for shares computed at the individual affiliate level.

| Dependent variable:                     | Local sales | 3rd ctry sales   | rd ctry sales US sales  |                      | 3rd ctry sales    | US sales         |
|---|-------------|------------------|-------------------------|----------------------|-------------------|------------------|
|   | Total sales | Total sales      | Total sales Total sales |                      | Total sales       | Total sales      |
|   | (1)         | (2)              | (3)                     | (4)                  | (5)               | (6)              |
| Fin Development                         | -0.047      | 0.030            | 0.018                   | -0.040               | 0.030             | 0.010            |
|   | (-2.46)**   | (1.86)*          | (2.20)**                | (-1.90)*             | (1.69)*           | (1.10)           |
| Fin Development x<br>Ext Fin Dependence |             |                  |                         | -0.007<br>(-3.87)*** | 0.004<br>(2.39)** | 0.003<br>(1.98)* |
| Log GDP                                 | 0.048       | -0.041           | -0.008                  | 0.050                | -0.044            | -0.006           |
|   | (5.35)***   | (-5.78)***       | (-2.52)**               | (5.13)***            | (-5.68)***        | (-2.03)**        |
| Log GDP per capita                      | -0.013      | 0.001            | 0.013                   | 0.007                | -0.011            | 0.004            |
|   | (-0.35)     | (0.03)           | (1.11)                  | (0.17)               | (-0.31)           | (0.39)           |
| Log Distance                            | -0.021      | 0.015            | 0.006                   | -0.014               | 0.010             | 0.004            |
|   | (-1.38)     | (1.45)           | (0.56)                  | (-0.82)              | (0.77)            | (0.32)           |
| Controls                                | K/L,        | H/L, Rule of Lav | v, Tax Rate, R          | TA Dummies, I        | ndustry FE, Yea   | ar FE            |
| # Obs                                   | 215,178     | 215,178          | 215,178                 | 161,427              | 161,427           | 161,427          |
| R <sup>2</sup>                          | 0.14        | 0.16             | 0.08                    | 0.15                 | 0.17              | 0.10             |

#### Table 6: Composition of Multinational Affiliate Sales, Affiliate Level

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#### Additional tests and robustness

Focus on effects on affiliate sales shares.

Empirical patterns robust to a series of specification checks:

- ► Tobit ► App Table 2
- Weighted least squares App Table 3
- Controlling for FD interacted with industry capital-intensity, or skill-intensity
- Controlling for FD interacted with parent firm sales, R&D over sales, or affiliate wage
- Controlling for entry and export costs
- Parent fixed effects
- Affiliate share of local borrowing
- Examining within-country variation

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#### Additional controls: Entry costs, export costs, and market potential

Financial development not simply proxying for regulatory entry barriers in the host country.

| Dependent variable:                     | Local sales          | 3rd ctry sales     | US sales                      | Local sales                   | 3rd ctry sales     | US sales           |
|---|----------------------|--------------------|-------------------------------|-------------------------------|--------------------|--------------------|
|   | l otal sales         | I otal sales       | l otal sales                  | I otal sales                  | l otal sales       | l otal sales       |
|   | (1)                  | (2)                | (3)                           | (4)                           | (5)                | (6)                |
| Fin Development                         | -0.056<br>(-3.50)*** | 0.031<br>(2.28)**  | 0.025<br>(3.99)***            | -0.060<br>(-4.04)***          | 0.036<br>(2.90)*** | 0.024<br>(3.75)*** |
| Fin Development x<br>Ext Fin Dependence |                      |                    |                               | -0.014<br>(-3.73)***          | 0.010<br>(3.15)*** | 0.003<br>(2.19)**  |
| Entry Cost                              | 0.006<br>(0.62)      | -0.004<br>(-0.51)  | -0.002<br>(-0.69)             | 0.010<br>(0.99)               | -0.007<br>(-0.76)  | -0.004<br>(-1.40)  |
| Export Cost                             | -0.022<br>(-0.81)    | 0.031<br>(1.25)    | -0.008<br>(-0.95)             | -0.035<br>(-1.24)             | 0.041<br>(1.69)    | -0.006<br>(-0.62)  |
| Export Platform<br>Potential            | -0.111<br>(-4.16)*** | 0.112<br>(5.49)*** | -0.000<br>(-0.02)             | -0.120<br>(-4.47)***          | 0.126<br>(6.17)*** | -0.006<br>(-0.59)  |
| Controls                                | GDP, GDF             | P per capita, Dis  | tance, K/L, H/L<br>Industry F | _, Rule of Law,<br>E, Year FE | Tax Rate, RTA      | Dummies,           |
| # Obs                                   | 15,182               | 15,182             | 15,182                        | 10,190                        | 10,190             | 10,190             |
| R <sup>2</sup>                          | 0.23                 | 0.25               | 0.13                          | 0.26                          | 0.27               | 0.15               |
|   |                      |                    |                               | 1 D                           |                    | <b>B N A B N</b>   |

