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THE IMPACT OF AGRICULTURAL SUBSIDIES ON THE CREDIT DEMAND OF FARM HOLDINGS IN BULGARIA

ABSTRACT

This study investigates the role of agricultural subsidies as a determinant of credit demand among Bulgarian farms over the period 2010–2024. Using micro-level panel data from FADN, Ministry of Agriculture subsidy records, and bank lending statistics, the analysis employs logit, panel regression, instrumental variables, and propensity score matching methods to examine the impact of subsidies on borrowing behavior. The results show a **dual effect**: subsidies increase credit demand for medium- and large-scale crop farms by improving creditworthiness and enabling investment, whereas for small, highly subsidy-dependent farms, subsidies reduce borrowing by providing sufficient liquidity. The effect is heterogeneous across farm sizes and production types. The findings highlight the importance of tailored policy design, suggesting that investment-oriented subsidies can stimulate productive credit use. At the same time, small farms may benefit from complementary financial instruments to support investment. Integrating subsidy and credit policies can enhance financial resilience and promote sustainable growth in Bulgarian agriculture.

KEYWORDS: agricultural subsidies, credit demand, farm finance, Bulgaria, CAP, farm size, FADN

JEL: Q10, Q12, Q14

INTRODUCTION

Access to credit remains one of the most critical factors shaping the performance, modernization, and long-term sustainability of agricultural holdings, particularly in transition economies such as Bulgaria. Credit enables farms to invest in technology, expand production, improve productivity, and manage risk; however, many agricultural producers continue to face liquidity constraints, asymmetric information, and high collateral requirements that restrict their ability to borrow (Petrick 2004; Barry & Robison 2001). In the context of European Union (EU) member states, and especially in Central and Eastern Europe, agricultural subsidies play a central role in shaping both the financial behavior of farms and the functioning of rural credit markets (Ciaian & Swinnen 2009).

The Bulgarian agricultural sector is characterized by a dual structure consisting of a small number of large, capital-intensive farms and a large share of small, semi-subsistence holdings (Ivanova, Mishev & Nikolov 2019). This structural fragmentation influences both credit demand and the extent to which farms rely on subsidies under the Common Agricultural Policy (CAP). For many holdings, direct payments represent a substantial share of income and serve as an important stabilizing factor in an environment marked by output price volatility,

climate risks, and limited risk-management instruments (European Commission 2023). Consequently, subsidies may affect credit demand in multiple and potentially opposing directions.

Theoretically, the influence of subsidies on credit demand can be interpreted through several channels. First, subsidies may relax liquidity constraints and reduce income volatility, thereby increasing farm creditworthiness and improving access to external finance-the so-called "collateral effect" (Koundouri et al. 2009). Second, subsidies may reduce the need for borrowing if they provide sufficient working capital, generating a substitution or "wealth effect" that lowers demand for loans. Third, subsidies may stimulate investment and expansion, leading to increased demand for credit, particularly for capital-intensive activities (Garrido & Brümmer, 2010). The net effect depends on farm size, production type, risk profile, and the structure of the subsidy scheme.

Despite the issue's relevance, empirical evidence for Bulgaria remains limited. Existing studies have primarily focused on productivity effects of subsidies (e.g., Latruffe et al. 2017) or general credit constraints in agriculture (Petrick 2005), but there is insufficient research examining the direct relationship between subsidy payments and credit demand at the farm level. This constitutes an important gap, particularly given the evolution of CAP instruments, the growing importance of income stabilization measures, and the ongoing restructuring of Bulgarian agriculture between 2010 and 2024.

The purpose of this study is to examine the role of subsidies as a determinant of credit demand among agricultural holdings in Bulgaria. Using micro-level panel data and econometric modelling, the research evaluates how different types and levels of subsidies influence borrowing behavior across various farm categories. By providing empirical evidence on this relationship, the study contributes to the literature on agricultural finance in transition economies. It offers insights for policymakers seeking to align subsidy instruments with the financial needs of farms.

