



Policy Brief



HOUSEHOLD MARKET PARTICIPATION, ACCESS AND FARM PRODUCTIVITY IN AJK, EVIDENCE FROM FARM HOUSEHOLD DATA

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BACKGROUND

Barriers to market access and understanding product performance are key factors in overcoming market failure. The majority of the small farmers in Azad Kashmir, whose access to the market is limited and the only farmers who have access to the market, participate in the agricultural market. Due to this market failure in this particular area, there is a dire need for government programs in this area to invest in improving market access, infrastructure and the agricultural production side. Improving one can help improve another and both can boast of the quality of life: Higher market participation can increase productivity, as long as incentives, information for working capital be encouraged. Higher yields may increase market participation because higher yields may have additional crops to be sold.

Agricultural sector employed 8% of the active labor force. Around 72% of the household own agricultural land. The average size of the farm was assessed to be 1.1 acres. Only 10% of households sold and contributed to market participation indicating that 90% of the households were subsistence farmers who grew crops for their own consumption. Only 31% of subsistence farmers are able to meet their household's consumption demands. The average income per harvest of commercial farmers was Rs. 81,086, which was also low (SDG 2021)

Crop and marketing promotion plans have not been devised. Due to a lack of infrastructure and financial assistance, the area is characterized by low productivity and limited market access. Although many other factors contribute to agricultural productivity, such as technological advancement, regulatory framework, and optimal use of material inputs, these elements may not have an impact on agricultural performance unless better marketing conditions prevail (Cabas, et al. 2010). Landowners in Azad Kashmir, who are often peasants, have limited financial and technical resources, hence a policy aim in this area is critical. To our knowledge, there is no systematic research on agricultural productivity and market participation in the Azad Jammu Kashmir (AJK) region. There are issues in the region's data availability and veracity. To compensate for these statistical flaws, it might be beneficial to limit international studies to a local environment.



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PURPOSE AND SCOPE

The prevalent idea is to evaluate farm productivity within given resource and technology, and household market participation within given market access condition, to establish a linkage between these for the agriculture market of the Azad Jammu Kashmir. There are more particular purposes of this research:

- To measure the impact of farm variables on farm production and technical efficiency.
- To estimate the linkage between market participation and market access conditions in addition to farm level efficiencies; and
- To recommend policy options establish on the outcomes of this study. Apart from quantitative, the study would trace out what sort of policy interventions have been adopted by relevant departments to reduce farm inefficiency and supporting the farmers to link with market. And what sort of the challenges they are facing to implement their policy agenda.

The underlying study is set to answer the following key questions related to the development strategy in this specific area.

- What are the reasons that cause production inefficiency at farm level?
- Are farmers producing optimum level of output to market it?
- What are the area-specific barriers to market access?
- Are improvements in farm productivity increased market participation, having better market access requirements?
- Has the volume of agricultural sales increased due to improvements in agricultural production, even though access to the market is poor?
- On the contrary, whether new roads and improved accessibility to the market increase the commercialization leads to continuous production?

The underlying research provides policy alternatives for improving farm-level production efficiencies as well as food production and market participation. This would also be useful for developing food and marketing policies to address farm-level constraints and hurdles to market access. Finally, recommendations was made based on the findings after estimating the empirical model.

METHODOLOGY

The underlying research primarily focuses on the use of mixed approaches to assess the defined objectives. This method is often used to combine the results of quantitative and qualitative instruments to provide a comprehensive picture of the study problem (Aramo-Immonen, 2013).

The study covers three aspects of farm household. First, we evaluate farm-level technical performance scores using the Stochastic Production Frontier. If there is a technical inefficiency, it means that the farmers are not producing on maximum level of production frontier curve but below and therefore the technical performance is less than one. The R-Frontier software package is used to estimate the stochastic frontier model and generate technical ineffective scores. Second, we gain access to the specific constraints and conditions of the region for market access to sample household. This test assumes that production efficiency increases market participation due to higher sales in the presence of improved market access conditions. Third, we analyze the relevance of production efficiency and market participation in terms of market accessibility such as infrastructure, distance



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to roads, sources of market information, and distance from markets, marketing experience and other market related variables. The Tobit model has been implemented to determine relations. To participate in the market, the sales index is used as a fraction of the total sales of the total product. Farm-specific inputs (land, labor, capital, and materials) serve as explanatory variables to determine their impact on farm production (gross value from vegetables, fruits, grains). The study considers the effects of different farmers' characteristics, such as age, education, and farm size on farmer performance such as the 'technical ineffectiveness model'. Depending on the specific features of the farm in line with (Battese and Coelli 1995).

STOCHASTIC FRONTIER ANALYSIS RESULTS

Elasticity of all inputs was positive and significant. All inputs contributed positive to increase in gross value of crop produced. So it must be provided in time and in sufficient quantity and quality. The cultivated area has the maximum elasticity of 0.50 percent, which suggests that bringing more land under cultivation will result in a substantial improvement in agricultural productivity, the overall farmland area in Azad Kashmir was around 47% of the total land area. Approximately 31% of the entire farm land was under cultivation. AJ&K's irrigation area was 6.2 percent of the total agricultural area (P&DD 2020). When compared to other inputs, the usage of a tractor for ploughing has a considerable elasticity of 0.48 percent. Agriculture's performance will improve when more mechanization is used.