#### Table 8: Cost of Entry, Cost of Exporting and Export Platform Potential in Host Country, Aggregate Level

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#### Affiliate local borrowing

Competition effect still present when controlling directly for local borrowing of affiliates.

| Dependent variable:                     | Local sales | 3rd ctry sales   | US sales    | Local sales          | 3rd ctry sales    | US sales        |  |  |
|---|-------------|--|-------------|----------------------|-------------------|-----------------|--|--|
|   | Total sales | Total sales  | Total sales | Total sales          | Total sales       | Total sales     |  |  |
|   | (1)         | (2)  | (3)         | (4)                  | (5)               | (6)             |  |  |
| Fin Development                         | -0.061      | 0.039  | 0.022       | -0.054               | 0.038             | 0.017           |  |  |
|   | (-2.63)**   | (1.82)*  | (2.81)***   | (-2.13)**            | (1.56)            | (2.27)**        |  |  |
| Fin Development x<br>Ext Fin Dependence |             |  |             | -0.008<br>(-3.13)*** | 0.005<br>(2.23)** | 0.002<br>(1.37) |  |  |
| Lagged Share of                         | 0.103       | -0.084   | -0.019      | 0.084                | -0.073            | -0.010          |  |  |
| Local Financing                         | (4.42)***   | (-4.11)***   | (-2.71)***  | (3.78)***            | (-3.69)***        | (-1.46)         |  |  |
| Controls                                | GDP, GDF    | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Industry FE, Year FE |             |                      |                   |                 |  |  |
| # observations                          | 22,199      | 22,199   | 22,199      | 16,566               | 16,566            | 16,566          |  |  |
| R-squared                               | 0.18        | 0.19   | 0.11        | 0.18                 | 0.19              | 0.13            |  |  |

Table 9: Use of Host-Country Financing, Affiliate Level

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Empirical specification and Data Baseline Findings Additional Checks

#### Within-firm variation

Using parent fixed effects to absorb unobserved MNC characteristics.

(E.g.: Productivity, managerial practices, labor skill composition, R&D intensity, financial health etc.)

| Dependent variable:                     | Local sales | 3rd ctry sales  | US sales    | Local sales          | 3rd ctry sales     | US sales          |  |  |  |  |
|---|-------------|---|-------------|----------------------|--------------------|-------------------|--|--|--|--|
|   | Total sales | Total sales   | Total sales | Total sales          | Total sales        | Total sales       |  |  |  |  |
|   | (1)         | (2)   | (3)         | (4)                  | (5)                | (6)               |  |  |  |  |
| Fin Development                         | -0.033      | 0.023   | 0.010       | -0.026               | 0.022              | 0.004             |  |  |  |  |
|   | (-1.94)*    | (1.56)  | (1.59)      | (-1.44)              | (1.39)             | (0.58)            |  |  |  |  |
| Fin Development x<br>Ext Fin Dependence |             |   |             | -0.009<br>(-5.03)*** | 0.006<br>(3.65)*** | 0.003<br>(1.99)** |  |  |  |  |
| Controls                                | GDP, GDF    | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Parent Firm FE, Year FE |             |                      |                    |                   |  |  |  |  |
| # observations                          | 215,181     | 215,181   | 215,181     | 161,427              | 161,427            | 161,427           |  |  |  |  |
| R-squared                               | 0.27        | 0.27  | 0.24        | 0.28                 | 0.27               | 0.24              |  |  |  |  |

#### Table 10: Parent Firm Fixed Effects, Affiliate Level

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#### Within-country variation

Variation within countries over time in financial development is smaller.