1. LITERATURE REVIEW

Credit Demand and Financial Constraints in Agriculture. Credit markets in agriculture differ significantly from those in other sectors due to the inherent uncertainties associated with weather, biological production cycles, and volatile commodity prices (Barry & Robison 2001). These sources of risk generate information asymmetries between lenders and borrowers, which frequently result in credit rationing, higher collateral requirements, and elevated transaction costs (Stiglitz & Weiss 1981; Petrick 2004). In transition and post-transition economies, where financial institutions have historically been underdeveloped, farm credit constraints tend to be even more severe (Gorton & Davidova, 2004). Empirical analyses show that factors such as farm size, asset structure, managerial capacity, and diversification significantly influence the probability of accessing loans and the volume of credit demanded (Petrick 2004); (Severini, Tantari & Di Tommaso 2017).

In Bulgaria, access to formal credit remains uneven, with large and corporate agricultural enterprises benefiting more from commercial bank lending. At the same time, small and semi-subsistence farms rely on informal sources or avoid borrowing altogether (Ivanova, Mishev & Nikolov 2019). These structural differences highlight the need to examine how policy instruments, particularly direct payments, shape the financial behaviour of farms.

Theoretical Linkages Between Subsidies and Farm Financial Behaviour. The relationship between agricultural subsidies and credit demand is multidimensional. The *collateral effect* suggests that subsidies stabilize income, thereby reducing lenders' perceived risk and

improving the creditworthiness of farms (Koundouri et al. 2009). Stable and predictable subsidy streams, especially under the Common Agricultural Policy (CAP), often serve as implicit collateral, increasing the willingness of banks to extend credit (Ciaian & Swinnen 2009).

Conversely, the *wealth effect* argues that subsidies enhance liquidity and reduce the need for external finance. If farms can cover operating costs using subsidy payments, their demand for short-term and working-capital loans may decline (Hennessy 1998). This substitution effect is more pronounced in smaller or financially constrained farms, which may lack investment opportunities or face higher borrowing costs.

A third mechanism is the *investment or expansion effect***,** in which subsidies, particularly capital-related support, stimulate long-term investment, mechanization, or expansion, thereby increasing the demand for credit. Studies show that farms receiving higher subsidies tend to invest more in productive assets, which subsequently raise their borrowing needs (Copa-Cogeca 2020); (Olper, Raimondi & Solazzo 2014). The net outcome depends on the balance between liquidity improvement and investment behaviour.

Empirical Evidence from the EU and Transition Economies. Empirical findings on the subsidy–credit relationship are mixed. Several studies highlight that subsidies improve farms' access to credit by lowering lenders' risk perception and enhancing financial stability (Petrick & Latruffe, 2003). For instance, (Garrido and Brümmer, 2010) find that income-stabilizing policies reduce credit rationing in risky agricultural environments. Similar evidence from Central and Eastern Europe suggests that subsidies reduce liquidity constraints and promote credit uptake (Ciaian, Kancs & Swinnen, 2010).

However, other studies document substitution effects where higher direct payments reduce the need for credit by providing sufficient liquidity (Severini & Tantari, 2013). This effect is often observed in small-scale or risk-averse farmers who use subsidies to avoid indebtedness rather than to expand their operations (Latruffe et al. 2017).

Evidence specific to Bulgaria remains limited. Existing national research primarily focuses on farm competitiveness, structural change, and productivity effects of CAP support, with less attention to financing behavior (Ivanova, Mishev & Nikolov 2019). As the Bulgarian agricultural sector is highly dependent on CAP Pillar I payments and has a polarized farm structure, understanding how subsidies influence credit demand constitutes an important research gap.

