© *The Pakistan Development Review*
61:3 (2022) pp. 335–363
DOI: 10.30541/v61i3pp.336-364

The Socio-economic Analysis of the Street Economy in the Twin Cities of Pakistan

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The study provides a socio-economic analysis of the street economy using primary data based on a survey of 1,863 fixed street vendors operating in the Twin Cities of Pakistan. Descriptive analysis shows that street vendors, on average, make a significant profit of US$ 212 per month (29 percent of total monthly revenue). They chose to vend due to the lack of formal education and the unavailability of formal sector jobs. Vendors pay more than 51 percent of their operating cost (US$107 per month) as rent to shop owners to place carts/tables in front of shops. About 98 percent of vendors operate without legal protection (e.g. license/permit), leading to frequent evictions. The economic loss constitutes about 62 percent of the monthly revenue (215 percent of the monthly net profit) due to one-time expulsion by the administration. The Multidimensional Vulnerability Index (MVI) shows that around 21 percent of vendors are acutely vulnerable, while more than 25 percent of SVs are vulnerable. Multivariate analysis indicates that socio-economic vulnerabilities negatively and significantly impact monthly profits. These findings provide insights to policymakers and other stakeholders, including entrepreneurs, market associations, regulators, administrative authorities, and social protection agencies, to harness the potential economic benefits of the street economy.

Keywords: Street Economy, Twin Cities, Economic Analysis, Pakistan

1. INTRODUCTION

Pakistan has a large street economy (SE) operated by individuals and micro-enterprises, namely street vendors (SVs), across the country, mostly in urban areas.[1] SVs

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Authors' Note: The authors are thankful to Nadeem Ul Haque, Vice-Chancellor, PIDE, for his valuable input in designing this study. We also thank Zia Banday, Capital Development Authority, ICT Commissioner Office, for assisting and supporting data collection teams. We also acknowledge the support provided by PIDE students in data collection. The authors are grateful to RASTA team, especially Ahmed Jamal Pirzada and David Orden, for their valuable feedback to improve the quality of the paper. The earlier version of the paper has been presented on various forums, including RASTA Workshop, the PIDE Working Paper Webinar Series, the 35th Annual General Meeting and Conference of the PSDE on "Opportunities to Excel—Now and the Future" (2021), 2nd International Conference by IBA, Karachi (2022) and RASTA conference (2022). This research was supported by the 'Research for Social Transformation & Advancement' (RASTA), a PIDE initiative, through Competitive Grants Programme Award [Grant No. CGP-01-146/2021].

[1] The SE is defined as retailing of skills and materials, manufactured, and supplied through different processes (both formal and informal) to retailing enterprises working informally from the state- or privately-owned public spaces. The SE can also be defined as exchanging all types of goods and services in public areas, streets, sidewalks, and squares (Sirkeci, 2020, p. 14). A public space refers to an area or place that is open and accessible to all people, regardless of gender, race, ethnicity, age, or socio-economic level. The SE is a subset of a broader informal economy.

are a part of the informal economy that provides employment and livelihood to the poor with low skills and literacy and produce numerous social and economic benefits (Martínez, Short, & Estrada, 2018). The SE strongly links the supply chain, comprising both formal and informal players. SVs are just at the retail end of a rather complex supply chain. Despite the massive penetration of SVs in urban markets, the socio-economic structure and the supply chain of SE are unknown due to their informal nature in Pakistan.[2] Street vendors continue to struggle at the margins of the economy. Street entrepreneurs are subjected to abuse, violating their dignity due to a lack of legal status. The failure to recognise them as entrepreneurs has resulted in the loss of national revenue from street vending registration fees, hawking licenses, and taxes (Mazhambe, 2017).

Understanding the characteristics of micro-enterprises operating in SE is vital to design a policy framework to formalise SVs. Unless we know the socioeconomic profiling of informal entrepreneurs, it is difficult to develop targeted policy interventions to promote the street economy (Williams, Shahid, & Martínez, 2016). This study explores the characteristics of the micro-entrepreneurs operating in SE through a comprehensive survey of SVs in twin cities, i.e., Islamabad and Rawalpindi.[3] We also examine the differences in business operations, supply chain, and economic contribution of SVs across two different types of markets. Twin cities host around 3 million people.[4] On average, 1 percent to 1.5 percent of the labour force is engaged in SE (GoP, 2022). Both cities operate under different administrative structures. Markets are relatively well organised in Islamabad compared with Rawalpindi. Furthermore, Islamabad hosts relatively high- and middle-income families, while low- and middle-income families reside in Rawalpindi.

Descriptive analysis, based on primary survey data of 1,863 fixed SVs in twin cities, shows that the lack of formal education and unemployment force individuals to choose the street vending business. The analysis shows that the average monthly revenue of street vendors is Rs. 114,708 (US$ 740) and, on average, makes a significant profit amounting to US$ 212 per month (29 percent of total monthly revenue). Vendors incur around US$ 107 per month in operational costs, and more than 51 percent of the total operating cost incurred by the SVs fell under the category of rent paid to the shop owner. We find that SVs are not integrated with the financial market to use financial services as only 11 percent of SVs has a formal bank account. Around 49 percent of SVs have a mobile banking account, mainly for sending money home, i.e., remittances. The lack of legal protection is a significant challenge that SVs face. We find that 98 percent of SVs operated without legal protection in the market. Due to informality and without legal production, it is noted that 65 percent of SVs face eviction, which is significantly high in sector markets (76 percent) than in non-sector markets (59 percent). We find that total economic loss due to confiscation ranged from US$ 497 in the sector market to US$ 334 in the non-sector market. The reported economic loss due to informality constituted around 62 percent of monthly revenue and 215 percent of net monthly profits.

[2] Global assessments have shown that the SE has grown exponentially, affecting the daily life of 5 billion people, with a volume of US$ 30 trillion (Sirkeci, 2020, p. 11)

[3] Rawalpindi is adjacent to Islamabad—the capital of Pakistan and the two are jointly known as the "twin cities" due to strong social and economic links between the two cities.

[4] According to Census 2017, the urban population of the Rawalpindi tehsil is 2 million while around one million people live in urban areas of Islamabad tehsil. The total population of the Rawalpindi district is 5.4 million and the Islamabad district is 2 million.

We contribute to the literature in many ways. First, the study provides detailed socio-economic profiling of fixed street vendors operating in twin cities in Pakistan. Much of the existing literature has focused on other regions such as East Asia, Latin America, and Africa, with few exceptions from India. For example, studies were conducted in different countries, including the USA (Liu, Burns, & Flaming, 2015), Cambodia (Kusakabe, 2010), Thailand (Kusakabe, 2014; Maneepong & Walsh, 2013), Colombia (Martinez & Rivera-Acevedo, 2018; Martínez, et al. 2018), Vietnam (Thanh & Duong, 2022), China (Sun & Zhu, 2022) and India (Sekhani, Mohan, & Medipally, 2019). Thus, we have a limited understanding of street economy given the significant contextual, economic, and institutional differences across countries. Given the considerable proportion of labour forces involved in the street economy, it is vital to unbundle their profile to design appropriate policies and integration plans.

Another significant contribution of our study is that we develop a comprehensive Multidimensional Vulnerability Index (MVI). We extended the vulnerability index developed by Esayas & Mulugeta (2020) by incorporating local dimensions/elements relevant to twin cities in Pakistan. Further, we use the Alkire-Foster methodology to construct the MVI of street vendors (Alkire, Roche, & Vaz, 2017; Nawaz, 2021; Nawaz & Iqbal, 2021). The MVI captures three broad dimensions of socioeconomic vulnerability: social, vending, and economic. We find that street vendors' illegal and informal status makes their livelihood more vulnerable in cities. The MVI shows that around 21 percent of street vendors are acute vulnerable, while more than 25 percent of SVs are vulnerable. We find that SVs with vulnerable status face a 3.1 percent decline in average profit, and acute vulnerability generates 12.2 percent less profit than the sample means profit. The vulnerability-profit analysis indicates that socio-economic vulnerability adversely impacted the profit margins of the street vendors.

Lastly, we contribute to the literature by quantifying the impact of the MVI along with other factors on profitability. The multivariate analysis showed that socio-economic vulnerability has a negative and significant impact on monthly profits. The monthly profit is 12 percent lower for the "vulnerable" street vendors and 20 percent lower for the "acutely vulnerable" street vendors than for the "not vulnerable" street vendors. The regression results provide valuable insights for policymakers to address socio-economic vulnerabilities attached to street vendors to promote the street economy.

The rest of the paper is structured as follows: Section 2 presents the discussion on data and methodology; Sections 3 and 4 provide results and discussion, while the last section concludes the paper with policy recommendations.

2. METHODOLOGY

This section briefly describes street vending in Pakistan, focusing on twin cities. This section presents a detailed description of data and an empirical strategy to explain the role of socioeconomic and institutional factors in running street vending.

