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INFORMAL SECTOR AND URBANIZATION EXTERNALITIES IN VIETNAM

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Abstract

This paper investigates the impacts of urbanization on the productivity of informal household businesses in urban places of Vietnam. Urbanization externalities are measured by the diversity of industry, which are disaggregated from formal and informal sources, and city size. Results from the paper show that informal household businesses in urban places benefit from clustering with formal enterprises but not from informal firms in other industries. Furthermore, the concentration in large and dense urban areas does not bring benefits to informal household businesses. The results call for more attention on the urban planning towards the informal sector in urban places of Vietnam.

Keywords: Urbanization, Informality, Productivity

JEL Classifications: R120, R200, L600

1. Introduction

Recent academic works on the New Economic Geography (NEG) reveal contradictory conclusions on the distribution of the informal sector in cities in developing countries. In a theoretical study, Gerritse and Moreno-Monroy (2012) argue that if the informal sector provides a competitive alternative to formal goods, large numbers of informal workers are needed in less developed regions while the informal sector is relatively smaller in larger, more developed regions.

Mazumdar and Sarkar (2013) support Gerritse and Moreno-Monroy's (2012) point by showing that the rural informal manufacturing sector in Thailand has been mainly concentrated in the central region around Bangkok. Contrarily, Cling *et al.* (2010) find high disproportions of informal workers in cities with high economic growth in Vietnam. Mukim (2011) reveals that the informal sector is highly concentrated in developed cities in India. Similar results are found for Cambodia where informal employment is relatively high in Phnom Penh and low in peripheral provinces (Tanaka and Hashiguchi, 2015).

The above contradictory findings call for more evidence linking the informal sector to urbanization to understand how and why informal enterprises locate in cities in developing countries. Theoretically, firms (both formal and informal) tend to locate in places that bring them higher productivity and thus profits (Vernon, 1966; Duranton and Puga, 2001; Henderson, 2003; Rosenthal and Strange, 2004; Overman and Venables, 2005; and Puga, 2010). These benefits are called local scale externalities or agglomeration economies.

There are two types of agglomeration. The first is localization, known as the localization-MAR economy because it was developed by Marshall (1920), Arrow (1962), and

Romer (1986). In MAR localization, by clustering with other enterprises in the same industry, a firm can take advantage of technological spillovers, sharing of inputs and skilled labor that enhances productivity of all firms in that industry.

The second type of agglomeration is urbanization externalities or urbanization for short. Urbanization can be measured by either city size in terms of population and employment or the diversity of industry known as Chinitz-Jacobs urbanization. Developed by Chinitz (1961) and Jacobs (1969), Chinitz-Jacobs urbanization implies the benefits of innovations, knowledge transfer, and access to business services that an enterprise could have if locating with firms in other industries in diverse and large metro areas.

In a recent study on the effects of agglomeration economies on the labor productivity of informal household businesses in Vietnam, Tran and La (2018) find that technology transfers are not an agglomerative force for the informal sector in Vietnam. This is because informal firms have low human capital and thus they might not learn from each other. Instead, the decision on the location of an informal firm is driven by the benefits of market access. In addition, the literature on the Vietnamese informal sector argues that the existence of the sector in rural areas diversifies the livelihood of rural farmers and thus contributes to the sustainable economic development. On the other hand, the concentration of the sector in big cities and urban places creates urban costs and destroys the income of urban dwellers (Haughton, 2010; Cling *et al.* 2010). Nevertheless, Vietnamese informal businesses and workers concentrate in high economic growth cities (Cling *et al.* 2010; Tran and La, 2018).

Given these above findings, this paper limits to study urbanization externalities on labor productivity of informal household businesses in urban places of Vietnam. In Vietnamese history, urban places are defined as urban districts in cities and provinces. They often attract enterprises and workers thanks to their potential consumption markets and favorable conditions of transportation. To evaluate whether informal household businesses benefit from the diversity of informal or formal industrial enterprises, we separate urbanization into two types, including urbanization of informal households and urbanization of formal enterprises.

Studying geographical regional effects in general and urbanization in particular needs to consider the issues of endogeneity. This is because higher output per worker might not be so much a consequence of higher employment density but its cause (Moomaw, 1981; Brulhart, 1998). If a location has conditions favoring higher productivity, it will attract more firms and workers and become larger as a result. As such, there will be correlation across geographical units in the error term. To deal with the problem of endogeneity, the paper uses lagged urbanizations and data on population of cities in the past as instruments for current urbanizations.