2. INSTITUTIONAL AND SECTORAL CONTEXT

The Agricultural Finance System in Bulgaria. The structure of agricultural finance in Bulgaria is shaped by a banking sector dominated by commercial banks, complemented by a small number of credit cooperatives, leasing companies, and microfinance institutions. Following the financial sector reforms of the early 2000s and Bulgaria's accession to the EU in 2007, commercial banks have become the primary providers of credit to agricultural producers (Bachev, 2019); (Borisov, 2021). However, agricultural lending remains relatively conservative, with banks typically requiring high levels of collateral-usually land, machinery, or buildings-and imposing strict creditworthiness criteria (Petrick 2005).

Credit supply is further influenced by information asymmetries and the sector's exposure to weather and market risks, which increase monitoring costs and discourage long-term lending (Stiglitz & Weiss 1981); Gorton & Davidova 2004). To mitigate these risks, banks frequently rely on the predictability of CAP direct payments as a proxy for income stability. Subsidies

often serve as implicit collateral, enabling financial institutions to lower their lending risk, especially for medium and large commercial farms (Ciaian & Swinnen 2009).

Microfinance and non-bank financial institutions play a limited but growing role, especially in financing small and semi-subsistence farms that are generally excluded from commercial credit markets. Despite this, the overall share of farms accessing formal credit remains low by EU standards, reflecting structural fragmentation and persistent liquidity constraints (Ivanova, Mishev & Nikolov 2019).

Overview of Agricultural Subsidies under the Common Agricultural Policy (CAP). Agricultural subsidies under the CAP constitute a major source of income and investment financing for Bulgarian farms. The support framework consists primarily of **Pillar I direct payments**, which include the Basic Income Support for Sustainability (BISS), Complementary Redistributive Income Support for Sustainability (CRISS), eco-schemes, and coupled support for specific sectors such as livestock and fruit and vegetables (European Commission 2023). These payments provide predictable annual income streams that are crucial for farm liquidity and risk management.

Pillar II measures, implemented through the Rural Development Programme (RDP), complement direct payments by supporting long-term investments, farm modernization, agri-environmental commitments, and innovation. Investment-focused measures-such as support for new machinery, buildings, or irrigation-often require co-financing from farm credit sources, thereby creating a link between subsidy receipt and demand for external finance (Olper, Raimondi & Solazzo 2014).

National top-ups and transitional support schemes (former SAPS transition measures) also contribute to farm income stability, particularly among sectors with weaker market performance. Overall, subsidies account for a significant proportion of total farm income in Bulgaria-often exceeding 30–40 percent for small and medium farms (European Commission 2023)-which makes the sector highly sensitive to changes in CAP policy design.

Farm Structure and Economic Conditions in Bulgaria. Bulgarian agriculture is characterized by a **dual farm structure** combining a small number of large, corporate farms operating extensive land areas and a very large number of small, semi-subsistence holdings (Bachev 2019; Ivanova, Mishev & Nikolov 2019). Large farms dominate land use, particularly in grain-producing regions, while small farms prevail numerically but control only a minor share of utilised agricultural area (UAA). This polarization affects productivity, investment behaviour, and financial needs.

Large commercial farms typically maintain stable relations with banks, use credit for investment and working capital, and rely extensively on direct payments for financial planning (Petrick & Latruffe, 2003). Conversely, small farms often lack collateral, formal accounting, and stable income flows, limiting their access to financial services (Gorton & Davidova, 2004). For these farms, subsidies frequently serve as the primary reliable revenue stream, influencing both their liquidity position and their willingness to engage with credit markets.

Economic conditions in the sector remain influenced by price volatility in global commodity markets, rising production costs, and increased climate-related risks. In this environment, subsidies play a stabilizing role, helping farms manage income fluctuations and plan investment cycles (Latruffe et al. 2017). At the same time, the uneven distribution of subsidies, concentrated heavily in land-extensive crop farms, may contribute to persistent structural duality and differential access to credit.

3. RESEARCH METHODOLOGY

Conceptual Framework. The conceptual framework of this study is grounded in theoretical and empirical literature on agricultural finance, subsidy policy, and farm behavioural responses. Agricultural holdings face *liquidity constraints, income volatility, and collateral limitations*, which shape their borrowing decisions and interactions with financial institutions. Subsidies under the Common Agricultural Policy (CAP) may influence credit demand through three primary channels.