2.1. Setting the Context: Street Vending in Pakistan

The street vending business constitutes a significant portion of the informal economy in Pakistan. According to the Pakistan Labour Force Survey 2020-21, the informal sector absorbs around 72.5 percent of non-agriculture employment, which

constitutes 45.3 percent of the total labour force. This implies that over 30.49 million workers participated in the informal sector (GoP, 2022). The statistics reveal that around 59.8 8 percent of the non-agriculture labour force engaged in the informal sector in Islamabad and over 64.9 percent in Rawalpindi (GoP, 2022). The total number of street vendors operating on streets or roads across Pakistan is 753,690 (around 1.22 percent of the total employed labour force) who are either stall and salespersons, street food salespersons, or street vendors (excluding food). Most street vendors are situated in Punjab, followed by Sindh and Khyber Pakhtunkhwa.

2.2. Data: PIDE Street Economy Survey (PSES)

Our analysis is based on primary survey data, called the "PIDE Street Economy Survey (PSES)", conducted in twin cities, namely, Islamabad and Rawalpindi. The survey covered 1,683 street vendors (SVs) operating in twin cities. Keeping in view the objectives of the study, we only interviewed fixed-street vendors located in the main markets of the twin cities. In Islamabad, we interviewed the entire population of SVs operating in Markaz of 15 sectors.[5] Furthermore, we interviewed SVs in the peri-urban market of Bhara Kahu in Islamabad to capture the regional heterogeneities. In Rawalpindi, two trading hubs were selected for the survey based on the importance of the markets. First, we interviewed SVs in Raja Bazar, a wholesale market, and customers from adjacent districts use this market to buy wholesale products. Secondly, we covered the Commercial Market, one of Rawalpindi's biggest retail markets in terms of offerings. Both spaces have a significant presence of street vendors.

We used the computer-assisted personal interviewing (CAPI) method to collect data using Android tablets and mobiles. The CAPI provides real-time access to data for verification and cross-checks to ensure data quality and transparency. We revised the questionnaire after conducting a pre-testing survey in Bhara Kahu and G9, Islamabad. We hired sixteen enumerators (eight males and eight females) and two supervisors to conduct a survey using the face-to-face interview method in twin cities. We organised a three-day training session at PIDE to train the enumerators. The field survey was conducted from June-July 2021. The final dataset covered 1,683 SVs in twin cities [1,238 SVs in sector markets and 445 in non-sector markets] (Appendix Table 1).[6]

We used a structured questionnaire to collect information on the socioeconomic profiles of SVs, their business operations, supply chain, financial inclusion, economic contribution, and administrative challenges. The survey results showed that the average age of respondents (street vendors) was 32.9 years, and among them, 75 percent of SVs were married. The lack of education is one of the key determinants of adopting informal businesses such as street vending (Smith & Metzger, 1998). Among respondents, 24 percent had no formal education, 21 percent had below primary education, 44 percent had up to 10 years of education, and 11 percent had intermediate and above education. These statistics suggest that most of the SVs had low education

[5] Sectors are administrative divisions of Islamabad. Each sector covers an area of approximately 2KM×2KM and divided in four sub-sectors (residential) and a centralized commercial market, called "Markaz".

[6] Sector markets include all commercial markets located in commercial areas (Markaz) of sectors in Islamabad. Non-sector markets include peri-urban markets located in Islamabad and commercial hubs (Raja Bazar and Commercial Market) located in Rawalpindi.

and hence, had less chance of getting a job in formal sectors of the economy. The average household size was 8.1, a relatively larger household size compared to the national figure. Appendix Table 1 shows that around 60 percent of SVs were migrant workers who migrated from other districts across Pakistan. About 58 percent of SVs lived with family members, while approximately 35 percent lived alone in rented houses. The data shows that around 90 percent of SVs lived in rented houses. Notably, more than 90 percent of SVs lived in rented places in Islamabad compared to 84 percent in Rawalpindi and other peri-urban areas.

2.3. Developing a Multidimensional Vulnerability Index (MVI)

The illegal and informal status of street vendors makes their livelihood more vulnerable in cities (Brata, 2010; Esayas & Mulugeta, 2020). Vulnerability is the extent to which persons or things are likely to be affected (Flanagan, Gregory, Hallisey, Heitgerd, & Lewis, 2011).[7] In the street vending analysis, vulnerable individuals (SVs) cannot cope with socioeconomic shocks due to either weak resilience against economic shocks or a lack of legal protection in vending businesses to cope with the risk of eviction.

The literature has documented various levels of socioeconomic vulnerability faced by street vendors in cities of developing countries. To empirically examine the socioeconomic vulnerability of street vendors in twin cities, we used the framework created by Esayas & Mulugeta (2020) with some modifications. We used three broad dimensions to capture the socioeconomic vulnerability of street vendors, namely social vulnerability (V1), vending vulnerability (V2), and economic vulnerability (V3).

(a) Social vulnerability (V1) of SVs refers to the socio-demographic factors that affect the resilience of SVs (Flanagan, et al. 2011). Limited access to social capital, such as education, age (a proxy for health and experience), marital status, and social statuses, such as residence and living status, may affect the resilience of an individual to cope with socioeconomic risks. The socially vulnerable SVs are less likely to have alternative means of business to cope with business shocks. We used five indicators to define social vulnerability among SVs. These indicators included education, age, marital status, residence, and living status.

(b) Vending vulnerability (V1) of SVs refers to the vending business characteristics that affect the resilience of SVs to cope with administrative and legal challenges to run their businesses. In vending vulnerability, we used four indicators: vending timing, ownership status, eviction, and legal status.

(c) Economic vulnerability (V3) of SVs refers to the economic conditions determining their resilience to running and expanding the vending business. In economic vulnerability, we used four indicators: income, experience, loan, and bank account.

[7] Vulnerability is a "state of defencelessness against adverse shock that could inflict damage to an agent or system" (Gallardo, 2018). Gallardo (2018) argues that "a state of vulnerability can be characterized either by the presence of certain weaknesses or internal conditions inherent to the agent or system in question (which determine their state of defencelessness) or by the presence of certain probable external shocks, to which the agent or system does not have the ability to cope."

We used the Alkire-Foster methodology to construct a multidimensional vulnerability index (MVI) of street vendors (Alkire, et al. 2017). Appendix Table 2 describes each indicator used in the construction of MVI along with theoretical justifications. We assigned equal weight to each dimension and set the equal weight to each indicator within each dimension.[8] We calculated the vulnerability score of each street vendor using the following formula: $MVI_{i\in[0,1]:} = \sum_1^{13} w_i I_i$. Where $I_i \in \{0,1\}$: 1 if a street vendor was vulnerable in indicator i and 0 otherwise. w_i is the weight assigned to each indicator i. The descriptive analysis shows that the mean vulnerability was 0.562 with a standard deviation of 0.115. Using the mean and standard deviation of MVI_i, we defined four vulnerability levels, including "not vulnerable ($MVI_i \leq 0.447$)", "mild vulnerable ($MVI_i > 0.447$ &$MVI_i \leq 0.562$)", "vulnerable ($MVI_i > 0.562$ &$MVI_i \leq 0.677$)" and "acutely vulnerable ($MVI_i > 0.677$)". Esayas & Mulugeta (2020) used a similar approach to define various levels of vulnerability among street vendors.

2.4. Factors Affecting Profits of Street Vendors: Multivariate Analysis

Given the important role of street vendors in economic activity, it is necessary to determine the factors affecting the street vendor's profit. To examine the impact of various socioeconomic factors (vulnerability) and business-related factors on the profits of street vendors, we defined a simple regression model as given below:

$$\ln(\pi_i) = \alpha + \varphi S_i + \lambda M_i + \delta_i Z_i + \nu_i$$

Where $\ln(\pi_i)$ is the average monthly profit after taking the log, S represents the sale item, M captures different markets, Z is a vector of socioeconomic variables, and ν_i is the error term. In this case, Z captured various levels of socioeconomic vulnerabilities calculated in the previous section. In the above equation, φ, λ and δ_i are estimated coefficients.

3. RESULTS AND DISCUSSION

3.1. Street Vending Characteristics

Table 1 shows that, on average, vendors had 10.5 years of experience in the street vending business. The fixed vendors used different structures for vending their products. The survey data shows that around 61 percent of SVs used tables and 32 percent used carts for vending. Using tables for vending reflects a bit of permanence as most tables are placed in front of shops. The descriptive statistics show that 84 percent of SVs owned vending carts/tables, and around 86 percent also owned vending businesses. Martínez, et al. (2018) found similar ownership patterns in Colombia. These statistics reflect that street vendors are self-entrepreneurs with more than 10 years of working experience. We found that around 86 percent of street vendors, on average, worked for more than 10 hours per day. We found that working hours were relatively higher in non-sectors markets than in sector markets. Around 92 percent of SVs worked more than 10 hours a day in non-sector markets compared to 83 percent of street vendors in sector markets. Similarly, most street vendors (more than 91 percent of SVs) worked seven days a week, showing long working hours without any breaks.

