Online Appendix to "Learning to Import from Your Peers"[*]

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This material supplements our paper "Learning to Import from Your Peers". In Section O1, we report additional details about our sample, including variation across source countries and imported products, as well as peer and firm group patterns. In Section O2, we include details of several regressions that we reported in an abridged form in the main text, as well as additional comparisons of peer-induced importers to other firms, and comparisons of the implications coming from our two different designs.


O1 Additional descriptive statistics of the estimation sample

O1.1 Import patterns

To provide further context to our analysis and results here we include a variety of additional descriptive statistics. Our main message is that the four source countries we study (Czech Republic, Slovakia, Romania and Russia) are broadly similar in terms of exports to Hungary, and that most firms import from at most one of these markets. This justifies our choice to pool these markets and study the entry into importing independently.

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Figure O1: Industry composition of importers by source country
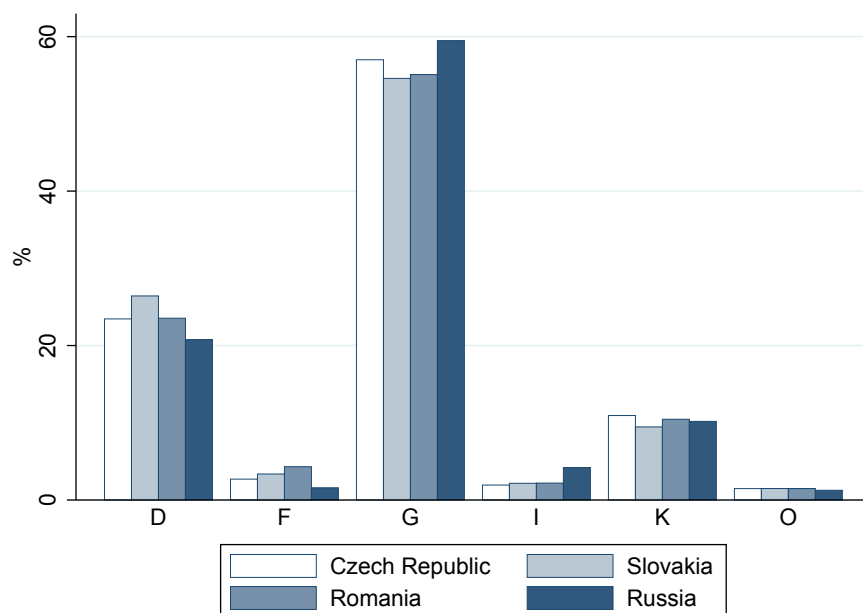
Notes: Sample includes firms with headquarters in Budapest, 1994-2003. We present the industry composition by 1-digit NACE Rev.1.1 categories, separately for importers from a specific country. Only those industry categories are included which have at least a share of 1% in the country-specific imports of our sample from any of the four countries. D: Manufacturing, F: Construction, G: Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods, I: Transport, storage and communication, K: Real estate, renting and business activities, O: Other community, social and personal service activities.

Figures O1-O3 show the industry composition of firms importing from one of the four countries. This provides further evidence for the similarity of the importers from the different countries we examine.

