

# The effects of grant policy on technology investment in Italy

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## Abstract

This paper investigates the effect of subsidies on the adoption of information and communication technology in Italy. We argue that the important geographical differences between North and South Italy are something that public policy should be concerned of. A matching estimator is used to explore the effects of financial assistance, by comparing the granted with non-granted firms. Our results suggest that public assistance has positive effects on ICT adoption. We also find that firms in the South are more dependent on public grants, and that duality would be more pronounced if subsidies were not given. Furthermore, because firms prefer traditional rather than ICT investment, subsidies should be specifically ICT oriented.

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## 1. Introduction

The adoption and diffusion of ICT capital goods throughout the productive system has assumed a core position in the new economy. New technology and internet can have effects which can be compared to reductions in transport costs, as well as facilitating access to more developed markets for marginal regions. This might favour the reduction of disparities between different

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areas. From this perspective, it is of foremost importance to pinpoint any constraints that might discourage or reduce the rate of ICT adoption (Salvatore, 2003). Incentives represent critical factors in the development of information technology and its effects on a faster productivity growth (Feldstein, 2003). Moreover, although ICT is global, public policy may play an important role locally (Iammarino, Jona-Lasinio, & Mategazza, 2004).

In Italy several studies have been carried out as the new national data have become available. Becchetti, Londono Bedoya, and Paganetto (2003) investigated what determines the decision to invest in ICT and the impact of the ICT component on labour productivity and efficiency. They found that ICT investment is affected by the industry, the geographical location and the characteristics of the firm. Bugamelli and Pagano (2004) found that the relatively low value of ICT capital in Italian firms is due to certain barriers to investment, such as the low level of human capital and the organization of the firms. Fabiani, Schivardi, and Trento (2005) investigated the role of firms' specific variables in determining the optimal rate of ICT investment. They concluded that the size of the firm, the level of human capital and the presence of large firms in the local environment played the most important role. Atzeni and Carboni (2006) analysed the link between ICT productivity and the innovative level of investment and found that computers have more effect on output growth than conventional capital.

In this work we test the effectiveness of investment subsidy policies on ICT adoption in Italy, one of the advanced countries lagging behind in the adoption of new technologies. Given its economic and financial duality, Italy is a litmus paper for testing the effectiveness of investment subsidy policies on ICT adoption across regions. In this context, the Southern regions are more backwards in almost all technology indicators than the Northern ones. The fact that Southern firms are lagging behind in adopting ICT contributes to the increase of the disparity, which is something that should influence public policy.

Although there is voluminous literature on the role of public support in reducing territorial disparities (Faini & Schiantarelli, 1987; Gabe & Kraybill, 2002; Harris & Trainor, 2005) there is no agreement on the effectiveness of investment incentives. The extent to which investment incentives affect economic performance has been investigated for decades, and it still is an open question, since several support plans are now being implemented in many EU countries (Braunerhjelm, Faini, Norman, Ruane, & Seabright, 2000; Yuill, Bachtler, & Wishlade, 1999). Although many empirical investigations have been carried out on the impact of subsidies on R&D investment at firm level, no specific research has been conducted on the effect of public aid on ICT. This study attempts to advance our knowledge in this area.

Forms of market failures in real and financial markets provide, in principle, scope and justification for public intervention: (i) insufficient private investment in public or semi-public goods, such as monitoring (Stiglitz, 1993) and technological knowledge (Grossman & Helpman, 1991); (ii) information asymmetries leading to financial constraints and credit rationing (Bond & Meghir, 1994; Devereux & Schiantarelli, 1989; Fazzari, Hubbard, & Petersen, 1988; Hoshi, Kashyap, & Scharfstein, 1991); (iii) learning-by-doing externalities in equipment investment (De Long & Summers, 1991). For all these reasons the private return may be too low (the costs too high) to justify private investment. In these cases giving a subsidy would partly compensate for the investment disincentives. Grants might affect the financial sources that firms have access to. If these increase, the incentive has a positive effect on investment, but if they decrease, subsidies turn into simple substitution of financing, with little effect on overall investment.

In this paper a matching estimation method for the average treatment effect is employed to measure the impact of subsidies on ICT adoption. This allows us to determine whether the supported firms would have invested the same amount of ICT if they had not received assistance.

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