[8] Various studies have used a similar approach to assign weight to different dimensions and indicators (Alkire & Foster, 2011; Awaworyi Churchill, Iqbal, Nawaz, & Yew, 2021; Iqbal & Nawaz, 2017; Maduekwe, de Vries, & Buchenrieder, 2020; Nawaz & Iqbal, 2016, 2021).

Table 1

Street Vending Characteristics

Variables	Sector-Market	Non-Sector-Market	All
Vending experience (years)	10.5	10.5	10.5
Vending category (%)			
Cart	33.6	27.0	31.9
Table	60.6	62.9	61.2
Sheet/others	5.8	10.1	7.0
Ownership of cart/table (owned %)	83.9	85.2	84.3
Ownership of vending business (owned %)	83.8	93.7	86.4
Vending location or placement (%)			
In front of a shop	47.5	46.7	47.3
Sidewalk	48.2	51.9	49.2
In front of a plaza/other	4.3	1.4	3.5
Vending working hours (%)			
4-10 hours	16.56	8.09	14.32
More than 10 hours	83.44	91.91	85.68
Vending working days (%)			
Seven days	90.5	93.3	91.2
Less than seven days	9.5	6.7	8.8
Average employees, including the owner (No)	1.19	1.07	1.16

Source: Author's calculation based on PSES.

Note: Sector markets include all commercial markets located in commercial areas (Markaz) of sectors in Islamabad. Non-sector markets include peri-urban markets in Islamabad and commercial hubs (Raja Bazar and Commercial Market) in Rawalpindi.

The descriptive statistics show that food, garments, fruits/vegetables, ladies' handbags, and electronic and plastic items were the main selling products in the street vending economy (Appendix Figure 1). Around 26 percent of SVs offered food-related items for sale, which included packed food/snack, and food prepared with fire and without fire. Approximately 22 percent of SVs offered garments for sale – the second largest category of sales item offered by SVs after food items. Around 15 percent of SVs offered fruits and vegetables for sale, followed by shoes, sunglasses, and watches (13 percent), plastic items (8 percent), electronic and mobile accessories (8 percent), and ladies' bags and jewellery (5 percent).

The survey respondents (SVs) presented various reasons to start a vending business. The descriptive statistics show that around 43 percent of SVs reported starting a street vending business due to unemployment. Dzaramba & Marumure (2021) found that unemployment is the highest contributor to street vending in Zimbabwe. Around 40 percent of SVs documented joining vending businesses due

to unemployment in Zimbabwe (Dzaramba & Marumure, 2021). Furthermore, around 26 percent of SVs mentioned that they started street vending businesses willfully due to significant returns. About 23 percent of street vendors stated that they opted for the street vending business due to a lack of formal education and experience to be engaged in formal employment or any other business. A small portion of SVs (around 8 percent) reported that street vending was their family business (Appendix Figure 2).

3.2. The Economics of Street Vending

This section presents information on business operations, economic linkages, income, sales, and profits of the street vending business. We use descriptive statistics to conduct an economic analysis of the street vending business. As mentioned above, we collected data from the sector and the non-sector markets. We used the standard t-test with a confidence interval of 95 to explain the significance of differences across the two markets.

3.2.1. *Formal-informal Economy Linkages*

We found that street vendors in both markets located their stalls (tables/carts) outside formal stores using the available public spaces and sidewalks. Around 47 percent of SVs were situated in front of shops, and over 49 percent used sidewalks for their businesses (Table 2). The street vendor respondents informed that owners of the formal shops charged for the use of public space in front of their businesses. In some cases, the owners of the formal shops hired a worker (around 15 percent of SVs) to operate a stall in front of the shops.

These findings reflect that formal-informal linkages benefit both formal shop owners and street vendors. Martínez, et al. (2018) argued that the formal-informal nexus benefits both owners of formal shops and street vendors due to strong linkages. Formal business (shops) benefits from the pedestrian traffic that street vendors attract by selling low-cost products. On the other hand, street vendors use the formal sector to buy products and use storage spaces. We found that wholesalers/distributors (mainly working in the formal sector) were the major input providers for street vendors in both markets. Around 70 percent of SVs purchased raw materials and other inputs from wholesalers/distributors. Around 26 percent of SVs used the marketplace (*Mandi*) to buy raw materials and other inputs. Very few (around 4 percent of the SVs) used middlemen as a source to purchase raw materials and other inputs for street vending (Table 2). Martínez, et al. (2018) also found that wholesalers were the major input providers for street vendors in Colombia.

We found that around 73 percent of SVs used stall spaces to store sales items, while approximately 18 percent used warehouses to store sales material (Table 2). The street vendors reported that formal shop owners provided storage spaces on rent to store sales items. This also reflected bi-directional dependence between formal shop owners and street vendors to generate business returns.

Table 2

Business Operations: Formal-informal Economic Linkages

Variables	Sector-Market	Non-Sector-Market	All
Source of Purchase of Raw Material/Inputs (%)			
Wholesale/Distributor	70.8	67.9	70.0
Marketplace	23.9	30.8	25.7
Middleman/others	5.3	1.4	4.3
Product (Sales Items) Storage Place (%)			
On-spot	74.1	69.0	72.7
Warehouse	16.3	20.7	17.5
At Home/others	9.6	10.3	9.8

Source: Author's calculation based on PSES.
Note: See Table 1.

3.2.2. *Business Operations: Revenues, Investment, Profits, and Operational Costs*

The descriptive analysis shows that the average monthly revenue of street vendors was Rs. 114,708 (US$ 740) for the full sample. Street vendors operating in sector markets generated relatively higher revenues (US$ 746) compared to non-sector markets (USS$ 725). However, the standard t-test showed differences in revenues were not significant. The economic transactions (sales of items and services) of street vendors contributed directly to the socio-economic development of the city since street vendors provided low-cost food items and other daily use items to low- and middle-class society in the city. Martínez et al. (2018) argued that low-price products and food supplies by street vendors had a direct impact on the economic and social development of the city's poor segments.

The analysis revealed that street vendors, on average, earned a significant profit that amounted to Rs. 32,862 (US$ 212) per month (29 percent of total monthly revenue). Street vendors operating in sector markets earn a relatively higher profit of Rs. 33,637 (US$ 217) compared to vendors running a business in non-sector markets who earned a profit amounting to Rs. 30,846 (US$ 199). The standard t-test shows that sector market profit was significantly higher than the non-sector market (Table 3). This implies that businesses were more profitable in sector markets than in non-sector markets. The apparent reason for relatively high profits in sector markets was the economic status of the customers. The customers in sector markets mainly belong to the middle-income group, while in non-sector markets, customers belong low-income quintile. Generally, profit margins were higher in rich urban markets such as sector markets (Markaz) in Islamabad. Martínez, et al. (2018) found that average profit varied between 21 percent and 40 percent in street vending businesses, depending upon the market structure.

The descriptive analysis shows that street vendors invested, on average, US$ 571 to run a vending business. There was a significant difference in investment requirements across the two markets. We found that the average investment in sector markets was US$ 626, while it was US$ 419 in non-sector markets. This shows that starting a vending business in a non-sector market is cheaper than in a sector market due to cheap inputs and low operational costs. Around 60 percent of SVs invested their own money to start a street vending business, followed by 32 percent of SVs who took money from their family and

friends to invest in the business. Very few street vendors (only 8 percent) took a loan from formal and informal sources to invest in the street vending business (Table 3).

The analysis shows that street vendors held, on average, an inventory of US$ 498 to earn a profit from the street vending business. There was a significant difference in average inventory across markets. We found that the average inventory in sector markets was higher (US$ 544) than in non-sector markets (US$ 371). Interestingly, if we compare the profit ratio with investment and inventory requirements, we found that profit share was relatively higher in non-sector markets compared to sector markets due to small investment requirements.

Table 3

Business Operations: Revenue, Profit, and Investment

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Monthly Revenue (Average)				
				0.72
PKR	115553	112358	114708	[0.24]
US$	746	725	740	
Monthly Profit (Average)				
				2.30
PKR	33671	30860	32927	[0.01]
US$	217	199	212	
Profit as % of Total Income (%)	29.1	27.5	28.7	
Investment (Average)				
				4.21
PKR	97034	64991	88562	[0.00]
US$	626	419	571	
Sources of Investment (%)				
Own Money	59.0	62.7	60.0	
Family and Friends	33.6	29.2	32.4	
Loan/Committee/Credit	7.4	8.1	7.6	
Inventory (Average)				
				2.19
PKR	84271	57489	77189	[0.01]
US$	544	371	498	

Source: Author's calculation based on PSES.

Note: See Table 1. Probabilities are reported in brackets. For currency conversion, we assume 1 US$ = PKR 155.

Apart from input costs (for raw materials and other services), we explored the operational cost incurred by street vendors to run their businesses. We found that a street vendor pays around US$ 107 monthly as an operational cost. The analysis showed a significant difference in operational costs across both markets. The descriptive analysis revealed that street vendors, on average, incurred approximately US$ 115 in sector markets and only US$ 85 in non-sector markets (Table 4). These findings exhibit that running a business in sector markets was costly due to high operational costs. We bifurcated total operational costs into various components. Interestingly, we found that more than 51 percent of the total operational costs incurred by the street vendors fell in the category of rent paid to the owner of the shop.