Figure O2: Industry composition of importers in manufacturing by source country
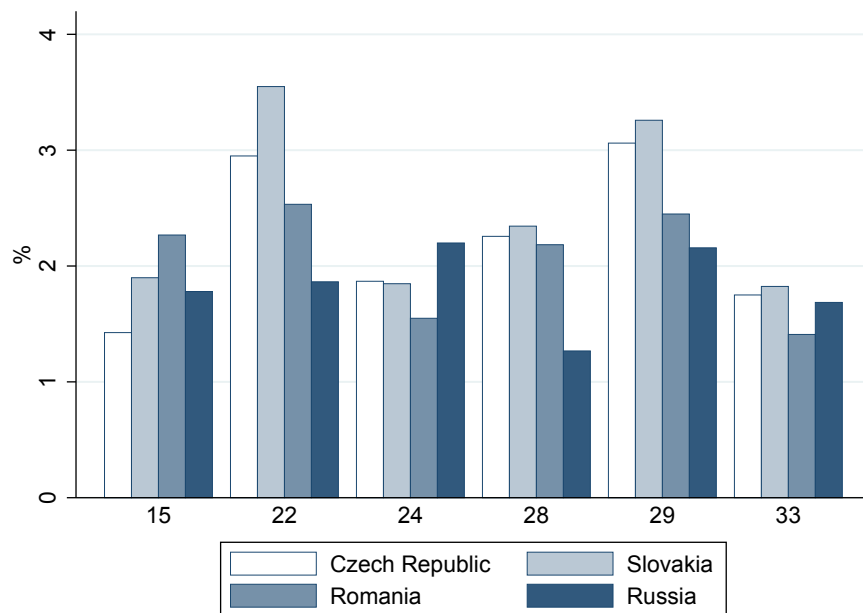
Notes: Sample includes firms with headquarters in Budapest, 1994-2003. We present the industry composition by 2-digit NACE Rev.1.1 categories within manufacturing, separately for importers from a specific country, including only the six highest-share categories. 15: Manufacture of food products and beverages, 22: Publishing, printing and reproduction of recorded media, 24: Manufacture of chemicals and chemical products, 28: Manufacture of fabricated metal products, except machinery and equipment, 29: Manufacture of machinery and equipment n.e.c., 33: Manufacture of medical, precision and optical instruments, watches and clocks.

Figure O3: Industry composition of importers in trade and business services by source country
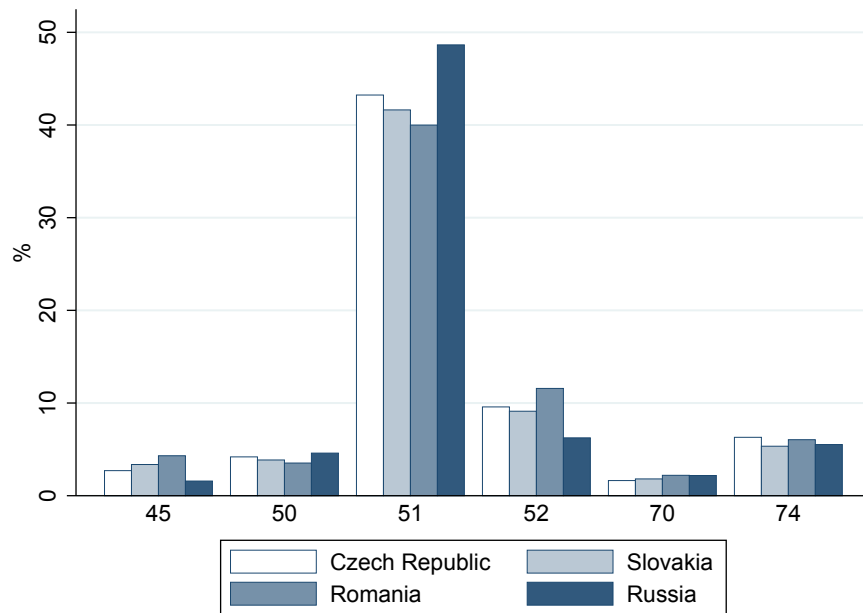
Notes: Sample includes firms with headquarters in Budapest, 1994-2003. We present the industry composition by 2-digit NACE Rev.1.1 categories outside manufacturing, separately for importers from a specific country, including only the six highest-share categories. 45: Construction, 50: Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel, 51: Wholesale trade and commission trade, except of motor vehicles and motorcycles, 52: Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods, 70: Real estate activities, 74: Other business activities.