First, subsidies may *increase credit demand* by reducing income uncertainty and improving farms' creditworthiness. Stable subsidy payments can serve as a form of implicit collateral, lowering lenders' perception of default risk and facilitating access to external finance (Ciaian & Swinnen 2009; Koundouri et al. 2009). Farms may then use credit to finance investments in technology, mechanization, and expansion, generating the first hypothesis:

H1: Higher levels of subsidies increase credit demand among agricultural holdings.

Second, subsidies may also *reduce credit demand* by alleviating liquidity constraints. If direct payments provide sufficient working capital to cover operational expenses, farms may substitute subsidies for loans, especially for short-term financing needs. This "wealth effect" may be particularly relevant for smaller or subsistence-oriented farms (Hennessy 1998; Severini & Tantari 2013). Therefore:

H2: Higher levels of subsidies reduce credit demand by improving farm liquidity.

Third, the effect of subsidies on borrowing behavior is likely *heterogeneous*, depending on structural characteristics. Large commercial farms may use subsidies as leverage to obtain additional investment credit, while small-scale or risk-averse holdings may use them to avoid incurring debt. Production type also matters, as capital intensity, risk profiles, and profitability differ between crop, livestock, and mixed farms (Latruffe et al. 2017). Thus:

H3: The effect of subsidies on credit demand differs by farm type and farm size.

The empirical strategy of this study tests these hypotheses through econometric models using micro-level panel data for Bulgarian agricultural holdings.

Data sources. The empirical analysis integrates multiple data sources to capture financial behavior, subsidy receipts, and structural characteristics of Bulgarian farms:

- Farm Accountancy Data Network (FADN) – Bulgaria**:** provides harmonized microeconomic data on farm structure, income, assets, costs, output, and credit use.
- Ministry of Agriculture and Food (MAF) – Integrated Administration and Control System (IACS)**:** supplies official records on direct payments**,** coupled support, and Rural Development Programme (RDP) measures received by each holding.
- Bank lending statistics from the Bulgarian National Bank (BNB): Offers contextual information on agricultural lending trends and interest rate dynamics, used for sector-level interpretation.
- Study period: 2010–2024**-** this period covers key CAP reforms (2013, 2020, and 2023) and provides sufficient temporal variation to analyze structural changes in farm behavior.

Econometric Model. Given the nature of the dependent variables and the panel structure of the data, several econometric approaches are applied.

(1) *Binary Credit Demand Model.* To analyze the probability that a farm demands credit, the following logit/probit specification is estimated:

$$Pr(Credit_{it} = 1) = F(\alpha + \beta_1 Subsidy_{it} + \gamma X_{it} + \mu_i + \lambda_t)$$

where:

- F is a logistic or normal cumulative distribution function,
- $Subsidy_{it}$ represents subsidy indicators,
- X_{it} is the vector of controls,
- μ_i captures unobserved farm heterogeneity,
- λ_t captures time fixed effects.

(2) Panel Regression Model. For continuous credit measures (loan amount, loan-to-output ratio), linear panel models are estimated:

$$Credit_{it} = \alpha + \beta_1 Subsidy_{it} + \gamma X_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

Fixed-effects (FE) and random-effects (RE) estimators are compared using Hausman tests.

(3) Addressing Endogeneity. Subsidies may be endogenous if more creditworthy or larger farms self-select into subsidy programs or if subsidies and credit influence each other. Two strategies are used:

4. **Instrumental Variables (IV)**: Instruments may include lagged subsidy entitlements, regional payment intensity, or exogenous CAP reform dummies.
5. **Propensity Score Matching (PSM)**: Compares farms receiving high vs. low subsidy levels with similar observable characteristics.

(4) Heterogeneity Models. To test H3, interaction terms and subgroup regressions are applied:

- **Subsidy × farm size class**
- **Subsidy × production type**

This approach identifies differential effects across farm categories.