But results still present when exploiting cross-industry differences in *EFD*, in the presence of country or country-year FEs.

| Dependent variable:                     | Local sales<br>Total sales | 3rd ctry sales<br>Total sales | US sales<br>Total sales  | Local sales<br>Total sales   | 3rd ctry sales<br>Total sales        | US sales<br>Total sales    | Local sales<br>Total sales | 3rd ctry sales<br>Total sales | US sales<br>Total sales |
|---|----------------------------|-------------------------------|--------------------------|------------------------------|--------------------------------------|----------------------------|----------------------------|-------------------------------|-------------------------|
|   | (1)                        | (2)                           | (3)                      | (4)                          | (5)                                  | (6)                        | (7)                        | (8)                           | (9)                     |
| Fin Development                         | 0.005<br>(0.38)            | -0.015<br>(-1.21)             | 0.010<br>(2.04)**        | 0.014<br>(0.94)              | -0.020<br>(-1.45)                    | 0.006<br>(1.24)            |                            |                               |                         |
| Fin Development x<br>Ext Fin Dependence |                            |                               |                          | -0.012<br>(-3.46)***         | 0.009<br>(2.85)***                   | 0.003<br>(2.08)**          | -0.011<br>(-3.19)***       | 0.009<br>(2.61)***            | 0.003<br>(1.87)*        |
| Controls                                | Country I                  | FE, Industry FE,<br>GD        | Year FE<br>P, GDP per ca | Country I<br>pita, Distance, | FE, Industry FE,<br>K/L, H/L, Rule o | Year FE<br>of Law, Tax Rat | Countr<br>te, RTA Dumm     | /-Year FE, Indu               | stry FE                 |
| # Obs<br>R <sup>2</sup>                 | 15,531<br>0.27             | 15,531<br>0.29                | 15,531<br>0.16           | 10,435<br>0.30               | 10,435<br>0.31                       | 10,435<br>0.18             | 11,392<br>0.32             | 11,392<br>0.33                | 11,392<br>0.20          |

Table 11: Cross-Section vs. Time-Series: Country Fixed Effects, Aggregate Level

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# Plan of Talk

- 1. Introduction and Motivation
- 2. Discussion of Mechanisms
- 3. Evidence from US Multinational Activity Abroad
  - Empirical Specification
  - Data
  - Results

#### 4. Conclusions

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### Conclusion

- Host-country financial development systematically influences the structure of multinational activity:
  - An increase in MNC affiliate presence, in terms of numbers and aggregate sales levels
  - But also: Triggers reallocations in the composition of affiliate sales.
     Horizontal motives become less important, relative to return and platform exports.
- Consistent with the presence of two effects:
  - Competition effect: Entry of local firms leads MNCs to orient their global sales away from the host market.
  - Financing effect: Entry of affiliates raises multinational activity in the aggregate.
- Scope to examine in more detail the interaction between MNC affiliates and host firms in local financial markets. To better understand how local conditions affect the nature of global supply chain activity.

# **Supplementary Slides**

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#### Other Financial Development measures • Return

| Dependent variable:                     | Local sales<br>Total sales | 3rd ctry sales<br>Total sales  | US sales<br>Total sales | Local sales<br>Total sales | 3rd ctry sales<br>Total sales | US sales<br>Total sales |  |  |  |  |
|---|----------------------------|--|-------------------------|----------------------------|-------------------------------|-------------------------|--|--|--|--|
|   | (1)                        | (2)  | (3)                     | (4)                        | (5)                           | (6)                     |  |  |  |  |
| Panel A: Private credit                 | by banks an                | d other financia   | al institutions         | / GDP                      |                               |                         |  |  |  |  |
| Fin Development                         | -0.056<br>(-2.63)**        | 0.036<br>(1.94)*   | 0.020<br>(2.80)***      | -0.059<br>(-2.71)***       | 0.041<br>(2.09)**             | 0.018<br>(2.49)**       |  |  |  |  |
| Fin Development x<br>Ext Fin Dependence |                            |  |                         | -0.013<br>(-3.65)***       | 0.010<br>(3.01)***            | 0.003<br>(2.13)**       |  |  |  |  |
| Controls                                | GDP, GDF                   | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Industry FE, Year FE |                         |                            |                               |                         |  |  |  |  |
| # Obs<br>R <sup>2</sup>                 | 15,673<br>0.22             | 15,673<br>0.23   | 15,673<br>0.13          | 10,530<br>0.24             | 10,530<br>0.24                | 10,530<br>0.15          |  |  |  |  |
| Panel B: Stock market                   | capitalizatio              | n / GDP  |                         |                            |                               |                         |  |  |  |  |
| Fin Development                         | -0.038<br>(-2.64)***       | 0.024<br>(2.02)**  | 0.014<br>(3.17)***      | -0.037<br>(-2.67)***       | 0.027<br>(2.29)**             | 0.011<br>(2.61)**       |  |  |  |  |
| Fin Development x<br>Ext Fin Dependence |                            |  |                         | -0.009<br>(-5.41)***       | 0.008<br>(4.04)***            | 0.002<br>(2.45)**       |  |  |  |  |
| Controls                                | GDP, GDF                   | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Industry FE, Year FE |                         |                            |                               |                         |  |  |  |  |
| # Obs<br>R <sup>2</sup>                 | 15,480<br>0.22             | 15,480<br>0.24   | 15,480<br>0.13          | 10,476<br>0.24             | 10,476<br>0.25                | 10,476<br>0.16          |  |  |  |  |

