

Our primary concern, in this work, is with the differential impact of regulatory schemes on cost efficiency. From Table 1b, the negative sign of  $\delta_R$  (-0.6145), the parameter related to the subsidization mechanisms as such, without their interaction with network characteristics, seems to back our opening conjecture of lower x-inefficiency levels for the units run under fixed-price schemes. Indeed, when compared over time, the results of Table 4 indicate a tendency of predicted cost inefficiency to diminish for most of companies facing a transition from cost-plus to fixed-price reimbursement mechanisms. The differential impact of regulation is clearly observable in many cases where the subsidization practice changed from 1996 onwards, such as, for instance, Firm 5 (9.7 percent in 1995, 3.6 in 1996 and 3.4 percent in 1997) or Firm 43 (4.3 percent in 1995, 2.5 in 1996 and 2.3 percent in 1997). A similar evidence is found for the transit systems which shifted from a cost-plus to a fixed-price scheme the following year or three years later, as it occurred for Firm 41 (6.4 percent in 1996, 4.7 in 1997 and 4.5 percent in 1998), Firm 4 (6.5 percent in 1998, 3.9 percent in 1999), or Firm 30 (14.0 percent in 1998, 11.6 percent in 1999)<sup>74</sup>.

It is worthwhile to highlight that the magnitude of the efficiency recovery differs from case to case, and not all the firms which faced a regulatory change exhibit better performances after the transition. This is due to the fact that the inefficiency estimates reported in Table 4 represent the combined effect of the regulation dummy and two other explanatory variables (besides time), viz., the average commercial speed of vehicles, that is a proxy for network characteristics, and its interaction with the subsidization mechanisms. Table 1b shows that an increase in the network speed tends to lower x-inefficiency ( $\delta_{SP} = -0.6567$ ), as the transit company faces more favourable exogenous operating conditions, and this effect is strongest for the units subjected to fixed-price schemes ( $\delta_{RSP} = -0.8592$ ), presumably because of the higher cost reducing effort exerted by managers under this type of regulation. As explained in Section 3.2, from the latter result it is also proper to infer that when the intrinsic inefficiency of a network is too high (here due to a very low commercial speed), the impact of regulatory constraints on the overall cost efficiency becomes modest and in the extreme circumstances is no longer perceptible (Gagnepain and Ivaldi, 1998). Thus the greater efficiency recovery for some of the companies moved towards fixed-priced mechanisms can be partially attributed to better network characteristics as reflected in the higher

<sup>74</sup> Other situations of companies in which the introduction of fixed-price schemes generated a significant fall in the level of x-inefficiency are represented by Firm 27 (8.5 percent in 1995, 4.2 in 1996 and 5.0 percent in 1997), Firm 33 (6.3 percent in 1995, 2.6 in 1996 and 2.7 percent in 1997) and Firm 44 (3.1 percent in 1995, 2.0 in 1996 and 2.1 percent in 1997), so far as the transition in 1996 is concerned, and Firm 36 (6.2 percent in 1998, 5.4 percent in 1999) and Firm 20 (4.4 percent in 1998, 3.6 percent in 1999), as regards the transition in 1999.