These findings reinforce the argument of strong formal-informal economic linkages. On the one hand, street vendors earn significant profits from street vending businesses, while on the other hand, formal shopkeepers earn profit in two ways. First, owners of shops receive direct rent from street vendors to run businesses in front of their shops. Second, the sales of formal shop owners increase due to the flow of pedestrians, mainly visiting vendors. Apart from shopkeeper rents, street vendors paid a small amount to the local administration and market committee as fees. Furthermore, street vendors paid around 8 percent of operational costs for basic utilities such as electricity, water, and other services. About 13 percent of operational expenses were in the transportation category, and 25 percent were other costs.

Table 4

Business Operations: Operational Cost Other Than Inputs

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Monthly Operational Costs (Average)				
PKR	17894	13193	16651	5.42 [0.00]
US$	115	85	107	
Head-wise Operational Costs (%)				
Shopkeeper	51.9	48.2	51.1	
CDA/RDA Charges	1.9	3.6	2.3	
Cleaning	0.4	0.4	0.4	
Utilities	8.5	3.4	7.5	
Market Committee	0.1	0.5	0.2	
Transportation	14.3	10.8	13.5	
Others	22.9	33.1	25.0	

Source: Author's calculation based on PSES.
Note: See Table 1 & Table 3.

3.2.3. *Business Operations: Financial Inclusion*

The importance of financial inclusion in promoting micro, small and medium enterprises (MSMEs) is well-documented in the literature (Demirgüç-Kunt & Singer, 2017; Ibor, Offiong, & Mendie, 2017; Irankunda & Van Bergeijk, 2020; Khawaja & Iqbal, 2019). Financial inclusion, such as saving accounts, loans, and business transactions, positively and significantly impacts the operations and growth of MSMEs, leading to inclusive growth and economic development (Demirgüç-Kunt & Singer, 2017; Ibor, et al. 2017; Nandru, Chendragiri, & Velayutham, 2021). Despite the significant contribution of financial inclusion, the global evidence shows that the use of financial services among street vendors is very low (Irankunda & Van Bergeijk, 2020; Martinez & Rivera-Acevedo, 2018).

The descriptive analysis shows that only 11 percent of SVs had any type of bank account. These statistics reflect that the ratio of formal bank accounts is very low among street vendors operating in non-sector markets (only 6 percent of SVs had a bank account) compared to vendors doing business in sector markets (13 percent of SVs had a bank account). With respect to the nature and the use of bank accounts, we found that among

those SVs who had bank accounts, around 24 percent of SVs used bank accounts for trading purposes. In comparison, around 50 percent of SVs used bank accounts for saving purposes, and around 25 percent used bank accounts to send money home (Table 5). This implies that apart from very low financial inclusion, the use of bank accounts is also limited to non-productive uses.

Over the last few years, mobile banking has been expanding exponentially in developing countries, including Pakistan. We found that around 49 percent of SVs had mobile banking accounts. Interestingly, mobile banking use was significantly higher in non-sector markets than in sector markets. In non-sector markets, around 56 percent of VS had mobile banking accounts, while only 47 percent of SV had mobile banking accounts in sector markets. This shows that SVs preferred mobile banking accounts, primarily due to easy access and quick payment. With respect to the use of mobile banking accounts, we found that, among those SVs who had mobile bank accounts, around 50 percent of SVs used mobile banking accounts for sending money home, i.e., remittances.

Furthermore, around 37 percent of SVs used mobile banking accounts to make business transactions, such as making and receiving payments. This implies that easy access to financial services would induce street vendors to use the financial system to expand their businesses. Martinez & Rivera-Acevedo (2018) argued that street vendors are generally excluded from the formal financial sector, hence, rely on the informal sector for lending.

Table 5

Financial Inclusion and Business Operation

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Bank Account (%)	13.1	6.3	11.3	3.90 [0.00]
Bank Account Purpose (%)				
Payment to Traders	25.3	17.9	24.2	
Savings	50.6	50.0	50.5	
Sending Money Home	24.1	32.1	25.3	
Mobile Account (%)	47.0	56.2	49.4	-3.32 [0.00]*
Mobile Account Purpose (%)				
Payment to Traders	36.1	37.6	36.5	
Savings	13.8	12.0	13.2	
Sending Money Home	50.2	50.4	50.2	

Source: Author's calculation based on PSES.
Note: See Table 1 & Table 3.

The analysis shows that around 34 percent of SVs took loans from various sources. Among those SVs who took loans, around 54 percent of SVs took loans from friends and family members for starting a business, while 41 percent of SVs took loans from informal lenders. Only 5 percent of SVs used the formal sector, such as banks and microfinance institutions, to take a loan. This again reflects that SVs are weakly integrated into the formal financial sector for business purposes. The analysis shows that SVs took, on average, US$ 864 loans from these sources, either to make an investment or meet consumption needs (Table 7). Martinez & Rivera-Acevedo (2018) showed that informal lenders charged very

high-interest rates, maintaining a vicious indebtedness cycle. Various studies show that informal money lenders charge very high-interest rates, ranging from 10 percent to 12 percent per month (Qadir, 2005).

Table 6

Business Operations: Loan

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Loan Taken by SV (%)	34.3	33.9	34.2	
Loan Amount (Average)				
PKR	138929	119623	133868	1.20 [0.11]
US$	896	772	864	
Sources of Loan (%)				
Family and Friends	58.6	40.4	53.8	
Informal Lending	36.5	53.0	40.8	
Bank/Microfinance	4.9	6.6	5.4	

Source: Author's calculation based on PSES.
Note: See Table1 & Table 3.

3.3. Vending Licenses and Cost of Eviction

The lack of legal protection is one of the major challenges faced by street vendors. In the absence of a vending license, SVs always remain on tenterhooks. The lack of legal protection leads to harassment, confiscation, and arbitrary evictions (Roever, 2016). Even high-earning vendors at shop fronts are exploited by shopkeepers with an arbitrary increase in rents. The local administration also exploits the illegal status of vendors and earns rent from street vendors.

The descriptive analysis shows that only 2 percent of SVs had licenses to operate in the market. This implies that 98 percent of SVs were operating without legal protection in the market. It is also important to note that around 12 percent of SVs had applied for licenses to local administration (Appendix Figure 3). The illegal status of SVs induced the local administration to confiscate the material and evict the street vendors. The analysis shows that 65 percent of SVs faced eviction, which was significantly high in sector markets (76 percent) than in non-sector markets (59 percent). Around 25 percent of evicted street vendors got a receipt for confiscated material. This shows that the majority of street vendors did not get any legal documents as evidence to claim confiscated material. Around 65 percent of street vendors reported that they did not get back their confiscated material. This again shows massive exploitation by the local administration to extract rents from street vendors.

The analysis shows that most SVs reported that their carts/tables were removed from their existing locations. Only 39 percent of SVs claimed that their carts/tables remained intact after confiscation. SVs reported, among those who mention confiscation, that it took, on average, more than seven days to get back their confiscated material. The local administration imposed a penalty of around US$ 9. Around 39 percent of SVs mentioned that confiscation caused a loss of more than 50 percent of their inventory, while 37 percent claimed it caused a loss of between 25 percent to 50 percent of their inventory (Table 7).

Table 7

Confiscation and Eviction

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Ever Evicted (%)	67.3	59.3	65.2	3.02 [0.00]
Received the Receipt of Confiscated Material (%)	23.2	32.6	25.4	-3.06 [0.00]*
Confiscated Material Returned (%)				
No	16.2	12.1	15.2	
Seldom Return	52.7	40.2	49.7	
Yes	31.1	47.7	35.1	
Cart/table Remains Intact (%)	38.3	40.5	38.8	-0.64 [0.74]*
Days to Return Material (Average Days)	7.7	6.2	7.3	1.86 [0.03]
Average Penalty (Average)				
PKR	1525	1115	1417	2.90 [0.00]
US$	10	7	9	
Loss in Inventory due to Eviction (%)				
Less than 25 percent	19.81	32.20	22.79	
Between 25 percent to 50 percent	40.94	27.65	37.74	
50 percent and above	39.26	40.15	39.47	

Source: Author's calculation based on PSES.

Note: See Table 1 & Table 3.

We used reported data on daily income to monetise the economic loss due to confiscation. Table 8 shows that the net loss to inventory, on average, was US$ 267, which was very high in sector markets (US$ 296) than in non-sector markets (US$ 176). The average revenue loss due to business closure ranged between US$ 150 in non-sector markets and US$ 191 in sector markets. Total economic loss due to confiscation ranged from US$ 497 in sector markets to US$ 334 in non-sector markets. The reported economic loss due to informality constituted around 62 percent of monthly revenue in the full sample(215 percent of net monthly profits). This implies that one-time eviction led to almost two months' net profit loss for the SVs (Table 8).