#### Table 7: Alternative Measures of Financial Development, Aggregate Level

Bilir, Chor, Manova Host-Country Financial Development and Multinational Activity

### Tobit specification

To account for the bounded support of the sales shares variables:

| Dependent variable:                     | Local sales | 3rd ctry sales   | y sales US sales I |                      | 3rd ctry sales    | US sales           |  |  |  |
|---|-------------|--|--------------------|----------------------|-------------------|--------------------|--|--|--|
|   | Total sales | Total sales  | sales Total sales  |                      | Total sales       | Total sales        |  |  |  |
|   | (1)         | (2)  | (3)                | (4)                  | (5)               | (6)                |  |  |  |
| Fin Development                         | -0.058      | 0.057  | 0.060              | -0.060               | 0.055             | 0.052              |  |  |  |
|   | (-2.88)***  | (2.15)**   | (3.42)***          | (-2.92)***           | (2.11)**          | (3.37)***          |  |  |  |
| Fin Development x<br>Ext Fin Dependence |             |  |                    | -0.013<br>(-3.71)*** | 0.008<br>(2.13)** | 0.007<br>(2.95)*** |  |  |  |
| Controls                                | GDP, GDF    | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Industry FE, Year FE |                    |                      |                   |                    |  |  |  |
| # observations                          | 15,531      | 15,531   | 15,531             | 10,435               | 10,435            | 10,435             |  |  |  |
| R-squared                               | 0.37        | 0.30   | 0.27               | 0.42                 | 0.31              | 0.38               |  |  |  |

#### Appendix Table 2: Tobit, Aggregate Level



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#### Weighted least squares specification

Using log total affiliate sales as weights. Results not driven by small firms with small sales.

| Dependent variable:                     | Local sales  | 3rd ctry sales | US sales    | Local sales          | 3rd ctry sales    | US sales          |
|---|--|----------------|-------------|----------------------|-------------------|-------------------|
|   | Total sales  | Total sales    | Total sales | Total sales          | Total sales       | Total sales       |
|   | (1)  | (2)            | (3)         | (4)                  | (5)               | (6)               |
| Fin Development                         | -0.051   | 0.032          | 0.019       | -0.046               | 0.034             | 0.012             |
|   | (-2.56)**  | (1.89)*        | (2.40)**    | (-2.10)**            | (1.80)*           | (1.34)            |
| Fin Development x<br>Ext Fin Dependence |  |                |             | -0.008<br>(-3.86)*** | 0.004<br>(2.39)** | 0.004<br>(2.06)** |
| Controls                                | GDP, GDP per capita, Distance, K/L, H/L, Rule of Law, Tax Rate, RTA Dummies,<br>Industry FE, Year FE |                |             |                      |                   |                   |
| # observations                          | 210,852  | 210,852        | 210,852     | 159,137              | 159,137           | 159,137           |
| R-squared                               | 0.16   | 0.18           | 0.09        | 0.16                 | 0.18              | 0.11              |

#### Appendix Table 3: Weighted Least Squares, Affiliate Level

#### Return