Table O1: Distribution of imports by product categories

Share of the product category in all import transactions	All importers in 1994-2003 from				
	any of the 4 countries	Czech Republic	Slovakia	Romania	Russia
Consumer goods (BEC 1, 6)	24%	21%	20%	46%	10%
Industrial supplies (BEC 2, 3)	39%	37%	46%	34%	44%
Capital goods (BEC 41, 51, 52)	13%	16%	13%	7%	13%
Parts and accessories (BEC 42, 53)	22%	24%	19%	10%	32%

Notes: Sample includes firms with headquarters in Budapest, 1994-2003. BEC 1, 6: Food and beverage, consumer goods; BEC 2, 3: Industrial supplies, fuels and lubricants; BEC 41, 51, 52: Capital goods, transport equipment; BEC 42, 53: Parts and accessories. As some products are unclassified, shares in a specific column do not add up to 100%.

Table O2: Distribution of the number of import markets

Number of countries the firm imports from	Share of firms importing	
	all imports	successful imports
0	94.99%	98.46%
1	3.29%	0.89%
2	1.11%	0.44%
3	0.43%	0.15%
4	0.18%	0.06%

Notes: Sample includes firms with headquarters in Budapest, 1994-2003. The first column shows the share of firms importing from a specific number of countries out of the four - the Czech Republic, Slovakia, Romania and Russia -, and the second column shows the same share for successful imports, i.e. importing at least twice in the three-year period of [t-1,t+1].

Imported products. Table O1 shows the product composition of importers by source country. Most of the imported products are industrial supplies, and the product composition is stable across countries. Looking at the product composition of imports within a firm shows that import is highly concentrated by the product category (not reported).

Patterns of source countries. Table O2 presents the distribution of the number of countries from which firms have imported. More than half of the importers import from only one of the four countries. The second column shows the same pattern for successful importers, defined as a firm importing from a country at least twice in the 3-year period $[t-1, t+1]$ where t is the current year. Less than one third of the importers are classified as successful importers.

Table O3: Patterns of peer experience

Time period: 1994-2003	Share of firm-year-country observations	
Patterns of experienced peers	country-specific experience	experience about any of the four countries
By type of the experience:		
export only	6.0%	6.6%
import only	5.7%	5.8%
ownership only	1.9%	4.0%
export and import, but no ownership	7.2%	14.1%
other patterns	2.9%	11.7%
By peer group:		
geographic only	18.9%	32.6%
person-connected only	0.7%	0.8%
ownership-connected only	2.3%	3.5%
geographic and ownership-connected, but no person-connected	1.2%	3.7%
other patterns	0.7%	1.7%
No experienced peers	76.2%	57.8%

Notes: Sample includes firms with headquarters in Budapest, 1994-2003. The first panel shows the share of firms by the experience type of their peers, and the second panel shows the share of firms by the type of experienced peers they have. The first column uses country-specific experience and the second column uses experience with any of the four countries.

O1.2 Peer patterns and firm characteristics

Here we provide further descriptive statistics about our sample to show that there is large enough variation in peer patterns as well as in firm characteristics for estimating heterogeneous spillovers by different firm and peer groups.

Patterns of experienced peers. Table O3 shows the distribution of peer experience in the various networks to illustrate the independent variation in our right-hand-side variables. The patterns suggest that export and import experience are not necessarily present together, and there are relatively few observations with peers having an owner from one of the four countries. There are closely located neighbors with country-specific experience in more than 20% of the observations. The share of observations with person-connected or ownership-connected experienced peers is much lower.

Firm groups. Table O4 shows descriptive statistics about the different firm groups we use for the heterogeneity estimates of Section 4, including group size, the share of importers and import

Table O4: Size and composition of firm groups

| Firm groups | Not-yet-importer firm-country pairs | | All observations |
	share of obs. (%)	share of import starts (%)	share of importers (%)
By size:			
≤5 empl.	66.1	0.2	1.0
6-20 empl.	7.5	0.9	5.1
21-100 empl.	2.2	2.0	12.4
>100 empl.	0.5	4.9	29.5
no data	23.7	0.1	0.9
By productivity:			
1st quartile	13.9	0.2	1.2
2nd quartile	17.0	0.3	1.8
3rd quartile	16.9	0.5	3.0
4th quartile	14.7	0.6	3.6
no data	37.5	0.1	0.7
By ownership:			
foreign	8.9	0.9	5.5
not foreign	91.1	0.2	1.4

Notes: Sample includes firms with headquarters in Budapest 1994-2003. The first two columns include firm-country pairs in those years when the firm has not imported from the country until the previous year. The first column shows the share of observations in the specific firm group. The second column presents the share of observations within each firm group in which the firm starts to import from the country. The third column shows the share of importers in all observations within the firm group.

starts.