The paper is structured as follows: Section 2 provides a general picture on the informal sector in Vietnam. Section 3 describes data and variable measurement. An empirical approach is presented in Section 4. Section 5 discusses estimated results and Section 6 concludes.

2. The informal sector in Vietnam

The informal sector has long existed in Vietnam since the centrally planned economy. However, until the economic reforms of 'Doi Moi' in 1986 when Vietnamese legal documents recognized the existence of the non-state sector, the informal sector has been formally accepted as an integral part of the economy. Afterwards, studies on the Vietnamese informal sector have developed with different measures of the sector's size. This, besides the sector self-development, comes partly from using a different definition of the informality.

Until 2007, Razafindrakoto *et al.* (2008) introduced international standards to measure the informal sector and informal employment in Vietnam. In accordance with international measures, the informal sector is defined as all private unincorporated enterprises that produce at least some of their goods and services for sale or barter, and that do not register and engage in non-agricultural activities. This definition has been applied in surveys on the informal sector and informal employment in Vietnam lately.

Since then, the measurement of the informal sector has been changed. Using data from the Vietnam Labor Force Survey (LFS) in 2009, Razafindrakoto *et al.* (2013) estimate that the

informal sector accounts for 23.8% of total workers and is just behind agriculture in terms of number of jobs. Vietnamese informal businesses and workers tend to concentrate in high economic growth cities (Cling *et al.* 2010). Similarly, Tran and La (2018) find that informal household businesses in Vietnam tend to cluster in the most highly developed cities including metropolitan areas, centrally-managed cities, and emerging industrial provinces.¹In addition, the informal sector concentrates in five labor-intensive industries including: food processing, wearing apparel, fabricated metal products, furniture, and wood and wood products. Studies on the informal sector in Vietnam reveal that the sector includes some of the poorest and most vulnerable people (Cling *et al.* 2010). Their job satisfaction is low (only higher than those working in the agricultural area – Razafindrakoto *et al.* 2013). In a recent study, Nguyen *et al.* (2015) show that technical and scale efficiency of informal businesses are low.

Given the concentration of the informal sector in industrial activities in urban places in Vietnam, the paper restricts to study to five industries including food processing, wearing apparel, fabricated metal products, furniture, and wood and wood products in urban places in Vietnam.

3. Data and variable measurement

This paper uses data on informal household businesses in urban places from the Vietnam Establishment Census (VEC) in 2012. The census covers all fixed location businesses and production establishments, administrative organizations, political and non-profit associations (General Statistics Office, 2013). Of 4.7 million fixed premise non-agriculture household businesses surveyed 2.9 million do not have business licenses and are defined as informal household businesses (IHBs). There are 665,747 manufacturing IHBs, accounting for 23% of the total IHBs. Information on household level output defined as the value of outputs produced during the first six months of the year 2012 and the number of workers allow the calculation of the labor productivity (LP) of IHBs.

The household level data are supplemented by location externalities measured at district level. To measure the first type of urbanization, which is the diversity of industries in one location or Chinitz-Jacobs urbanization, information on the number of IHBs and their workers in VEC 2012 are aggregated at district level. This allows to calculate current urbanizations of the informal sector. A similar census carried out in 2007 provides opportunity to compute lagged effects of local scale externalities. It should be noted that the VEC 2007 collects information on IHBs' outputs only for the sample. Thus, panel data for LP at the household level is not available.

As shown in Tran and La (2018), informal household businesses tend to locate in areas which have the high concentration of formal firms. This paper, therefore, examines the impacts of formal firm clustering on LP of IHBs. The distinction between formal and informal urbanization allows us to evaluate whether IHBs benefit from the diversity of formal or informal enterprises in different industries. Urbanization of the formal sector are computed using data on formal enterprises from VEC 2007 and 2012.

