# Credit Constrained Firms and Government Subsidies: Evidence from a European Union Program

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*We assess the effects of non-repayable subsidies on financially constrained and unconstrained Hungarian SMEs. Using bank queries to the credit registry to identify firms that applied for but did not receive a loan, we show that subsidies generate a sizeable incremental impact on asset growth of constrained firms relative to unconstrained businesses. This effect, however, is transitory and does not translate into higher sales, profitability, or productivity. Financing, therefore, may not be the primary hurdle for these SMEs, and credit constraints may reflect other shortcomings, such as lack of good management or viable projects.*

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Small and medium-sized enterprises (SMEs) play an important economic role – generating between half and two-thirds of employment and value added in major advanced as well as emerging market economies (Stein et al [2013]). Yet globally they tend to have patchy access to finance (e.g. Beck et al. [2008], Rajan and Zingales [1996], Demirguc-Kunt and Maksimovic [1999]). Governments, multilateral organisations and even the European Commission, spend substantial resources to provide funding subsidies to SMEs with the goal to improve both firm-specific and aggregate outcomes. Our current understanding is that on average subsidies do accelerate SME growth (e.g. Kersten et al. [2017] and Banerjee and Duflo [2014]). However, there are two questions that are less well understood in the literature.

First, it is unclear which channel works when an SME receives a subsidy. On the one hand, a subsidy could improve the availability of funds for firms that are unable to get a bank loan (say due to lack of collateral), i.e. it could ease a credit constraint. On the other hand, a subsidy could simply reduce the cost of borrowing, i.e. when the subsidy is non-repayable or when the interest rate charged is lower than the bank loan rate, thus it could render a project profitable (or greatly improve the project's profitability).

A second less well understood issue is whether subsidies improve credit constrained (CC) firms' outcomes more broadly. If a firm has good investment ideas but cannot obtain financing due to a short credit history (e.g., young firms) or the lack of collateral (e.g. small firms), then a subsidy is more likely to accelerate growth by alleviating a relevant constraint. By contrast, if the firm does not have good projects or is poorly managed, the credit constraint may simply reflect these other shortcomings and financing per se is not the main hurdle. Providing a subsidy may thus only lead to a transitory impact on a CC firm's outcomes since it does not address the root cause of its growth performance.

To shed light on these questions, we use a unique combination of detailed micro-data from Hungary. This consists of three datasets relevant for assessing the EU subsidy program: (1) Hungarian Credit Registry with information on the credit history of corporations (even with information on their loan queries); (2) the European Union's Structural and Cohesion Fund's data which contains information on all subsidy applications, both successful and rejected; and (3) the Tax Return Dataset from the National Tax and Customs Administration that includes firm balance sheet and income statements. In contrast to previous studies that have utilized one or more of these datasets (or comparable data in other jurisdictions), to the best of our knowledge, ours is the first study to unify them all.

The compiled data enable us to identify credit constrained firms more directly. In the existing literature, studies typically rely on indirect measurement, such as using a firm's balance sheet and profitability measures (e.g. Mulier et al. [2016]), investment to cash-flow sensitivity, and rate of innovation to suggest whether a firm is likely constrained or not. We consider a firm to be credit constrained if prior to applying for a subsidy it was credit checked by a bank with which it did not have any business relationship – something akin to a loan application – but did not receive a loan. The idea underlying this definition is that banks typically check the credit worthiness of new, unrelated clients prior to making a decision on a loan application – therefore, firms that we consider credit constrained have applied for bank credit but failed to get one. Our approach is related to Jimenez et al. (2012) who also use credit checks by unrelated banks to identify loan applications (although the goal of their research is to study the bank-lending channel of monetary policy transmission). We classify firms that received bank credit in the year prior to applying for a subsidy as not constrained (NC), and we categorize the remaining firms as uncertain in this respect and drop them from the analysis.

Our data also provides information on both successful as well as unsuccessful subsidy applicants. The latter set of firms constitute a better control group for successful applicants as compared to a control group that consists of

Hungarian firms in general. Indeed, firms that apply for a loan constitute a more homogeneous group as they reveal their genuine need for financing by paying the fixed cost of a subsidy application. Accordingly, we use a triple difference-in-difference panel regression framework, where we compare firm outcomes (1) before and after the subsidy (2) across firms that received a subsidy with those which had applied but were rejected and (3) across CC and NC firms. Our estimation controls for time trends, firm, and sector-year fixed effects.

