inefficiency effects, u_{ft} , we also see that the γ estimate is significantly less than one⁷¹, to indicate that our stochastic frontier model [3]-[5] may be significantly different from a deterministic frontier specification, in which there are no random errors, v_{ft} , in the cost function.

The predicted x-inefficiencies for each one of the 45 transit companies over the different years involved are presented in Table 4. These estimates refer to the expression defined by equation [7] and have been obtained using the predictor presented in equation [A.20] of the Appendix. The mean overall cost inefficiency, corresponding to square "all firms-all years", is found to be 1.137^{72} . This means that, on average, the cost of production exceeds the minimum level frontier by 13.7 percent because of xinefficiency. The positive coefficient for τ_{t} in Table 1b ($\delta_{\tau} = 0.0303$) suggests that the inefficiencies of the Italian LPT firms tended to increase throughout the seven-year period. First row of Table 4, which reports the estimates for mean cost inefficiency over time, confirms this tendency to worsen the performance: on average, the level of xinefficiency has increased slightly, from 12.2 percent in 1993 to 14.2 in 1999, with an upward swing during 1993-1995 and 1998-1999 and a brief downward swing over the period 1996 to 1997⁷³. As mentioned in Section 3.2, one can possibly trace the deterioration of cost efficiency during the first half of the nineties in the laxity induced by the several actions taken by the Government with the purpose of covering the old deficits of LPT companies through extraordinary funds. On the contrary, the temporary efficiency recovery during 1996-1997 could be linked to expectations of more tight financial constraints triggered by the promulgation of the reform Law n. 549 in 1995, whereas the new rise in x-inefficiency observed in the years 1998 and 1999 probably reflects a let-up in the managerial effort induced by the delay in implementing the reform.

Although there is a general increase in the x-inefficiency of the transit companies over time, Table 4 shows that the individual predicted values vary considerably among firms in each year and they also change up and down over time for a given company. This leads to investigate the role played by the other *z*-factors included in model [5] that, jointly with time, determine such a variability in the inefficiency levels.

⁷¹ The test statistic is -2.532, that is larger (in absolute value) than the one-sided critical value of -2.326 for the standard normal distribution at the 1 percent level of significance.

⁷² This value is calculated as the arithmetic average of the predictors for the individual cost inefficiency of the sample firms over all the observations involved.

⁷³ We also computed the average annual rate of variation in the level of cost inefficiency. This is equal to about +3%, which is consistent with the estimate for the parameter associated to the year of observation in the inefficiency model [5], δ_{τ} .