Table 8

Economic Loss of Eviction Faced by Street Vendors Due to Informality

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Net Loss in Inventory (Average)				
PKR	45863	27339	41405	1.38 [0.08]
US$	296	176	267	
Average Penalty (Average)				
PKR	1525	1115	1417	2.90 [0.00]
US$	10	7	9	
Revenue Loss (Average)				
PKR	29603	23294	28038	0.72 [0.24]
US$	191	150	181	
Economic Loss of Informality (Average)				
PKR	76991	51749	70860	
US$	497	334	457	
Cost of Informality as a % Monthly Revenue	66.6	46.1	61.8	
Cost of Informality as a % of Monthly Profit	229	168	215	

Source: Author's calculation based on PSES.

Note: See Table 1 & Table 3. The economic loss of informality is the sum of loss incurred due to inventory loss, penalty imposed by the local administration, and revenue loss due to business closure. We use information reported in Table 7 on loss in inventory and average time (days) to return material and information reported in Table 3 on monthly revenue and average inventory.

3.4. The Political Economy of the Vending Location

The vending location is the key to determining the nature and profitability of the street vending business. We found that vending location was mainly decided by the vendors themselves (48 percent), followed by the shopkeeper (46 percent). Around 15 percent of SVs reported negotiating with existing vendors to place vending carts/tables for vending at a specific location. There was a significant difference in the role of old vendors in location choice among sector and non-sector markets. Further, we found that only 8 percent of SVs reported that the market association was supportive of selecting the vending location. This implies that market association primarily discouraged the entry of new vendors into the market. We found that existing vendors were unwilling to relocate to weekly markets or any other market developed for street vendors. Only 29 percent of SVs were willing to relocate to a new market for vending business. The apparent reason reported was that they wanted to stay at the existing place. Around 43 percent of SVs said they selected the spot for vending based on daily footfall. Around 26 percent of SVs reported that they chose the existing space for vending due to space availability.

Table 9

Political Economy of the Vending Location

Variables	Sector-Market	Non-Sector-Market	All	T-test [Pr(T > t)]
Who Decided about Vending Location (%)				
Shopkeeper	47.7	42.0	46.2	
Own Decision	45.4	53.3	47.5	
CDA/Market Committee/Previous Vendor	7.0	4.7	6.4	
Negotiations Required with Old Vendors for Location (%)	17.8	7.0	14.9	5.53 [0.00]
Supportive Role of Market Association in Locating Decision (%)	10.5	3.0	8.4	5.12 [0.00]
Willing to Relocate if Offered (%)	30.0	27.6	29.4	0.59 [0.17]
Reasons for Selecting Vending Location (%)				
Higher Footfall	39.82	52.81	43.26	
Space Availability	26.82	25.17	26.38	
Networking with Stakeholders and other Vendors	33.36	22.02	30.36	

Source: Author's calculation based on PSES.
Note: See Table 1 & Table 3.

3.5. Socioeconomics Vulnerability of Street Vendors and Profitability

As discussed earlier, we developed a multidimensional vulnerability index (MVI) of street vendors in twin cities. The analysis shows that around 21 percent of street vendors were acutely vulnerable, while more than 25 percent of SVs were vulnerable. These statistics reveal that about 50 percent of SVs were either vulnerable or acute vulnerable.

Both markets had almost similar vulnerability patterns (Appendix Figure 4). Only 13 percent of street vendors were not vulnerable per the multidimensional vulnerability index based on thirteen different indicators. The multidimensional vulnerability index provides valuable policy insights to streamline the informality faced by SVs in the twin cities of Pakistan.

We explored the impact of different vulnerability levels on the SVs' monthly profits. We found that SVs with no vulnerability earned 4.2 percent higher profit than the sample means profit. On the other hand, SVs with the vulnerable status suffered a 3.1 percent decline in average profit, and acutely vulnerable SVs made 12.2 percent less profit than the sample mean profit (Appendix Figure 5). The vulnerability-profit analysis indicated that socioeconomic vulnerability adversely impacted the profit margins of street vendors: the higher the levels of vulnerability, the higher the chances of reduced profits.

4. FACTORS AFFECTING PROFITS OF STREET VENDORS: MULTIVARIATE ANALYSIS

Given the important role of street vendors in economic activity, it is necessary to determine the factors affecting the street vendor's profit. The multivariate regression results are reported in Table 10. We estimated various models to ensure the robustness of the results. In Model 1, we estimated the impact of various levels of socioeconomic vulnerability on monthly profit. We used "not vulnerable" as the base category to find the relative contribution of various levels of vulnerability. In Model 2, we estimated the impact of various items sold by street vendors on monthly profit. We used other/electronic items as the base category in this model. In Model 3, we examined the relative contribution of different market structures to monthly profits by using the non-sector market as the base category. In the last model (Model 4), we combined all the factors in a single regression equation.

The results reported in Table 10 show that socioeconomic vulnerability had a negative and significant impact on monthly profits. We found that monthly profits were 12 percent lower for the "vulnerable" street vendors than for the "not vulnerable" street vendors. Further, we found that monthly profits were 20 percent lower for the "acutely vulnerable" street vendors than for the "not vulnerable" street vendors (Table 10–Model 4). These statistics reveal that an increase in socioeconomic vulnerability adversely affected the monthly profits of street vendors.

The empirical analysis shows that monthly profits were 12 percent higher for the "food" items as compared to "other" items. Similarly, monthly profits were 24 percent higher for the "fruits/vegetables" than the "other" items. The analysis also shows that the street vendors earned 15 percent higher in the "garments" category than "other" items. These findings uncover that food, fruits, vegetables, and garments were the major profitable items sold by street vendors. Earlier, we documented that these three sales items (food, fruits/vegetables, and garments) had a 62.5 percent market share in the street vending business (see Appendix Figure 1). This implies that profit margins influenced the choice of vending items in the market.

Table 10

Factor Affecting Street Vendor's Profit: Multivariate Analysis

	(1)	(2)	(3)	(4)	(5)
Socio-economic Vulnerabilities (Not vulnerable as the base category)					
Mild Vulnerability	–0.048				–0.034
	(0.042)				(0.042)
Vulnerability	–0.131				–0.126
	(0.045)***				(0.045)***
Acute Vulnerability	–0.238				–0.225
	(0.047)***				(0.047)***
Sales Product (Electronics/Mobile Accessories/Others as the base category)					
Food		0.111			0.109
		(0.054)**			(0.053)**
Fruits/Vegetables		0.177			0.216
		(0.059)***			(0.058)***
Beverages/Juices		0.044			0.067
		(0.080)			(0.079)
Garments		0.137			0.143
		(0.055)**			(0.055)***
Ladies' Bags/Jewellery		0.030			0.036
		(0.077)			(0.075)
Plastic Items/Cosmetics/Leathers		–0.061			–0.037
		(0.066)			(0.066)
Shoes/Sunglasses/Watches		–0.042			–0.029
		(0.060)			(0.059)
Market for Business Operation (Non-sector market as the base category)					
Sector Market			0.103		0.119
			(0.030)***		(0.030)***
Reasons to Start Street Vending Business (Others is the base category)					
Unemployment				0.221	0.211
				(0.110)**	(0.107)**
Job Termination				0.364	0.353
				(0.141)***	(0.138)**
Own will				0.217	0.209
				(0.111)*	(0.109)*
Good Business Opportunity				0.413	0.412
				(0.144)***	(0.141)***
Family Business				0.410	0.410
				(0.126)***	(0.123)***
No Formal Education				0.224	0.243
				(0.111)**	(0.109)**
Constant	10.360	10.180	10.181	10.025	9.944
	(0.037)***	(0.048)***	(0.026)***	(0.108)***	(0.122)***
Observations	1,674	1,674	1,674	1,674	1,674
R-squared	0.023	0.022	0.007	0.011	0.064

Source: Author's calculation based on PSES.

Note: OLS-based estimates are presented. We present standard errors in parenthesis [*** p<0.01, ** p<0.05, * p<0.1]. The dependent variable is the monthly profit earned by street vendors (reported profit) in log form.