O2 Additional estimates not reported in the main text

O2.1 Heterogeneity in spillovers from different peer groups

Section 4 in the paper presents evidence on heterogeneity in the same-building peer effect. Here we show analogous results for other peer groups. Tables O5 and O6 present heterogeneity results for spillover effects in neighbor-building and person-connected peer networks. The top panels of these tables are reported in the main text Tables 6 and 7.

Patterns of heterogeneity by firm groups and peer groups are similar for same-building peers and neighbor-building peers, but somewhat weaker for the latter. In person-connected networks we find no significant heterogeneity by the characteristics of the peers, and patterns by firm characteristics are not as clear as for spatial peers, either.

Table O7 shows that peers having import experience in the same industry or with the same product category have a significantly larger effect both in the same-building and in the person-connected peer network. The top panel of this table is reported in the main text Table 11. We do not find a significantly different effect for neighbor-building peers, potentially because of the much weaker neighbor-building peer effect.

Table O5: Heterogeneity of peer effect across receivers

Dependent variable: starting to import	Firm groups by		
	size (1)	productivity (2)	ownership (3)
Peers with import experience in same building			
* Firm in group 1	0.07*** (0.02)	0.03 (0.02)	0.11*** (0.02)
* Firm in group 2	0.62***° (0.12)	0.20***° (0.05)	0.81***° (0.11)
* Firm in group 3	1.45***° (0.29)	0.38*** (0.07)	
* Firm in group 4	3.32***° (0.87)	0.61***° (0.09)	
Peers with import experience in neighbor building			
* Firm in group 1	-0.03* (0.02)	-0.03 (0.02)	0.01 (0.02)
* Firm in group 2	0.34***° (0.13)	0.00 (0.05)	0.32***° (0.10)
* Firm in group 3	1.04***° (0.30)	0.15** (0.07)	
* Firm in group 4	2.02** (0.99)	0.21*** (0.07)	
Peers with import experience in person network			
* Firm in group 1	0.13** (0.07)	0.25** (0.10)	0.28*** (0.09)
* Firm in group 2	1.09***° (0.40)	0.62** (0.24)	1.29***° (0.46)
* Firm in group 3	0.95* (0.57)	0.38 (0.24)	
* Firm in group 4	1.57* (0.95)	0.57** (0.26)	
Other types of peers with import experience * Firm group indicators	Yes	Yes	Yes
Firm-year FE	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes
Observations	3,778,517	3,778,517	3,778,517

Notes: Sample includes firm-country pairs in years in which the firm has not imported from the country by the previous year. Dependent variable is an indicator for the firm starting to import from the country in the given year. Right-hand side variables are indicators for peers with prior country-specific import experience interacted with group indicators. Groups are defined in columns, with group 1 the lowest category or domestic firms in column 3. Other types of peers refer to cross-street and ownership-connected peer categories. Standard errors in parentheses are clustered by building. Coefficients are multiplied by 100 to read as percentage point marginal effects. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. ° denotes that the coefficient is significantly different from that of previous group at 5%.