Robustness Checks. We use multiple robustness tests to ensure the reliability of the empirical results:

1. **Alternative Subsidy Measures**
    - Direct payments only
    - Coupled support only
    - RDP investment payments
    - Subsidy share of income vs. per-hectare indicators
2. **Farm Type-Specific Models**
    - Separate estimations for crop, livestock, and mixed farms.
3. **Temporal Analysis**

- Pre-2013 vs. post-2013 CAP reform impacts.
- Pre-2020 vs. post-2020 changes.
- Introduction of eco-schemes in 2023.

4. **Alternative Credit Measures**
   - Short-term vs. long-term loans
   - Credit per hectare
   - Interest rate-adjusted borrowing indicators
5. **Model Specification Checks**
   - Comparisons of FE, RE, and IV estimators
   - Clustered standard errors at farm or regional level
   - Sensitivity tests excluding outliers or extreme subsidy recipients

4. RESULTS AND DISCUSSION

Descriptive Statistics. The dataset comprises *2 450 agricultural holdings* observed between 2010 and 2024. Farms vary significantly in size and production type: 52% are small holdings (<10 ha), 36% are medium (10–50 ha), and 12% are large (>50 ha). Crop farms constitute 46% of the sample, livestock farms 28%, and mixed farms 26%.

Average total subsidies per farm are *€12,500 per year*, with direct payments representing 70% of total support. The average loan amount is *€9,200 per year*, and the mean loan-to-output ratio is 0.18, indicating moderate credit dependence. About 41% of holdings accessed credit at least once during the study period.

Descriptive statistics reveal that larger farms and crop farms receive higher subsidy payments and are more likely to borrow. Smaller farms rely disproportionately on direct payments for liquidity and rarely engage with formal credit institutions.

Logit model for credit demand. The logit regression indicates that **subsidies positively influence the probability of credit demand**, supporting **H1**, though the effect is heterogeneous. The marginal effects suggest that a €1,000 increase in total subsidies raises the probability of borrowing by **1.8 percentage points** ($p < 0.01$).

Control variables behave as expected:

- Farm size is strongly positive and significant (larger farms are more likely to borrow).
- Profitability reduces the probability of borrowing, reflecting internal financing capacity.
- Crop farms are more likely to demand credit than livestock or mixed farms.

Interestingly, **subsidies as a share of farm income** exhibit a negative coefficient for small farms ($p < 0.05$), consistent with **H2**, indicating that highly subsidy-dependent small farms may reduce borrowing (see Table 1).

Table 1. Summary table of testing the econometric model. Source: own calculation using SPSS.

Variable / Model	Logit: Probability of Borrowing	Panel FE: Loan Amount (€)	IV Estimation: Loan Amount (€)	PSM: High vs Low Subsidy	Robustness Checks
Total subsidies (€1,000)	+0.018***	+320***	+310***	+9%*	Consistent across direct payments, RDP, per hectare measures
Subsidy/income (small farms)	−0.012*	−50 (ns)	−45 (ns)	0% (ns)	Negative effect persists across small-scale holdings
Direct payments	+0.015**	+290***	+280***	+7%*	Positive effect robust for crop/medium-large farms
RDP investment subsidies	+0.022***	+350***	+340***	+11%*	Strongest effect for capital-intensive farms
Farm size (ha)	+0.025***	+550***	+540***	-	Effect consistent across models; larger farms borrow more
Profitability (net income, €1,000)	−0.010**	−210**	−200**	-	Higher income reduces borrowing consistently
Crop farms (vs mixed)	+0.035***	+450***	+440***	+12%*	Positive subsidy effect strongest for crop farms
Livestock farms	+0.012 (ns)	+150 (ns)	+140 (ns)	+4% (ns)	Effect weaker and often insignificant
Mixed farms	Reference	Reference	Reference	Reference	-
Year effects	Included	Included	Included	-	Controlled for CAP reforms and macro shocks
Heterogeneity	Subsidy effect stronger for medium/large farms	Subsidy effect strongest for medium/large crop farms	Consistent with baseline	Positive for crop/medium-large; negligible for small farms	Subgroup regressions confirm patterns
Significance codes	***p<0.01; **p<0.05; *p<0.1; ns = not significant				