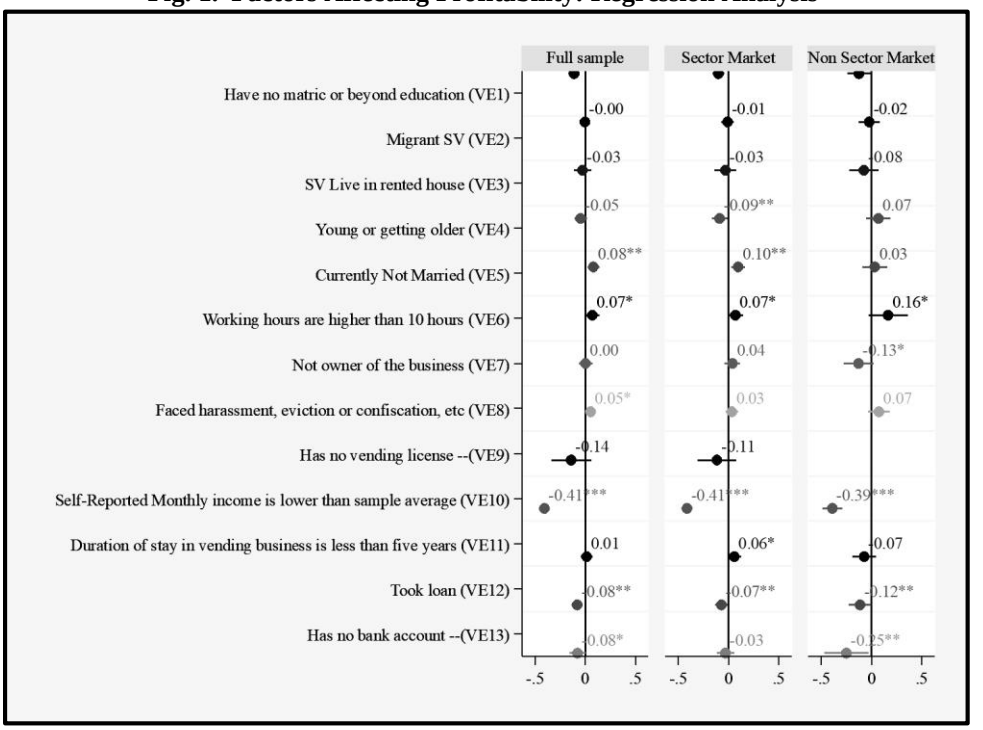
The empirical analysis shows that monthly profits were 13 percent higher in the "sector" markets as compared to the "non-sector" markets. This outcome reflects that profit margins were linked with the income status of residents of the vending area. It is well documented that people in sector areas fall in higher income brackets compared to those in non-sector areas in twin cities.

We also examined the impacts of the reasons to start a street vending business on monthly vending profits. We found that monthly profits were 51 percent higher for the "good business opportunity" category than in the "other" category. This outcome implies that those vendors who joined the vending business with the idea that it was a good business opportunity earned relatively higher profits than other categories. This also reflects that these street vendors might have had better business planning, such as the vending location and selling item choices. We also found that monthly profits were 51 percent higher for the "family business" category than for the "other" category. This implies that street vendors with a business background in street vending might have had a better experience and location to earn higher profits.

To establish the robustness of the results, we estimated the impacts of the factors discussed above by splitting the data across markets. The results are presented in Appendix Table 3. We found that socioeconomic vulnerability, especially "acute vulnerability", significantly negatively impacted monthly profits in both markets. The analysis depicts that the food, fruits/vegetables, and garments categories had positive and significant impacts on monthly profits in sector markets, and fruits/vegetables had a positive and significant impact on profits in non-sector markets. This implies that the profitability of different sale items varied across markets. Lastly, we examined the impact of all the factors on monthly profits using the fixed effects approach. We used the location (sector or market) as a fixed effect factor to capture the regional differences across sectors within sector markets. Based on the fixed effects, the results are presented in Appendix Table 4. We found similar results to those reported in Table 10 and Appendix Table 3.

We further expanded the analysis by conducting an indicator-wise regression analysis. For this analysis, we replaced Z with all the possible indicators used to construct socioeconomic vulnerabilities. The dependent variable was monthly profits earned by street vendors (reported profit) in a log form. We estimated thirteen different models based on each socioeconomic vulnerability indicator. The results are reported in Figure 1. Figure 1 shows that economic indicators such as income, loan, and financial inclusion significantly impacted profitability. However, taking a loan had a negative and significant impact on profitability. Similarly, the lack of a bank account also adversely affected the profitability of the street vendors.

Fig. 1. Factors Affecting Profitability: Regression Analysis



Source: Author's regression estimates based on PSES. Coefficients are reported.
[*** p<0.01, ** p<0.05, * p<0.1]. The dependent variable is the monthly profit earned by street vendors (reported profit) in log form.

5. CONCLUDING REMARKS AND POLICY RECOMMENDATIONS

The economic analysis of street vending in the twin cities of Pakistan provides numerous insights for policymakers and other stakeholders, including entrepreneurs, market associations, regulatory authorities, administrative bodies, and social protection agencies. The survey-based analysis of 1,863 fixed street vendors working in twin cities showed that the lack of formal education and unemployment forced individuals to choose the street vending business as a profession. It is noted that these street vendors, so-called micro-entrepreneurs, migrated from low-income and rural areas to find business opportunities in big cities such as Islamabad and Rawalpindi. These micro-entrepreneurs used carts or tables in front of shops and sidewalks to sell various products, including food, fruits/vegetables, garments, cosmetics, ladies' bags, and electronic products. Most street vendors worked more than 10 hours daily, showing long working hours without any breaks. The analysis indicates that formal-informal solid economic linkages benefit both formal shop owners and street vendors. Based on the analysis, the following implications are noted:

(i) Promoting financial inclusion: The analysis shows that street vendors are poorly integrated with the financial sector to use financial services for business expansion. Financial exclusion undermines business transactions in two ways. First, it restricts business expansion due to low investment and cash transactions. Second, it

hampers business prospects due to high lending costs from the informal sector—money lenders operating in the informal market. Financial exclusion occurs due to a lack of documentation due to migrant status, collateral to obtain financial services, and stringent legal requirements. Financial inclusion can be improved in the following ways:

(a) Reduce the documentation requirements (so-called sludge) to facilitate street vendors, especially migrant workers, to obtain financial services. Mobile banking is an alternative to increase financial inclusion.
(b) The government may allow mobile accounts as collateral to lend loans to street vendors for business purposes. Microfinance institutions (MFIs) should use the mobile account as a security/collateral to expand microfinance.
(c) To address the demand-side issue of financial inclusion, it is proposed that MFIs may devise lending schemes as per an informal committee (informal lending without interest on a rolling basis) to attract street vendors to use the formal financial sector.

(i) Provide legal protection to street vendors: More than 98 percent of street vendors do not have legal protection to run their businesses. Illegality causes a significant economic loss to street vendors. It is proposed that the local administration introduce work permits to qualified street vendors annually to provide legal protection. These permits generate revenues for the government and help standardise street vending products to ensure quality. The work permit may be renewed yearly after providing quality protocols.
(ii) Mechanism to formalise the income: Most business transactions (sales and purchases) occur in cash, which allows tax evasion. The government may restrict the renewal of work permit annual income statements based on formal transactions. Street vendors with no formal transactions may not be allowed to renew their work permits. This helps to formalise the income transactions and ultimately enhance tax collection
(iii) Reducing the cost of informality: As noted, more than 50 percent of the operational cost goes to the shopkeeper as the rent of using public space. The local administration should take appropriate measures to tag public spaces for street vending. Legal protection (mentioned in ii) may also help reduce the cost of informality.
(iv) Address huge inaccessibility of women to urban markets: A few women are involved in street vending business in twin cities due to a lack of proper spaces for women. It is proposed that particular areas or zones may be allocated for women in the street vending business.

APPENDIX

Appendix Table 1

Socioeconomic Profile of Street Vendors

Variables	Sector-Market	Non-Sector-Market	All
SVs Interviewed	1238	445	1683
Age of SV (years)	32.7	33.3	32.9
Household Size of SV (number)	8.2	8.1	8.1
Ever Married (%)	75.3	75.5	75.3
Educational Attainment of SV (%)			
No Education	23.2	26.5	24.1
Primary (class 1 to 5)	19.1	27.2	21.2
Middle (class 6 to 8)	21.2	17.5	20.3
Matric (class 9 to 10)	24.6	21.1	23.7
Intermediate & above	12.0	7.6	10.8
Residence Status of SV (%)			
Migrant	62.5	52.1	59.8
Permanent	37.5	47.9	40.2
Living Arrangements of SV (%)			
Live Alone	34.9	36.6	35.4
Live with Relatives	6.9	5.6	6.5
Live with Family	58.2	57.8	58.1
Housing Ownership of SV (%)			
Rented	92.33	83.6	90.02
Owned	7.67	16.4	9.98

Source: Author's calculation based on PSES.

Note: Sector markets include all commercial markets located in commercial areas (Markaz) of sectors in Islamabad. Non-sector markets include peri-urban markets in Islamabad and commercial hubs (Raja Bazar and Commercial Market) in Rawalpindi.