Table O6: Heterogeneity of peer effect across peers

Dependent variable: starting to import	Peer groups by		
	size (1)	productivity (2)	ownership (3)
Peers with import experience in same building			
and in group 1	0.17*** (0.03)	0.14*** (0.04)	0.14*** (0.03)
and in group 2	0.26*** (0.05)	0.13*** (0.05)	0.40***° (0.05)
and in group 3	0.35*** (0.07)	0.19*** (0.04)	
and in group 4	0.15 (0.10)	0.34***° (0.05)	
Peers with import experience in neighbor building			
and in group 1	0.02 (0.02)	0.00 (0.03)	0.05** (0.02)
and in group 2	0.13***° (0.05)	0.05 (0.04)	0.07* (0.04)
and in group 3	0.15** (0.07)	0.07** (0.03)	
and in group 4	-0.03 (0.10)	0.10** (0.04)	
Peers with import experience in person network			
and in group 1	0.64*** (0.15)	0.33** (0.13)	0.40*** (0.11)
and in group 2	0.04 (0.27)	0.25 (0.25)	0.32* (0.18)
and in group 3	0.36 (0.23)	0.30 (0.22)	
and in group 4	0.15 (0.15)	0.43** (0.18)	
Other types of peers with import experience in different groups	Yes	Yes	Yes
Firm-year FE	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes
Observations	3,778,517	3,778,517	3,778,517

Notes: Sample includes firm-country pairs in years in which the firm has not imported from the country by the previous year. Dependent variable is an indicator for the firm starting to import from the country in the given year. Right-hand side variables are indicators for peers with prior country-specific import experience by peer group. Groups are defined in columns, with group 1 the lowest category or domestic firms in column 3. Other types of peers refer to cross-street and ownership-connected peer categories. Standard errors in parentheses are clustered by building. Coefficients are multiplied by 100 to read as percentage point marginal effects. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. ° denotes that the coefficient is significantly different from that of previous group at 5%.

Table O7: Effect of peer experience within industry and product

Dependent variable: starting to import	same industry		same product			
	All firms	Manufacturing firms	Consumer goods	Industrial supplies	Capital goods	Parts and accessories
	(1)	(2)	(3)	(4)	(5)	(6)
Peers with import experience in same building						
with different industry/product	0.17***	0.36***	0.07***	0.05**	0.06***	0.05***
	(0.02)	(0.12)	(0.02)	(0.02)	(0.01)	(0.01)
with same industry/product	0.59***°	1.00**	0.17***°	0.17***°	0.11***	0.18***°
	(0.09)	(0.44)	(0.03)	(0.03)	(0.03)	(0.03)
Peers with import experience in neighbor building						
with different industry/product	0.04*	0.25**	0.01	0.02	0.01	0.01
	(0.02)	(0.10)	(0.02)	(0.02)	(0.01)	(0.01)
with same industry/product	0.11	1.21	0.00	0.04**	0.02	0.02
	(0.08)	(0.79)	(0.02)	(0.02)	(0.02)	(0.02)
Peers with import experience in person network						
with different industry/product	0.25***	0.67	0.08	0.08	0.07	-0.01
	(0.09)	(0.55)	(0.07)	(0.09)	(0.06)	(0.05)
with same industry/product	0.97***°	1.02	0.23**	0.30***	0.23**	0.32***°
	(0.31)	(1.16)	(0.10)	(0.09)	(0.09)	(0.10)
Other types of peers having import experience with same/different industry/product	Yes	Yes	Yes	Yes	Yes	Yes
Not yet importer from destination	No	No	Yes	Yes	Yes	Yes
Firm-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3,778,517	376,739	3,821,755	3,805,958	3,828,759	3,829,629
Baseline hazard (in %):	0.19	0.41	0.07	0.11	0.05	0.05

Notes: Sample includes firm-country pairs in years in which the firm has not imported from the country by the previous year. Column (2) contains only manufacturing firms. Dependent variable is an indicator for the firm starting to import from the country in the given year. In columns (3)-(6) only imports in the given product category are considered, both for creating the sample and defining the dependent variable. Right-hand side variables are indicators for peers with prior country-specific import experience. Separate indicators are included for peers in the 2-digit industry of the firm or in a different industry in columns (1)-(2), and peers importing the same or different product categories in columns (3)-(6). Consumer goods are BEC 1 & 6, industrial supplies are BEC 2 & 3, capital goods are BEC 41, 51 & 52, and parts and accessories are BEC 42 & 53. Other types of peers refer to cross-street and ownership-connected peer categories. Standard errors in parentheses are clustered by building. Coefficients are multiplied by 100 to read as percentage point marginal effects. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. ° denotes that the coefficient is significantly different from that of previous group at 5%. Baseline hazard refers to the share of importers in the estimation sample.