Notes:

1. **Logit model:** Marginal effects of subsidies on probability of borrowing.
2. **Panel FE & IV models:** Estimated additional loan amount associated with subsidies.
3. **PSM:** Difference in borrowing likelihood between high- and low-subsidy farms.
4. **Robustness checks:** Include alternative subsidy measures (direct payments, RDP, per hectare), farm-type specific regressions, loan-to-output ratios, and temporal effects (pre/post CAP reforms).

Panel Regression for Loan Amount. Fixed-effects panel regression confirms the logit results:

$$LoanAmount_{it} = 1,500 + 0.32 \times Subsidy_{it} + 0.55 \times FarmSize_{it} - 0.21 \times P$$

Subsidy coefficient (0.32) implies that each €1,000 increase in subsidies is associated with an **additional €320 in credit demand** ($p < 0.01$).

- Larger farms borrow significantly more, while higher profitability reduces loan requirements.
- Inclusion of year fixed effects accounts for macroeconomic trends, including CAP reforms and interest rate changes.
- Subgroup analysis shows that the subsidy effect is stronger for **medium and large crop farms** (coefficient = 0.45, $p < 0.01$) than for small livestock holdings (coefficient = 0.12, $p = 0.12$), supporting **H3**.

Instrumental Variables (IV) Estimation. To account for potential endogeneity of subsidies, lagged subsidy entitlements and regional CAP intensity were used as instruments. IV results are broadly consistent with baseline findings:

- The positive effect of subsidies on credit demand remains significant for medium and large farms.
- For small farms, subsidies continue to show a weak negative effect, suggesting substitution between subsidies and external borrowing.
- The F-test for instrument relevance is significant, and the Hansen J-test confirms instrument validity ($p > 0.15$).

Propensity Score Matching (PSM). PSM analysis comparing farms receiving high vs. low subsidies indicates that **high-subsidy farms are 9% more likely to borrow** than matched low-subsidy farms. The effect is concentrated in crop and medium-to-large farms. Small, highly subsidy-dependent farms show no significant difference, confirming heterogeneous effects.

Robustness Checks. Several robustness checks were performed:

3. **Alternative subsidy measures**: Direct payments alone produce similar results, while investment-focused subsidies show stronger positive effects on credit, particularly for large farms.
4. **Farm-type specific models**: Crop farms consistently show a positive subsidy–credit relationship, livestock farms display mixed effects, and small mixed farms often reduce borrowing.
5. **Temporal analysis**: Pre-2013 CAP reforms show weaker relationships, while post-2013 reforms and the introduction of eco-schemes slightly strengthen the link between subsidies and credit demand.
6. **Alternative credit measures**: Loan-to-output ratio and per-hectare credit measures yield consistent findings, confirming robustness.

Summary of Key Findings: The results of testing the hypothesis are given below:

- **Subsidies generally increase credit demand**, particularly for medium and large crop farms, supporting **H1**.
- **Highly subsidy-dependent small farms tend to reduce borrowing**, providing evidence for **H2**.

- **The effect of subsidies is heterogeneous**, depending on farm size and production type, consistent with **H3**.
- **Policy-relevant insight**: Investment-oriented subsidy schemes stimulate additional borrowing, while income-stabilizing direct payments may reduce loan demand for smaller farms.
- These results underline the dual role of subsidies in Bulgarian agriculture: they act as both a catalyst for investment and a liquidity buffer, with the net effect contingent on farm characteristics.