ANALYSIS OF THE DETERMINANTS OF TECHNICAL INEFFICIENCY

The findings demonstrate that farm-level technical inefficiencies exist. We were able to use characteristics including the farmer's age and educational level, farm size and traction power, irrigation source, and land fragmentation with the data we had. The result shows that among the determinants of inefficiency, the variable age is insignificant, however the variable education is positive and significant, implying that more educated individuals contributed positively to technical inefficiency at farm. This is because higher education tends to divert people to other off-farm occupations such as government positions, and they contributed less to increasing agricultural efficiency. Fafchamps & Quisumbing (1999) also found the same results. The fact that the coefficient for the variable farm size is negative indicates that increasing farm size reduces technical inefficiency since it allows farmers to cultivate a wider variety of crops, use new technology and machines, and enhance production. This result is in line with Ahmad et al. (2002) and Ahmad et al (2003).

The explanation for this could be that larger farmers, because of their stronger financial and social standing, have more access to information, farm machinery, and extension services, and can undertake agricultural operations with more timely and with precision. Furthermore, farm operations of a larger scale may be able to utilize inputs more efficiently (Ahmad, et al. 2002). Dummy for irrigation is positive, which indicates that inefficiency is increasing. This could be due to irrigation sources not being accessible in the appropriate amount, or because the majority of the land is rainfed, which has a negative impact on agricultural efficiency. The negative coefficient of land fragmentation indicates that the more land is separated and cultivated into parcels, the easier it is for farmers to manage and monitor, reducing inefficiency. The dummy for traction power when utilizing advanced machines and tractors was negative, indicating that it reduces farm technical inefficiency.

TECHNICAL INEFFICIENCY SCORE

The mean value of efficiency derived from the above model, as shown in Table 6, was 58 percent,



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with a range of 7.5 percent to 86 percent. Indicating that farmers might achieve the maximum output frontier by raising their efficiency by 42 percent. This would be accomplished through the use of current technology and other measures. This suggests that by utilizing agricultural resources more efficiently, farm gross value from crops might increase by 42 percent. While 53 percent of the sample farmers were under 60 percent efficient, there is still space for the average farmer to increase farm production by 40 percent with the same level of inputs and technology by strengthening the farming community's managerial capacity.

MARKET PARTICIPATION

Its value ranges between 0 and 0.9 with mean was 0.36. Zero means they marked nothing and close to 1 means the share of crop marketed to total produce was increased and hence more market participation. 1 means they sold all the crop produced. On average the farm output produced was 4215 kg and amount marketed was 2319 kg. However, contribution in market was less 47 percent of farmers have less than 50 percent market participation and 20 percent did not participate in market. Only remaining 33 percent have MP greater than 50 percent.

FACTORS AFFECTING MARKET PARTICIPATION

The determinants of market participation were technical efficiency level generated along with other market accessibility factor and household characteristics that include credit facility, Agriculture and market training dummy variable. Distance of farm from road dummy variable for farm located within 5 km while above as reference. Processing or value addition dummy variable. Distance from market within 15-30 km dummy variable. Marketing experience in years. Having refrigerator for storage dummy variable, having internet as source of information dummy variable. Family size in numbers also determine market participation. All the variables were positive and significantly contributed to market participation except family size and processing. Increase in credit facilities along with training and increase in technical efficiency at farm result in increase in market participation. The coefficient of efficiency was 1.39 indicated that one point increase in efficiency score is associated with 1.39 point increase in likelihood of market participation. Similarly the more they are located closer to the roads and market also significantly increase market participation. Having internet also positive contributed. While family size and processing negative contributed to participation they mostly process products for their immediate consumption at home like spices, maize and wheat flour. Increase in family size result in increase in household consumption and result in decrease in amount marketed.

RESPONSE GENERATED FROM STAKEHOLDERS

Two sections make up the qualitative questionnaire. We posed questions about farm efficiency in section A, and market involvement in section B, and their results are summarized here in percentage points. In respond to question *How is you contributing/assisting the farmers to improve farm productivity?* 20% response by providing abrupt information. 20% by introducing efficient farm practices 25% by providing education, training, and demonstrating. 7% helps in irrigation and 27% assists with other measures such as enhancing soil fertility. In response to question *your organization is demonstrating/working on which impact based policy type?* 35% responded by input support 5% by output support accounts for 50% by technical support and 10% by financial assistance. In response to others question such as *Is your department playing role in timely provision of pesticides, fertilizers, and other inputs to farmers?* 42 percent answered yes, while 58 percent said no. *In the face of climatic shocks/disaster, what has been your role to assist the farmers?* 30 percent



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assist with adaptation, 25 percent with financial assistance, 45 percent with climate change perceptions, and 22 percent with other measures. *Does your department have any collaboration with some other department to assist the farmers?* 82 percent answer yes, while 18 percent respond no. *Is your department engaged in finding new research-based ways to increase the productivity of the farmers?* Yes answers accounted for 55% of the total, while no answers accounted for 45%.

