Measuring and estimating retail productivity

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- Productivity captures how efficiently a firm creates value given any fixed quantity of inputs. Measures of productivity can enhance policy impact by directing resources to the most capable firms and targeting productivity gaps where needed.
- Retail productivity fundamentally differs from manufacturing, as "output" involves matching goods to customers rather than producing physical units. Standard productivity measures are ill-suited for this context and can lead to biased estimates and flawed policy recommendations.
- A flexible, retail-specific method captures shops' logistics, inventory choice, and marketing ability, providing more accurate insights and highlighting the importance of targeting specific productivity dimensions to ensure effective policy interventions.
- Data from shops in Lusaka, Zambia, highlight wide variations in productivity and profitability.
- Different dimensions of productivity are positively correlated with each other, but the correlation is far from perfect. This indicates that policy interventions that do not target the right productivity dimension might be ineffective and even counterproductive.

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The issue: Estimating retail productivity with a model tailored to retail

The retail sector consistently employs a larger share of the workforce than manufacturing across nearly all countries and stages of development. Yet, we have a limited understanding of the drivers of performance in this sector. Data-driven policy design for retail is constrained by the reliance on estimation methods originally designed for the manufacturing sector. These estimation methods:

- often define productivity as a residual (leftover measure) instead of considering it as a fundamental factor (structural parameter) rooted in the decisions businesses make at various stages of production
- treat productivity as a unidimensional factor, overlooking the possibility that a business may be productive in one stage of the production process but less so in others
- lead to an unintuitive and potentially misleading concept of productivity in retail where the "output" is not a physical good but the successful matching of goods from a shop's inventory to customers

The distinction is not just a philosophical one; it also has significant practical implications. Estimation methods that disregard these unique features of the retail sector can lead to biased productivity estimates, misdirect supporting interventions to the wrong businesses, and ultimately result in the design of ineffective or counterproductive public policies.

A new estimation method for retail productivity and its predictions for policy design

Our study introduces a novel and flexible method to estimate retail productivity. It evaluates a shop's productivity across three critical dimensions: marketing productivity, logistical productivity, and inventory choice productivity. Each of these dimensions represents distinct stages in a sequence that "produces" a transaction between a retailer and a customer.

- **Marketing productivity**: A shop's ability to attract customers through its location, pricing, and advertising choices. Shops that draw more visitors while holding these inputs constant exhibit higher marketing productivity.
- **Logistical productivity**: A shop's efficiency in sourcing and displaying goods, with labour and capital determining the shop's total inventory stock.
- **Inventory choice productivity**: A shop's skill in accurately predicting customer demand and sourcing products from low-cost suppliers. Shops

with higher inventory choice productivity maintain lower shares of unsold inventory.

We collected high-frequency survey data from single-establishment shops in Lusaka to estimate these productivity dimensions. By breaking down productivity and recognising its complex nature, this method yields clearer insight into the factors driving a shop's success and offers tools to identify areas that require better management. The findings reveal important lessons for any policy designed to support the retail sector that is at odds with the prescriptions from standard methods.

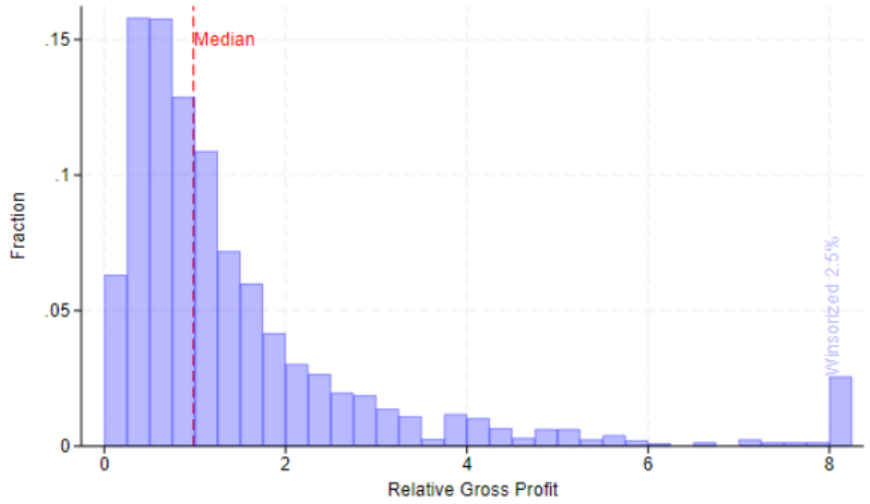
How do shops differ in performance, and what defines high performers?

