

Extended Abstract

Paper/Poster Title	Associations between access to adequate and inadequate credit and expenditures on farm investments
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Abstract	200 words max
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Access to credit is critical to boosting farm investments and productivity. However, some farming households cannot receive credit or only receive inadequate credit due to higher transaction costs associated with credit market access and imperfect information. This study provides insight into the impact of access to credit on farm investments, accounting for inadequate and adequate credit. We also distinguish between chemical input investments (i.e. chemical fertilizers and pesticides) and environmentally friendly ones (i.e. green pest management and organic fertilizers). We utilize the inverse probability-weighted regression adjustment estimator and multivalued treatment effects model and estimate first-hand data collected from 946 citrus farmers in China. The results show that access to credit significantly increases farmers' expenditures on chemical pesticides and green pest management by 12.1% and 47.7%, respectively. Farmers with and without accessing adequate credit appear to differ in farm investments. Specifically, farmers receiving inadequate credit have a significantly higher expenditure on green pest management and a lower expenditure on chemical pesticides than those without credit access. Farmers with adequate credit access spend more on chemical pesticides and green pest management compared with their counterparts without receiving credit. Farmers with adequate credit have higher chemical pesticide expenditures than those with inadequate credit. Access to credit does not have a significant impact on chemical and organic fertilizer investments.

Keywords	Access to credit; farm investments; MVTE; China
JEL Code	Cross-Sectional Models C21; Credit E51; Micro Analysis of Farm Input Markets Q12

Introduction	100 – 250 words
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Farm investments are foundations of improving farm economic performance, sustainability, and resilience. However, many low-income farmers still cannot purchase needed agricultural inputs due to income constraints, resulting in lower-than-expected farm productivity and household welfare. Credit has been identified as an important tool for improving household welfare because it allows farmers to invest in farm production and non-farm businesses. This study aims to analyze the impact of access to credit on farm investments. We aim to make several contributions to the literature, including the fact that we distinguish between access to inadequate and adequate credit and we consider chemical inputs (chemical pesticides and fertilizers) and environmentally-friendly inputs (green pest management and organic fertilizers) as outcome variables. We utilize the inverse probability-weighted regression adjustment estimator and multivalued treatment effects model to address the



selection bias issues and estimate first-hand data collected from 946 citrus farmers in China.

Methodology

100 – 250 words

The first objective of this study is to estimate the impact of access to credit on farm investments. The IPWRA estimator has a double-robust property, assuming that the estimated treatment effects are consistent and unbiased when either the treatment model or outcome model is correctly specified so we use IPWRA for our first objective. The second objective of this study is to examine the effect of credit adequacy on farm investments. The treatment variable has three options: access to inadequate credit, access to adequate credit, and no credit access. When the treatment variable has more than two options, the IPWRA estimator becomes inappropriate. In this case, we employ the MVTE model to conduct the empirical analysis. One of the advantages of the MVTE models is that the identification strategy may not necessarily require an identification restriction as it is in most recursive models used in addressing self-selection bias.

Results

100 – 250 words

The results show that access to credit significantly increases farmers' expenditures on chemical pesticides and green pest management by 12.1% and 47.7%, respectively. Farmers with and without accessing adequate credit appear to differ in farm investments. Specifically, farmers receiving inadequate credit have a significantly higher expenditure on green pest management and a lower expenditure on chemical pesticides than those without credit access. Farmers with adequate credit access spend more on chemical pesticides and green pest management compared with their counterparts without receiving credit. Farmers with adequate credit have higher chemical pesticide expenditures than those with inadequate credit. Access to credit does not have a significant impact on chemical and organic fertilizer investments.

Discussion and Conclusion

100 – 250 words

Our results highlight the positive impact of access to credit and access adequate credit on farm investments. Therefore, we also can draw some policy commendations. First, governments should promote farmers' access to credit. Specifically, governments should support credit institutions to expand credit coverage, lower credit interest rates, and extend credit terms to facilitate farmers' access to credit and better utilize it. Second, credit institutions should optimize the criteria for granting credit. The adequacy of credit should be regulated according to the farmers' production habits and the purpose of the credit to ensure the effective utilization of credit. Third, credit institutions could implement targeted lending policies (e.g., credit for green production practice programs) to guide farmers to use credit for more appropriate purposes.