Table O8: Effect of peer experience on same-country and same-product imports

Dependent variable: starting to import the product category

	(1)
Peers with import experience in same building	
with different product category	-6.67***
	(2.05)
with same product category	10.80***°
	(1.92)
Other types of peers having import experience with same/different product category	Yes
Firm-year FE	Yes
Country-year FE	Yes
Observations	38,088

Notes: Sample includes firm-country-product category triplets in the year in which the firm started to import for the first time from the country. Dependent variable is an indicator for the firm starting to import the product category from the country in the given year. Right-hand side variables are indicators for peers with prior country-specific import experience in the same or in a different product category. The product categories are consumer goods (BEC 1, 6), industrial supplies (BEC 2, 3), capital goods (BEC 41,51, 52) and parts and accessories (BEC 42 and 53). Other types of peers refer to all other (non-same-building) peer categories in Table 3. Standard errors in parentheses are clustered by building. Coefficients are multiplied by 100 to read as percentage point marginal effects. Significance levels: *** p<0.01, ** p<0.05, * p<0.1. ° denotes that the coefficient is significantly different from that of previous group at 5%.

O2.2 Alternative design for same-product spillovers

In the paper we show that spillovers are stronger from peers having import experience within the same product category. In Table O8 we explore a related specification in which we show that conditional on a firm starting to import from a country, it is more likely to import the product category in which its peer has had import experience. In this specification the unit of observation is a firm-country-product category-year quadruple. We use the four product categories based on BEC classification as before. Only those firm-country-years are included in which the firm imports from the country for the first time. Right-hand side variables are country-specific peer experience indicators differentiated by same or different product category.

O2.3 Comparing the treatment effect calculated from the mover design or from the counterfactual analysis

Both in Section 3.3 and in Section 5 we estimate the long-run effect of experienced peers on the import probability. Here we compare the magnitude of the estimated 5-year effect of an experienced peer on import entry using the two different designs: the mover design estimates and the counterfactual calculations which are based on our main research design. Table O9 shows that using the mover design or the counterfactual analysis gives similar results for the expected number of firms starting to import because of spillovers 1-5 years after the treatment. Using the mover design estimates, the expected effect of treating 1000 firms is $\beta_k \cdot N_f \cdot N_b$, where β_k is the estimated k-year spillover effect, N_f is the number of firms in a building which can benefit from the spillovers, and N_b is the number of treated buildings. To be more conservative, we take β_k from the mover design with firm-year and country-year fixed effects. In the counterfactual analysis the treatment induces an incumbent firm start importing, which decreases the number of non-importer firms which can benefit from the spillovers by one. To make the calculations based on the mover design comparable, we deduct one from the average number of incumbents per building in the estimation sample for the mover design, all of which are non-importers by design. This gives the following result for the 5-year effect: $0.0073 \cdot 3.6 \cdot 1000 = 26.28$. The magnitude of the two set of results is comparable, which provides internal consistency to our results. The remaining differences can be due to differences in sample composition in the two designs.

Table O9: Spillover effect of treating 1000 buildings

Years after the treatment	Expected number of new importers after treating 1000 buildings				
	Mover design			Multiplier calculations	
	Expected value	Confidence interval		Expected value	Confidence interval
1	4.4	(-4.8,13.7)		3.2	(2.7,3.7)
2	13.7	(-2.3,29.7)		6.4	(5.4,7.3)
3	23.3	(2.1,44.5)		9.7	(9.0,10.4)
4	28.0	(1.4,54.6)		12.6	(12.3,12.9)
5	26.2	(-12.3,64.7)		16.0	(14.5,17.6)