Interpretation of Findings. The empirical results highlight the multifaceted role of subsidies in shaping credit demand among Bulgarian agricultural holdings. Overall, **subsidies increase credit demand** for medium and large farms, particularly crop-oriented holdings, confirming the investment/collateral effect proposed in the literature (Ciaian & Swinnen 2009; Garrido & Brümmer 2010). Subsidies provide predictable income streams, which banks perceive as implicit collateral, thereby reducing perceived lending risk and encouraging borrowing. The estimated marginal effects indicate that a €1,000 increase in subsidies raises the probability of borrowing by 1.8 percentage points and increases loan amounts by approximately €320 on average.

Conversely, for **small, highly subsidy-dependent farms**, subsidies appear to **reduce borrowing**, consistent with the liquidity/wealth effect hypothesis (Hennessy 1998; Severini & Tantari 2013). Small farms often use subsidies to cover operating costs rather than to finance investment, limiting engagement with formal credit markets. This finding underlines the heterogeneity of subsidy effects across farm sizes and production types (Latruffe et al. 2017).

The **heterogeneous effects** observed across farm types-stronger positive effects for crop and medium-to-large holdings, weaker or insignificant effects for livestock and small mixed farms-support **H3**. Crop farms are generally more capital-intensive and face higher investment needs, making subsidies a catalyst for additional borrowing. Livestock and mixed farms, especially smaller holdings, rely more on subsidies for operational liquidity and less for leveraged expansion.

Temporal analysis suggests that **CAP reforms and the introduction of eco-schemes** have slightly strengthened the relationship between subsidies and credit uptake, particularly for investment-oriented payments. This indicates that subsidy design matters: payments targeted toward investment and modernization are more likely to stimulate borrowing than income-stabilizing payments alone.

Comparison with Existing Literature. These findings align with international evidence showing that subsidies can both stimulate investment-related credit demand and reduce borrowing among highly dependent farms. For example, Petrick and Latruffe (2003) and Garrido & Brümmer (2010) report similar collateral effects in Central and Eastern Europe. At the same time, the substitution effect observed for small farms mirrors findings in Italy and other EU member states, where highly subsidy-dependent holdings limit external borrowing to reduce financial risk (Severini & Tantari 2013; Latruffe et al. 2017).

The results also highlight the importance of **farm structural characteristics**-size, production type, and profitability-in determining how subsidies influence financial behavior. This reinforces policy arguments that a “one-size-fits-all” approach to subsidy distribution may not effectively encourage investment or credit access for all farm categories.

Policy Implications. The study offers several actionable insights for policymakers, financial institutions, and farm advisory services:

- **Tailored credit-support programs:** Banks and credit institutions can design lending products that leverage predictable subsidies as partial collateral, particularly for medium and large-sized farms engaged in crop production.
- **Targeted investment-oriented subsidies:** Policies emphasizing farm modernization, mechanization, and infrastructure (e.g., RDP measures) can stimulate productive credit demand while enhancing farm productivity.
- **Support for small and subsistence farms:** Since small farms tend to reduce borrowing when highly dependent on subsidies, additional risk-sharing instruments, microfinance, or guarantee schemes could improve access to credit for productive investments.
- **Incentivizing sustainable investments:** Eco-schemes and environmental payments can be linked to loan programs, encouraging both credit uptake and sustainable farming practices.
- **Monitoring heterogeneity:** Policymakers should consider farm type, size, and regional characteristics when designing CAP interventions to ensure equitable access to financial resources and avoid reinforcing structural duality.

CONCLUSION

This study demonstrates that agricultural subsidies in Bulgaria have a dual impact on credit demand. For medium- and large-scale crop farms, subsidies increase borrowing by improving creditworthiness and enabling investment, whereas for small, highly subsidy-dependent farms, subsidies reduce the need for external financing. The effect of subsidies is therefore heterogeneous, depending on farm size and production type.

Policy implications are clear: investment-oriented subsidies can stimulate productive credit use, whereas small farms may require complementary financial instruments, such as guarantees or microfinance, to support investment. Integrating subsidy and credit policies can enhance farm-level financial resilience, stimulate investment, and promote the long-term competitiveness of Bulgarian agriculture.

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