A common approach to measure the degree of economic diversity of a region is the Herfindahl index, which is the sum of squares of employment shares of all industries in region r . The index is calculated as in equation (1) below:

$$H_r = \sum_{i=1}^n \left(\frac{e_{ir}}{e_r} \right)^2 \quad (1)$$

¹The classification into industrial and non-industrial cities is based on gross-output of industry at current prices by province since 2011 (General Statistics Office, 2013). Quang Ngai in the centre and Vung Tau in the south also meet the criteria of industrial provinces but are excluded because a large proportion of industrial outputs in these two provinces comes from crude oil exploitation.

where e_{ir} is the total employment of industry i 's in district r , e_r is the total employment of all industries in district r . If the value of H_r is equal to one, there is a single industry in the region. The larger the value of H_r , the lower the value of economic diversify. Therefore, to have more intuitive interpretation of the measure, the paper follows Lall *et al.* (2004) to use the inverse index of H_r , which is defined as $D_r = 1 - H_r$. The larger the value of D_r , the higher the degree of economic diversity.

The second type of urbanization is measured as city size. This measurement reflects the importance of market to IHBs. In the paper, this type of urbanization is measured as the district population density. Since only the Population Census (PC) in 2009 provides information on population for every district, this variable is calculated as lagged effects. Information on district areas comes from the Vietnamese Atlas books.

As indicated in the literature, firms are likely to locate in regions with a strong presence of local suppliers. The presence of local suppliers can reduce transaction costs and increase profitability (Venables, 1996). Furthermore, with transport costs occurred in the process of selling products, firms are more profitable when locating in a large mass of consumers (Overman and Venables, 2005). The paper, therefore, separates these impacts from urbanization by capturing the effects of supplier linkages and market access on LP of IHBs in urban places of Vietnam. As in Tran and La (2018), supplier linkages are measured as the strength of connection to suppliers and market access measured the importance of market accessibility that an informal firm could have in its surrounding locations (see Tran and La (2018) for more details about the calculation of these variables). Table 1 provides the level and sources of variables while Table 2 presents descriptive statistics of variables used in the analysis.

Table 1. Variables and data sources

Variables	Level	Dynamic control	Data source	Year
Labor productivity	Firm	Current	VEC	2012
Urbanization	District			
Informal		Current, lagged	VEC	2007, 2012
Formal		Current, lagged	VEC	2007, 2012
Supplier linkage	District	Current	VEC	2012
Market access	District	Lagged	PC	2009

Table 2. Descriptive statistics of variables

	Food products		Wearing apparel		Wood & wood products		Fabricated metal products		Furniture	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Labour productivity (000 VND)*	64124	144512	39449	50961	38636	105751	74035	625976	74551	94482
Informal urbanization 2012	0.79	0.08	0.79	0.08	0.76	0.1	0.79	0.07	0.8	0.06
Formal urbanization 2012	0.68	0.17	0.71	0.15	0.7	0.13	0.72	0.15	0.7	0.15
Informal urbanization 2007	0.77	0.09	0.75	0.09	0.75	0.09	0.77	0.08	0.78	0.08
Formal urbanization 2007	0.64	0.2	0.69	0.19	0.7	0.21	0.7	0.18	0.67	0.19
Urban population density	7.18	1.06	7.83	1.33	7.13	0.82	7.67	1.23	7.22	1.05
Market access	11.52	1.11	11.99	1.32	11.72	0.89	11.99	1.23	11.55	1.1
Supplier linkage	644	850	824	1031	653	684	802	1141	643	1025

Note: *The exchange rate in 2012: 1 USD=20,825VND

Source: Author's calculations

The administrative hierarchical division of Vietnam starts from provinces and cities that belong to the management of the central government. This is followed by districts and then communes. Currently, Vietnam has 687 districts, 157 of which are urban.² During the course of urbanization, the administrative system in Vietnam has made some changes with the splitting and merging of districts, especially in 2008, 2009, and 2012. The merged data from 2007 to 2012 gives 141 urban districts.

² In Vietnam, the majority of districts in cities are urban. Contrarily, each province has one urban district that serves as the province capital and from one to four districts, which are considered as commerce centers and classified as urban districts.