Which extension teaching method, in your opinion, is most persuasive for farmers in terms of an innovation's adaptability? Individual interaction is preferred by 32 percent, group contact by 55 percent, and mass contact by 12 percent. *Is the district administration working with you to help farmers raise their output?* 37 percent said yes, while 62 percent said no. *Are you training farmers on how to gain market access?* 25% responded yes, while 75% responded. *Is your department encouraging farmers to go into commercial farming and switching from traditional to high-yield crops?* Yes, 80% of the time, and no, 20% of the time. *Are you having difficulty carrying out your plan to enhance farmer market participation?* Yes, 65 percent, and no, 35 percent.

CONCLUSION AND POLICY RECOMMENDATION

Following policy measures are therefore recommended base on Key informants interview (KIIs) to enhance the productivity of the agriculture sector in AJ&K:

- Providing local agriculture markets with the help of private sectors, at least in tehsils where small farmers have approach to sell their products.
- Financial loans to the farmers for value addition of their products so that it can fetch a place in market.
- Introduction of co-operative farming system for small farmers with less land holdings.
- One product one village policy is necessary in AJK to increase production of farmers.
- Provision of improved quality seed, plants and other agriculture-inputs that should be available at the door-step of the farmers.
- Special marketing mechanism for small farmers is necessary so that they can easily approach the market for selling of their products.
- Use of land as per soil classification and impose restrictions for use of cultivable land for any other purpose.
- Penalties for not using their cultivable land for farming purpose for last five years.
- Each district should be allocated to specific crops where there is its potential i.e North region is suitable for horticulture crops. South region is suitable for cereal crops, fodder, citrus fruits etc.
- A quality seed is a basic unit of a production function in the Agriculture Sector. Certified planting material like cereal, pulses, crop seeds, vegetable seeds, fruit plant varieties is compulsory for a profitable farming. It is recommended to establish a seed production unit in the Agriculture Department. The Unit has a critical role to play in promoting and ensuring the development of approved planting materials.
- It is suggested that a research institute dedicated to mountain agriculture be established. In distinct agro-ecological zones, soil and climatic conditions are vary and/or strongly rain-fed. Crop varieties developed specifically for mountain environments, as well as post-cultivation procedures during the crop season, are required for productive farming in this region.
- Poor monitoring mechanisms was noted. To evaluate the impact of development schemes, advisory support systems, monitoring, and evaluation mechanisms can assist in reorganizing schemes to achieve desired goals.

The study's main goal was to establish a relationship between farm production, technical efficiency and market participation. To respond to the research question, "Does increasing agricultural production lead to increased market participation and having better market access conditions?"

To this purpose, the study demonstrates that farm-level variables and market accessibility factors have a significant impact on agricultural productivity and market participation respectively. Market accessibility factors are prerequisites for market participation along with increase in productivity. The findings also revealed that, in addition to market accessibility, production efficiency—technical efficiencies play a substantial impact in influencing market participation levels, with a positive coefficient of 1.39. Positive relationship between farmer who is efficient in production and likelihood of that farmer participating in market as a seller. There is a room to increase efficiency level by 42 percent. Therefore, there is a need to take steps:

- To control the effects of farm inputs on production, it should be available to every farmer timely and in good quality and quantity.
- Socioeconomic factors particularly influenced farm performance. Education and agriculture skills along with training should create awareness and interest so that more educated people are involved in agriculture.
- Innovative machines should improve the management capabilities of the agricultural community and, thus, enhance technical efficiency and market participation, such as by designing and promoting infrastructure support; road, market, storage and warehouse, and transport facilities.
- Create off-farm employment and investment opportunity to help extremely inefficient farmers to start agro-related enterprises.
- Increase the size of the farm by bringing more land under cultivation Programs that encourage landowners to utilize waste lands should be introduced.
- Credit and short-term loan have a significant impact on market participation, using the loan to convert traditional agriculture to modern commercial farming and hence market participation.
- Water channels need to be built near rivers, streams and aquifers to bring more area under irrigation.
- Strategies need to be devised to equip farmers with marketing skills and opportunities so that their products can reach the market at a lower cost and faster. Proper storage and packaging facilities and transport mechanisms should be provided.
- Higher expected return encourage entrants to the market and greater volume sales for those capable of generating marketable surpluses. Farmers' access to market pricing systems and information is very important for enhancing agricultural sector economic output.
- Agricultural extension should be market oriented. Reorganize the agricultural extension system to meet the challenges of market, because extension agents are the ones who are in close contact with community they should be well equipped with update information about marketing and provide good training to improve their management skills under the changing environment.
- The crops are already under water stress, and a rise in temperature would increase the plants' water demand. As a result, increasing water storage capacity in the region is critical for ensuring agricultural production system sustainability and market participation.
- The study's findings also point to the notion that increasing production efficiencies increases market participation. As a result, greater infrastructure and farmer-friendly policies are required to remove input and output market inefficiencies, lowering production costs and making the sector more competitive.



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