Notes: The table shows the expected number of new importers due to spillovers after treating 1,000 random buildings, k years after the treatment with $k=1,2,3,4,5$. 95% confidence intervals are in parentheses. In column (1) we use the mover design estimations. The treatment is a firm with country-specific import experience moving into the building. The estimation sample contains all firm-country pairs for which a mover comes to the building and no incumbent firm has any country-specific experience by the time of the move. We get the expected values by multiplying the spillover coefficients with the number of firms in a building and the number of buildings. As the number of firms in a building we use the average number of incumbent firms in the sample minus one, to make it comparable with the multiplier calculations in which a non-importer incumbent is treated. We calculate the confidence intervals using the standard errors of the estimated spillover coefficients. In column (2) we use the multiplier calculations. The treatment is inducing a firm to start importing from a country. The sample contains all the buildings with at least 2 firms in 2013 which have no country-specific experience. Confidence intervals are calculated from bootstrap samples using 1,000 repetitions.

O2.4 Effect of experienced peers on additional margins of imports

Comparing new importers with and without experienced peers: In the paper we focus on the effect of experienced peers on the probability of import entry. Here we address the question, if the presence of experienced peers has an effect on the length and the value of country-specific imports as well. As before, we compare new importers with or without peers having country-specific experience. We look at both the probability of continuing importing in the next year and at import value. In these specifications we cannot have firm-year fixed effects, as there are very few firms which start to import from multiple countries in the same time. Instead, we either include time-variant firm-specific controls or firm fixed effects. Table O10 shows that experienced peers don't have a significant effect on the continuation probability or on the initial import value of new importers. At the same time, the last two columns of Table O10 show that continuing importers, i.e. firms already imported from the country before, with experienced peers import significantly larger values. These results are comparable to the findings of Mion and Opromolla (2014). They show that having a manager with country-specific experience doesn't have a significant effect on the export value of firms entering a new export market, but it has a significantly positive effect on the export value of continuing exporters.

References

Mion, Giordano and Luca David Opromolla, "Managers' mobility, trade performance, and wages," *Journal of International Economics*, 2014, *94* (1), 85–101.

Table O10: Comparing importers with and without experienced peers

Sample:	First importers from country in t				Continuing importers in t	
Dependent variable:	Continues importing in t+1		Log of import value in t		Log of import value in t	
	(1)	(2)	(3)	(4)	(5)	(6)
Peers with import experience in:						
same building	1.00	6.03	-0.019	-0.158	0.118	0.214***
	(1.60)	(6.15)	(0.084)	(0.278)	(0.086)	(0.078)
neighbor building	-2.36	8.30	-0.097	0.053	-0.007	-0.043
	(2.53)	(9.45)	(0.120)	(0.408)	(0.119)	(0.114)
cross-street building	-2.78	2.58	-0.366***	-0.119	-0.295**	0.122
	(2.90)	(11.20)	(0.135)	(0.382)	(0.142)	(0.138)
person network	-6.90**	1.27	0.585***	0.104	0.417***	0.271**
	(2.91)	(10.90)	(0.164)	(0.514)	(0.120)	(0.134)
ownership network	3.96*	-5.84	0.538***	0.198	0.631***	0.242**
	(2.32)	(9.81)	(0.108)	(0.361)	(0.098)	(0.097)
Firm's own experience	Yes	No	Yes	No	Yes	No
Firm-level controls	Yes	No	Yes	No	Yes	No
Firm FE	No	Yes	No	Yes	No	Yes
Country-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,861	8,331	7,706	9,522	18,284	21,313

Notes: Sample includes firm-country pairs in the year in which the firm starts to import from the country for the first time. Dependent variable is an indicator for the firm continuing to import from the country next year in columns (1-2) and the logarithm of current-year imported value in columns (3-4), expressed in 1000HUF and deflated using 2-digit PPI. Right-hand side variables are indicators for specific types of peers with prior country-specific import experience. Firm's own experience refers to indicators for the firm having export experience or owners from the country or from any of the four countries. Additional firm-level controls in columns (1),(3) are employment, labor productivity and age measured in logs, foreign-owned indicator and a set of 2-digit industry indicators. Standard errors in parentheses are clustered by building. Coefficients in columns (1)-(2) are multiplied by 100 to read as percentage point marginal effects. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.