Appendix Table 2

Dimensions and Indicators of Multidimensional Vulnerability Index (MVI)

Dimension	Indicator	Vulnerable if	Weight	Theoretical justification
V1: Social	VE1: Education	SV has no matric or beyond education	1/15	Education determines the ability of an individual to exploit economic and other opportunities to expand the business and enhance income (Esayas & Mulugeta, 2020; Jiménez, Palmero-Cámara, González-Santos, González-Bernal, & Jiménez-Eguizábal, 2015).
	VE2: Residence	SV is a migrant worker	1/15	Migrant workers are subject to discrimination, such as paying less, hence vulnerable to expanding business (Moyce & Schenker, 2018).
	VE3: Living	SV lives in a rented house	1/15	Homeownership provides economic security by showing residential stability and social standing (Zavisca & Gerber, 2016). Living in a rented house may negatively affect income via rent escalation (Esayas & Mulugeta, 2020).
	VE4: Age	SV is young (age less than 20) or getting older (age>45)	1/15	Age reflects an individual's experience in earning income (Iqbal & Awan, 2015). Being younger or older may increase vulnerability (Esayas & Mulugeta, 2020).
	VE5: Martial Status	SV is currently not married	1/15	Married men performed better than single men (Mehay & Bowman, 2005). Married vendors perform better than unmarried (Esayas & Mulugeta, 2020).
V2: Vending	VE6: Vending Time	Working hours are higher than 10 hours a day	1/12	Long working hours have a negative effect on health and productivity (Park, et al. 2020). Suggesting a better/low overall hourly rate average net profit (Esayas & Mulugeta, 2020).
	VE7: Ownership Status	SV is not the owner of the vending business	1/12	SV with a fully owned status helps to run the business independently (Esayas & Mulugeta, 2020).
	VE8: Eviction	SV faced harassment, eviction, confiscation, etc.	1/12	Businesses are more/less vulnerable to loss (Esayas & Mulugeta, 2020).
	VE9: Legal status	SV has no vending license	1/12	Businesses are more/less vulnerable to loss (Esayas & Mulugeta, 2020).
	VE10: Income	SV's self-reported monthly income is lower than the sample average.	1/12	Income is a proxy of business profitability (Esayas & Mulugeta, 2020).
	VE11: Experience	Duration of stay in vending business is less than five years	1/12	High/ low mastery of vending business (Esayas & Mulugeta, 2020).
V3: Economic	VE12: Loan	SV took loan	1/12	This reflects a lack of personal savings/investment to start a business. SVs feel financially insecure (Esayas & Mulugeta, 2020).
	VE13: Bank Account	SV has no bank account	1/12	Financial inclusion allows SVs to expand business (Irankunda & Van Bergeijk, 2020)

Source: Author's formulation.

Note: We follow the framework developed by Esayas and Mulugeta (2020) with some modifications to select indicators.

Appendix Table 3

Factors Affecting Profits of Street Vendors: Market-wise Analysis

Variables	(1) Sector Market	(2) Non-Sector Market
Socio-economic Vulnerabilities (Not vulnerable as the base category)		
Mild Vulnerability	–0.035	–0.025
	(0.047)	(0.093)
Vulnerability	–0.119	–0.128
	(0.050)**	(0.099)
Acute Vulnerability	–0.207	–0.262
	(0.052)***	(0.102)**
Sales Product (Electronics/Mobile accessories/Others as the base category)		
Food	0.108	0.124
	(0.058)*	(0.135)
Fruits/Vegetables	0.177	0.241
	(0.069)**	(0.124)*
Beverages/Juices	0.068	0.062
	(0.089)	(0.171)
Garments	0.165	0.088
	(0.061)***	(0.126)
Ladies' Bags/Jewellery	0.028	0.077
	(0.083)	(0.176)
Plastic Items/Cosmetics/Leathers	–0.078	0.035
	(0.076)	(0.138)
Shoes/Sunglasses/Watches	0.015	–0.156
	(0.066)	(0.134)
Reasons to Start Street Vending Business (Others is the base category)		
Unemployment	0.210	0.222
	(0.118)*	(0.254)
Job Termination	0.446	0.130
	(0.155)***	(0.307)
Own will	0.214	0.190
	(0.119)*	(0.257)
Good Business Opportunity	0.400	0.546
	(0.149)***	(0.471)
Family Business	0.395	0.445
	(0.138)***	(0.282)
No Formal Education	0.228	0.285
	(0.120)*	(0.257)
Constant	10.057	9.952
	(0.130)***	(0.293)***
Observations	1,231	443
R-squared	0.054	0.089

Source: Author's calculation based on PSES.

Note: OLS-based estimates are presented. We present standard errors in parenthesis [*** p<0.01, ** p<0.05, * p<0.1]. The dependent variable is the monthly profit earned by street vendors (reported profit) in log form.

Appendix Table 4

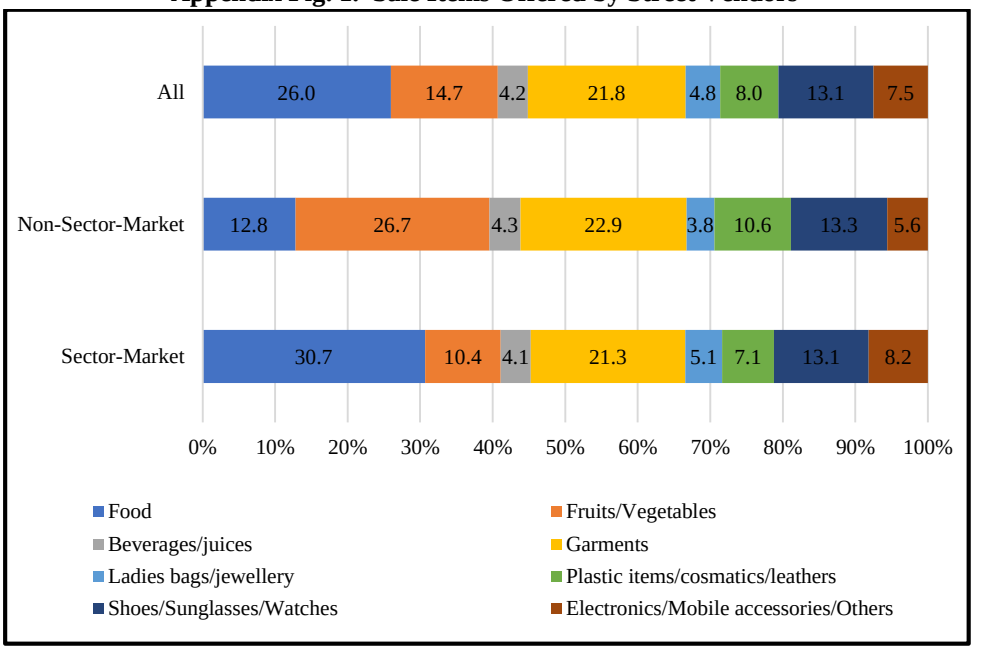
Factors Affecting the Profits Levels of Street Vendors

Variables	(1) Full Sample	(2) Sector Market	(3) Non-sector Market
Socio-economic Vulnerabilities (Not vulnerable as the base category)			
Mild Vulnerability	–0.032	–0.033	–0.020
	(0.042)	(0.047)	(0.094)
Vulnerability	–0.121	–0.111	–0.132
	(0.045)***	(0.050)**	(0.099)
Acute Vulnerability	–0.217	–0.199	–0.246
	(0.047)***	(0.052)***	(0.103)**
Sales Product (Electronics/Mobile Accessories/Others as the base category)			
Food	0.126	0.123	0.140
	(0.055)**	(0.059)**	(0.140)
Fruits/Vegetables	0.234	0.180	0.306
	(0.060)***	(0.069)***	(0.130)**
Beverages/Juices	0.070	0.070	0.086
	(0.079)	(0.090)	(0.172)
Garments	0.124	0.143	0.077
	(0.055)**	(0.061)**	(0.130)
Ladies' Bags/Jewellery	0.006	–0.007	0.059
	(0.076)	(0.083)	(0.181)
Plastic Items/Cosmetics/Leathers	–0.048	–0.089	0.031
	(0.066)	(0.076)	(0.142)
Shoes/Sunglasses/Watches	–0.052	–0.012	–0.163
	(0.060)	(0.067)	(0.137)
Reasons to Start Street Vending Business (Others is the base category)			
Unemployment	0.228	0.235	0.163
	(0.107)**	(0.117)**	(0.256)
Job Termination	0.375	0.482	0.069
	(0.138)***	(0.155)***	(0.308)
Own Will	0.231	0.246	0.133
	(0.109)**	(0.119)**	(0.258)
Good Business Opportunity	0.433	0.425	0.557
	(0.140)***	(0.149)***	(0.471)
Family Business	0.425	0.415	0.390
	(0.124)***	(0.138)***	(0.284)
No Formal Education	0.262	0.255	0.226
	(0.109)**	(0.120)**	(0.259)
Constant	9.993	9.978	9.869
	(0.124)***	(0.134)***	(0.297)***
Observations	1,674	1,231	443
R-squared	0.086	0.083	0.098
Fixed Effect	Yes	Yes	Yes

Source: Author's calculation based on PSES.