We show that subsidies lead to a significant incremental impact on tangible asset growth of CC firms relative to NC firms. Since subsidies constitute a source of cheap capital for both groups, the incremental impact points to an easing of credit access for CC firms. This impact, however, fades over time. Relatedly, subsidised CC firms are able to obtain more loans compared to the control group only temporarily. Our findings are robust to alternative estimations such as matching control and treated firms, using alternative definitions of the credit constraint indicator (i.e. using a different time horizon over which we define the CC indicator).

**Figure 1:** *Evolution of the impact of subsidy on log assets of credit constrained (CC) and not constrained (NC) firms over time. The markers (vertical bars) show the mean (confidence band) of the impact of subsidies on log assets of treated firms relative to the control group. Left and centre panels plot the coefficients on the main interaction term in the difference-in-difference analysis on CC and NC firms respectively. Right panel plots the triple interaction coefficients, and thus show the incremental impact of a subsidy on CC firms relative to NC firms. On the x-axis, 0 denotes the treatment year. In all the regressions, firm, sector × calendar-year, and relative-year fixed effects are included. Standard errors are always clustered at the firm level.*
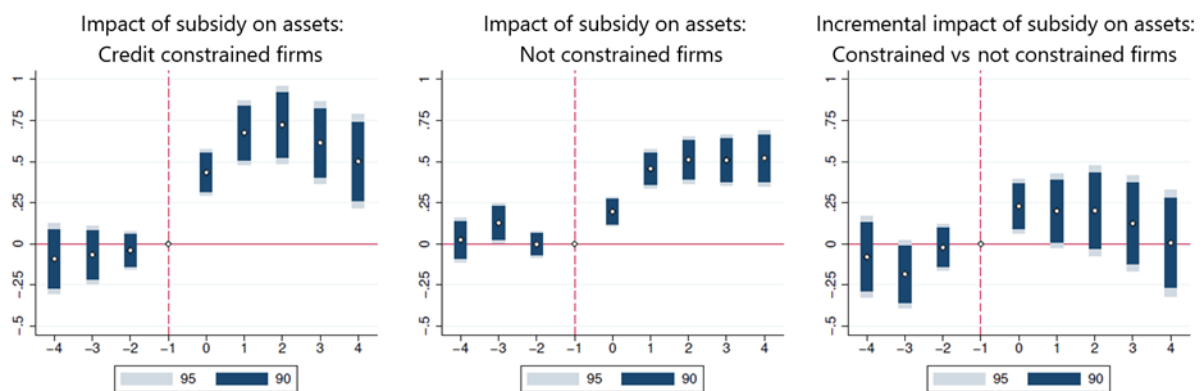


This finding suggests that while subsidies do provide a boost to the assets of CC firms, second order effects, such as more assets promoting sales and profit growth, which in turn lead to asset growth, may be absent. We test this hypothesis using our workhorse difference-in-difference framework and find that the higher asset growth of CC firms on the back of subsidies does not translate into improved outcomes in terms of sales, profitability or productivity. This finding suggests that banks may be less willing to lend to these firms for valid concerns around their prospects and credit risks. In other words, a lack of funding does not seem to be keeping these SMEs behind, at least in the case of Hungary.

That said, our findings do not imply that subsidies have no effect on firm outcomes. On the contrary, we show that subsidies improve growth outcomes for both CC and NC firms that receive a subsidy, a result that resonates with the existing literature that assesses the impact of EU subsidies on firms in general (e.g. Dvoulety et al. [2021]). This is an important finding in its own right, as it underscores that CC firms did not do worse in comparison to NC firms in terms of making use of the subsidies.

The findings place fresh spotlight on the question whether financial assistance policies should target CC firms. It suggests caution about excessive optimism on the potential impact of subsidies on easing credit constraints. Funding CC firms may not have a large multiplier effect in the economy, if lack of managerial skill or business

opportunities rather than lack of financing are more relevant hurdles for these firms. Further research on why some SMEs are unable to get the desired level of funding is thus warranted. This can help policymakers design programs that are focused on solving the issues that underpin financing constraints. This is even more important now given that the Covid-19 pandemic led several economies globally to extend or adopt subsidy programs. ◼

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