4. Specification

Recent works on location externalities have moved from using aggregate data at regional and industrial levels to individual enterprise levels to avoid biases created by aggregating data (Henderson, 2003; Puga, 2010). To investigate externality effects on the LP of informal businesses, we regress the natural log of LP on externality variables as in equation (2):

$$\ln(LP)_i = \delta + \alpha(X_{r,t} = X_{r,t-s}) + \beta Z_{r,t-s} + \gamma C + \varepsilon_i \quad (2)$$

In equation (2), $\ln(LP)_i$ represents LP of household i , $X_{r,t}$ includes two types of urbanization: Chinitz-Jacobs urbanization and city size. The first type of urbanization, Chinitz-Jacobs urbanization, reflects benefits from innovations, knowledge transfer, and access to business services that a firm could have when locating with firms in other industries in diverse and large metro areas. The literature from developed countries shows that higher technological and service activities appear to benefit from urbanization. While empirical evidence from the formal sector in developing countries is broadly in line with that from developed countries (Overman and Venables, 2010), some exceptional cases from Korea (Lee and Zang, 1998) and India (Lall *et al.* 2004) show no urbanization externalities.

The second type of urbanization reflects the importance of city size on a firm productivity. Because informal enterprises have low financial and human capital, concentrating in large urban areas is more important to them. However, the fierce cost competition may offset the scope of knowledge spillover (Moreno-Monroy, 2012). Consequently, urbanization may generate both positive and negative externalities.

The NEG identifies location as an endogenous variable because higher output per worker might be not so much a consequence of higher employment density but its cause (Moomaw, 1981; Brulhart, 1998). If a location has conditions favoring higher productivity, it will attract more firms and workers and become larger as a result. As such, there will be correlation across geographical units in the error term, ε_i , in equation (1). Ciccone and Hall (1996) solve this issue by using historical data of population and railroads as instruments to examine impacts of agglomeration on firms' productivity in the US. In this paper, lagged urbanizations, X_{t-s} , which are calculated from VEC 2007 and log of population in 1989, are used as instruments for current effects of urbanization. The choice of these instrument variables (IV) rests on the hypothesis that the source of urbanization in Vietnam has been influenced only by the preferences of households about their location; they are not related to current labor productivity of households.

In addition to urbanization, firms can benefit from other kinds of location externalities. These include the benefits from improved market access (Lall *et al.* 2003; Mukim, 2014) and buyer-supplier linkages (Venables, 1996; Puga, 2010). Lall *et al.* (2004) consider the market access and proximity of suppliers as the agglomeration effects at firm level. In this paper, impacts of these agglomerations are measured by the vector $Z_{r,t-s}$. In equation (2), C is a vector of dummy variables, which reflect the impacts of initial endowments of different city types including metropolitan areas, centrally-managed cities, and emerging industrial provinces on households' labor productivity. ε_i is the error term, which is assumed to be identical independent distribution.

5. Empirical results

The estimated results for equation (2) is presented in Table 3. In this Table, Chinitz-Jacobs urbanization is measured by the diversity of industries in the district and is named as formal and informal urbanization for short. The other kind of urbanization reflects the district size and is measured as the district population density in 2009. As indicated in Section 4, these variables are instrumented by lagged urbanizations and log of population in 1989.

The IV tests at the end of Table 3 reveal the relevance of all instruments used. The p -values show that the hypothesis of weak instrument is rejected at 1% of significance. Furthermore, the hypothesis that urbanization is not correlated with the error terms in this model (shown by the Durbin-Wu-Hausman tests) is rejected in all models, indicating that OLS estimate would yield bias estimates. Thus, the validity of instruments are vigorously tested and justified.

The first striking feature from Table 3 is that the diversity of informal industries generate congestions, i.e., negative externalities. Negative and significant impacts of informal urbanization on households' LP are found in all industries, except for the case of furniture. On the other hand, co-locating with formal firms in other activities brings benefits to IHBs in all studied industries. Results from Table 3 show that the other kind of urbanization (i.e., the log of population) has negative impacts on LP of IHBs. This result supports Moreno-Monroy's (2012) point of view that fierce cost competition from over-concentration may offset the knowledge spillover and thus pushes down LP of IHBs.

Estimates in Table 3 show that access to the market brings benefits to IHBs in almost all industries studied. The largest impact of market access is in the wood industry, showing that a 10% improvement in market access will be associated with a 4.6% increase in the LP of IHBs. The finding is not surprising because the wood industry depends considerably on transport costs and thus the reduction of these costs promote productivity of firms in this industry. Results from Table 3 reveal that the improvement of access to markets pushes down the LP of IHBs in the food industry. This is understandable because IHBs in this industry are weak (Cling *et al.* 2010) and hence cannot compete with stronger firms outside the region entering the local market.