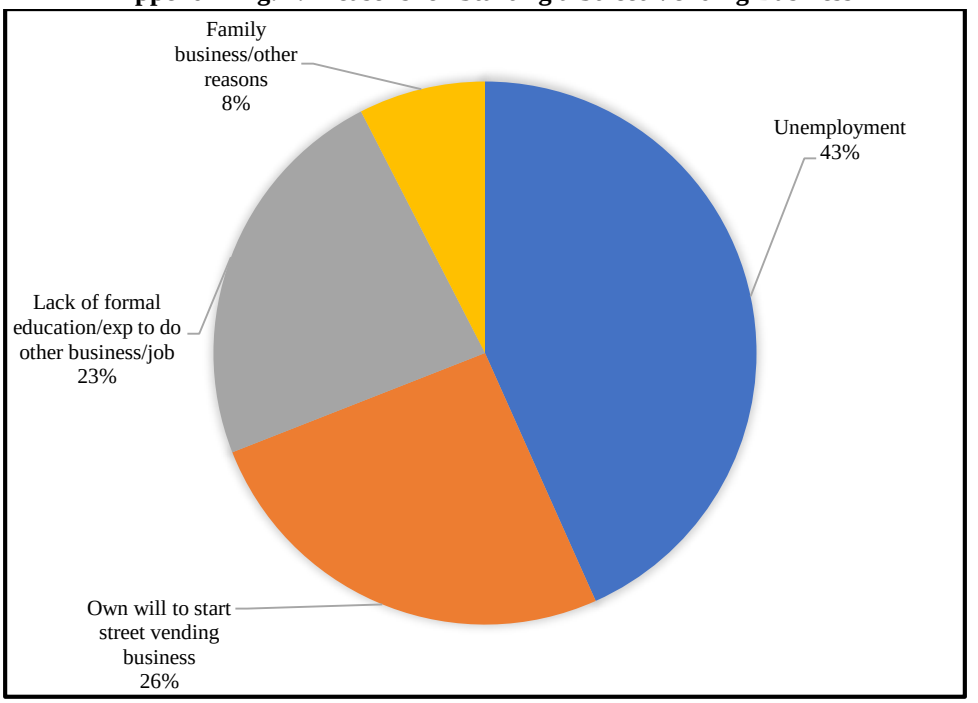
Note: The Fixed Effect based estimates are presented. We present standard errors in parenthesis [*** p<0.01, ** p<0.05, * p<0.1]. The dependent variable is the monthly profit earned by street vendors (reported profit) in log form. We use street vendors' locations as fixed effect factors.

Appendix Fig. 1. Sale Items Offered by Street Vendors



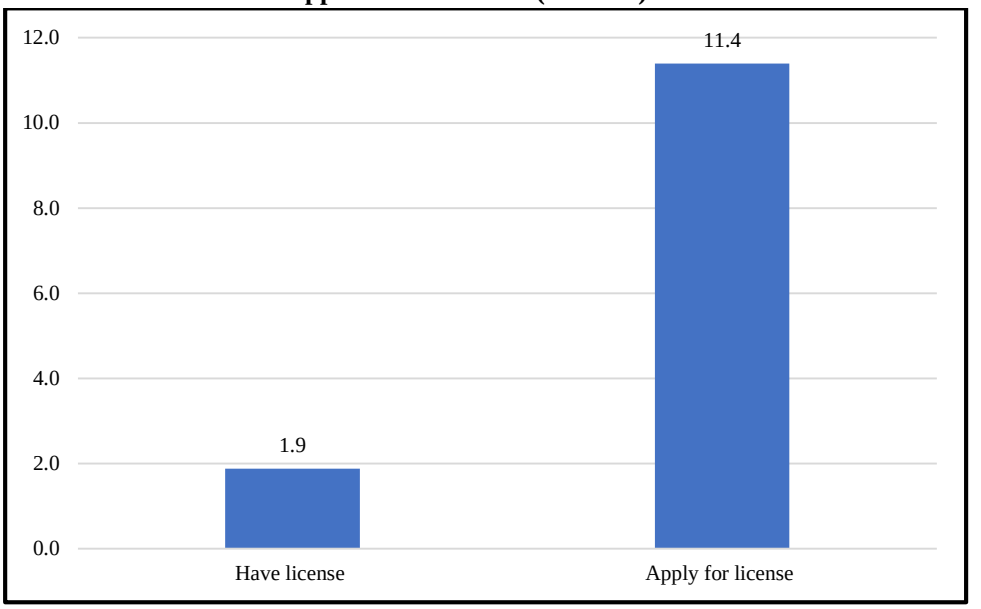
Source: Author's formulation based on PSES.
Note: See Table 1.

Appendix Fig. 2. Reasons for Starting a Street Vending Business



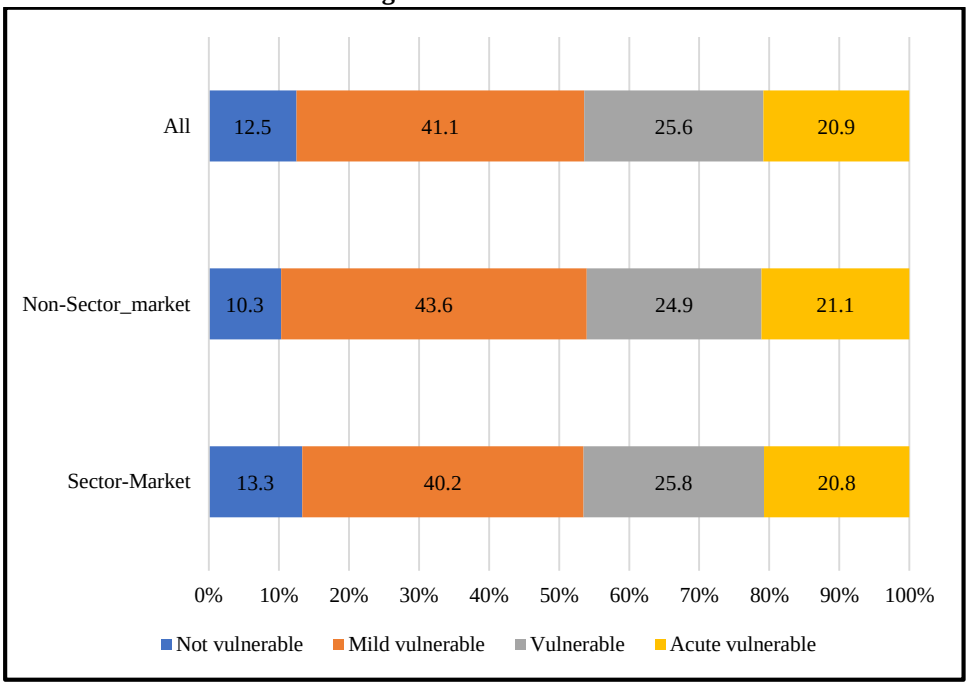
Source: Author's formulation based on PSES.

Appendix Fig. 3. Share of Street Vendors having a Vending License or Applied for a License (%Share)



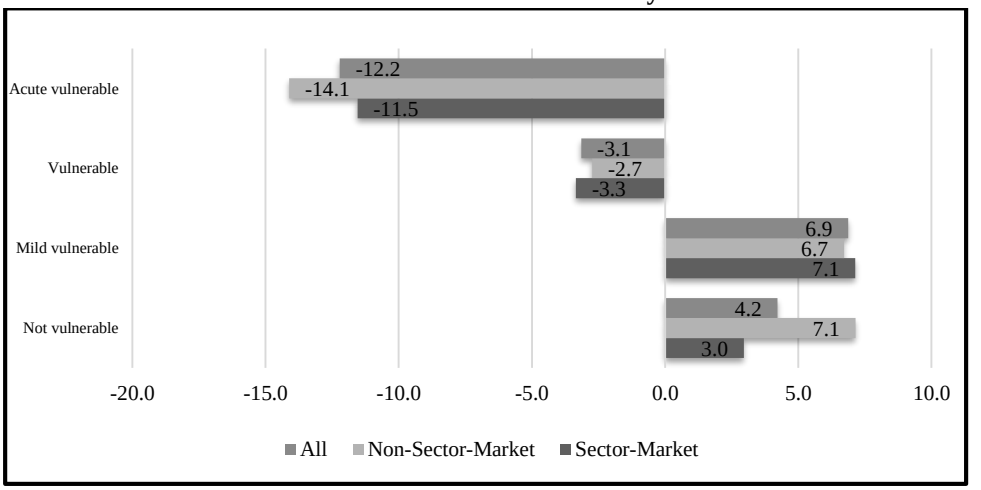
Source: Author's formulation based on PSES.

Appendix Fig. 4. Distribution of Multidimensional Vulnerability among Street Vendors



Source: Author's formulation based on PSES.
Note: See Table 1.

Appendix Fig. 5. Percentage Changes in Profit from the Mean Across Different Levels of Vulnerability



Source: Author's formulation based on PSES.

Note: See Table 1. Percentage changes in profit are defined as the percentage difference between the sample mean value of profit and the mean value of profit in a specific vulnerability level. $\Delta\pi = \left(\frac{\pi_{mean\_level}}{\pi_{samplemean}}\right) * 100$. Where $\Delta\pi$ represents the percentage change in profit, $\pi_{samplemean}$ denotes sample mean (profit) and π_{mean_level} presents mean profit at a specific level.

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