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IMPACT OF FINANCIAL CONSTRAINTS ON INNOVATION: WHAT CAN BE LEARNED FROM A DIRECT MEASURE?

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Abstract

This paper examines the impact of financial constraints on innovation in firms. We obtained a distinctive measure of the cash flow problem faced by firms. We are studying the endogenous and significant factors that encourage economic

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Notes

¹The Community Innovation Surveys (CIS) are conducted in each country by the national statistical entities in order to collect information about the innovative activities of firms. In each country, they are based on the same questionnaire that may be completed by additional questions. The survey used here (Financement de l'Innovation Technologique - FIT) is different because it is fully focused on the financing of

innovative activities. It is a well-known CIS' one, in particular, because it is the same questionnaire used in the

²This question is similar to the one used in the CIS (see the CIS' Generale (2005) and Piga (2008), and Piga

and Piga (2008) also adopt a similar questionnaire that firms are financed by the bank to obtain it.

³Our data



⁴See the details of the identification of innovative, non-innovative firms in the appendix.

⁵Firms were allowed to provide multiple answers.

⁶More recently, Aghion et al. ([2005](#)) proposed a model with an inverted U-shape relationship between innovation and competition. In this model, competition may increase innovation profit margin but strong competition may also reduce incentives to innovate for laggards.

⁷The importance of technological opportunities is given by a qualitative measure issued from the FIT survey. The same indicator was used in previous works such as Crépon et al. ([1998](#)) or Barlet et al. ([1998](#)). In the survey, the firms are asked: "Do You consider that Your market is technologically: not innovative? weakly innovative? moderately innovative? or strongly innovative?". We take the first level "not innovative" as reference and include in the regression three dummies TP2, TP3, and TP4 for the other levels.

⁸See the definitions of the variables in the Appendix ([Table II](#)). Moreover, let us remind that in the FIT survey, firms were asked about their innovative behavior and possible constraints over the years 1997-1999. To ensure that there is no time inconsistency in the definition of the dependent variable and the regressors, the latter are taken at their value measured ex ante, in 1996.

⁹In the FIT survey, there is no information to construct a demand pull indicator as it was done by Crépon et al. ([1998](#)). In order to try to account for demand effect, we have

introduced a dummy variable that we did not obtain a specific demand

¹⁰There is a literature on (1983, p.

222). If there is no excludable Wilde

([2000](#)). s, where x_{2i}

and x_{1i} is a simultaneous probit case is a exogenous

regressor. The model strongly relies on



the functional form of the distribution of errors and in practice, availability of instruments help to obtain results which are more robust to distributional misspecification.

¹¹See the details of these definitions in the Appendix.

¹²The univariate probit regression on the subsample of 'potentially innovative' firms is given in the Appendix ([Table I](#)).

¹³Such a test have been made with cash flow or profit margins and the results can be obtained from the author.

¹⁴We have also checked for nonlinear effects by introducing the square of firm size but it does not change the results.

¹⁵The 'Centrale de bilans' dataset.

¹⁶The manufacture of coke, refined petroleum products and nuclear fuel has been deleted because only two firms were present in the merged dataset. In addition, the firms with negative value added or with abnormally high investment rates have been excluded. This concerns only two firms.

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