Data from grocery/convenience shops and pharmacy/cosmetics businesses in Lusaka, Zambia, reveal widespread variation in profitability, even after accounting for location and product type. Shops show a wide range in the prices they pay for similar goods. They also vary drastically in the number of suppliers they use and the distance involved in sourcing, suggesting differences in logistical sophistication. There are also notable differences in the number of potential customers shops attract and whether they employ basic marketing efforts, such as printed signage, to draw attention.

Stores with higher profitability:

- are more likely to maintain a regular relationship with suppliers to source inventory but are also more likely to actively search for new potential suppliers
- are more likely to make strategic choices about how to display their storefronts
- keep larger inventory stocks but experience fewer losses to spoilage, theft, or other issues, reflecting their ability to forecast product demand

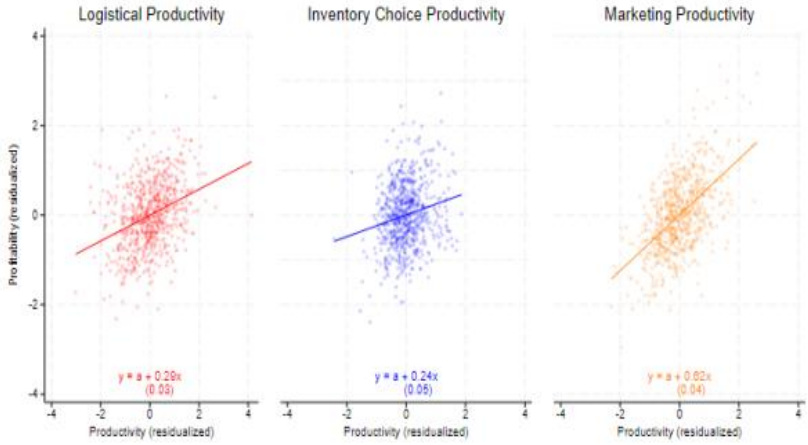
FIGURE 1: Some small shops are consistently far more profitable than others



Multi-dimensional productivity estimates

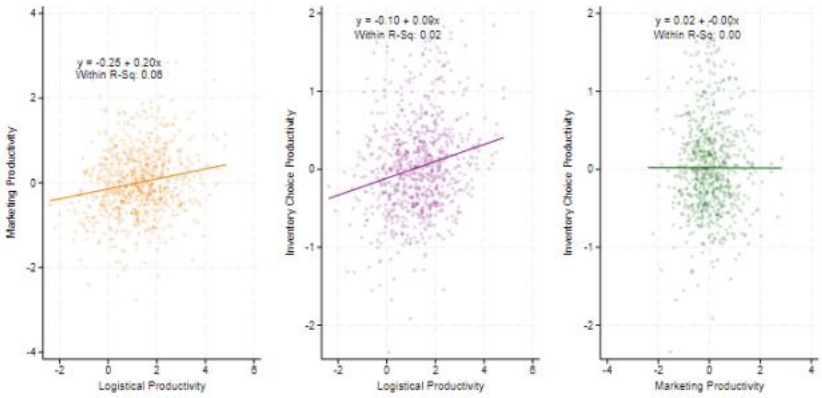
The three dimensions of productivity are good predictors of profitability. They account for more variation in future profits than traditional measures, such as the managerial practices assessed by standard management quality rubrics.