Proximity to local suppliers brings benefits to IHBs in food processing, apparel, and furniture industries. On the other hand, the supplier linkage does not generate benefits to informal firms in wood and fabricated metal industries. The impact is either negative or insignificant in these industries (Table 3). This finding implies that cost reductions when locating in regions with the strong presence of local suppliers cannot be offset by the rising costs of co-locating with firms in other industries in the region.

Table 3. Estimated results

Dependent variable: LP	Food	Apparel	Wood	Metal	Furniture
Informal urbanization 2012	-1.006*** (-3.23)	-1.316*** (-8.67)	-2.748*** (-5.30)	0.114 (0.46)	1.616*** (4.41)
Formal urbanization 2012	0.529* (1.95)	1.822*** (20.06)	5.161*** (8.19)	1.512*** (13.76)	0.805*** (4.08)
Urban population density 2009	-0.007 (-0.09)	-0.356*** (-14.59)	-0.299*** (-3.33)	-0.390*** (-13.21)	-0.169*** (-4.85)
Market access	-0.120*** (-3.09)	0.218*** (14.65)	0.463*** (7.19)	0.239*** (11.88)	0.148*** (5.99)
Supplier linkage/1000	0.186*** (8.62)	0.024*** (4.59)	-1.251*** (-26.20)	0.002 (0.20)	0.076*** (3.89)
Metropolitan cities	0.494*** (5.73)	0.276*** (6.75)	0.216** (2.23)	-0.077* (-1.82)	-0.165** (-2.54)
Centrally-managed cities	0.248*** (3.62)	0.444*** (12.84)	1.780*** (7.21)	0.340*** (8.16)	0.206*** (3.93)
Emerging industrial provinces	0.436*** (5.28)	0.181*** (4.79)	0.865*** (8.03)	-0.072* (-1.72)	-0.052 (-0.83)
Constant	12.120*** (58.08)	10.014*** (61.39)	5.563*** (11.16)	9.679*** (42.81)	8.443*** (29.21)
Observation	15801	14700	7764	11451	6738
Ho: Weak inst. for IU 2012	3779.44	4136.21	2306.98	2204.62	1152.80
Prob>F	0.000	0.000	0.000	0.000	0.000
Ho: Weak inst. for FU 2012	2793.89	4481.01	385.32	3104.08	1669.77
Prob>F	0.000	0.000	0.000	0.000	0.000
Ho: Weak inst. for UD 2009	1241.73	1800.89	565.08	1253.95	1252.30
Prob>F	0.000	0.000	0.000	0.000	0.000
Ho: Exogenous variable	98.29	245.02	177.68	189.88	89.67
Pro>Durbin Chi2	0.000	0.000	0.000	0.000	0.000
Ho: Exogenous variable	32.94	82.99	60.52	64.29	30.24
Pro> Wu-Hausman F	0.000	0.000	0.000	0.000	0.000

Note: (i) Instruments include all informal and formal urbanization in 2007 and a variable of ln(Commune population of 1989). (ii) IU: Informal urbanization; FU: Formal urbanization, UD: Urban population density. (iii) * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

Source: Authors' calculations

Results from Table 3 indicate that IHBs in food, apparel, and wood industries are more productive when locating in metropolitan, centrally-managed cities, and emerging industry provinces compared to their counterparts in other provinces. Nevertheless, the favorable conditions of metropolitan areas and emerging industrial provinces do not bring benefits to informal businesses in metal and furniture industries, as their LP is lower than that of IHBs in other provinces. Overall, the results show that IHBs still benefit from cities' endowments. However, these benefits might be offset by over-concentration of informal households in urban places.

6. Conclusion

This paper investigates the impacts of urbanization on the labor productivity of informal household businesses in urban places of Vietnam. Urbanization externalities are distinguished between Chinitz-Jacobs urbanization and city size, and disaggregated from formal and informal sources. Using data at the household level from the Vietnam Establishment Census in 2012, the paper builds up current urbanization variables, which are instrumented by their lagged variables in 2007 to tackle the issue of endogeneity.

Overall, the paper shows that the diversity of informal household businesses in urban places pushes down households' labor productivity. On the other hand, informal businesses benefit from Chinitz-Jacobs formal urbanization in all studied industries. Furthermore, the concentration in large and dense urban places does not bring benefits to informal household businesses. Findings from the paper call for more attention on the urban planning towards the informal sector in urban places of Vietnam.

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