FIGURE 2: All three dimensions of productivity are correlated with profitability



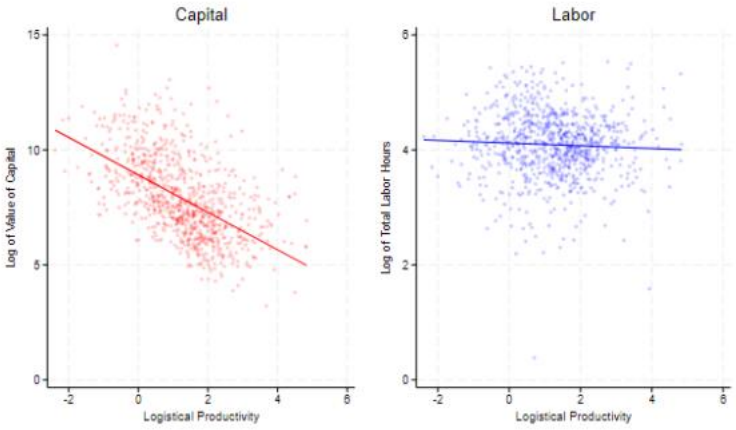
The dimensions of productivity are only weakly correlated, indicating that shops that source and display goods efficiently may not necessarily excel in selecting the right goods to stock or consistently attracting customers. For example, the skills needed to effectively negotiate with suppliers or forecast customer demand (inventory choice productivity) differ from the logistical skills required to optimise restocking frequency or determine how to display goods for maximum appeal.

FIGURE 3: The three dimensions of productivity are only weakly correlated with one another



Shops with higher logistical productivity tend to use less capital on average. According to our theory, this is possible when the dimensions of productivity are weakly correlated. If the shop can source more inventory using the same capital and labour but lacks the ability to sell the additional stock, then the most efficient strategy is to maintain the same inventory levels with fewer resources.

FIGURE 4: There is a negative correlation between logistical productivity and capital



Policy implications and recommendations

The data from retail shops in Lusaka reveal notable variations in profitability, highlighting substantial opportunities to improve sector performance. However, the findings suggest well-intentioned policies that give inventory or capital to highly productive entrepreneurs could inadvertently harm social welfare.

For example, the social benefit of giving additional inventory varies depending on a shop's inventory choice productivity. If a shop already has enough inventory to meet expected sales, each additional dollar of inventory serves as buffer stock. Additionally, while interventions that improve logistical productivity might allow a shop to increase its inventory, this inventory could remain unsold and go to waste if the shop is not also skilled in marketing or choosing the right products to stock.

Based on our results, we recommend the following tools:

Integrated support programs

Develop comprehensive programs that address all three dimensions of productivity: marketing, logistics, and inventory management. These trainings should cover marketing strategies to attract customers, efficient sourcing methods, and effective inventory management. Such integrated support ensures retailers receive well-rounded assistance to improve their overall productivity.

Targeted interventions to enhance productivity

Customise interventions to match the specific productivity profiles of individual shops. For example, provide marketing assistance to shops with strong logistical efficiency but low customer attraction. This targeted approach focuses

on each retailer's most critical needs, maximising the impact and effectiveness of support programs.

Data-driven decision-making

Leverage detailed data on shop operations to design, refine, and adapt interventions. Regular data collection and analysis enable policymakers to identify and understand the evolving needs of retailers. Data-driven decisions ensure that policies remain relevant and effective in addressing the retail sector's challenges.

Conclusions

Improving the productivity of the retail sector offers enormous potential benefits for low- and middle-income countries. The retail sector employs so many workers that a policy which successfully raises productivity would support many households. Furthermore, the magnitude of the gap between the least and most productive firms highlights substantial opportunities for productivity improvement. However, for policies to be effective, they must support retailers across all their operations, which include marketing, logistics, and inventory choice. Failing to do so could diminish the impact of interventions and risk wasting.