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Point process bridges and weak convergence of insider trading models

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We construct explicitly a bridge process whose distribution, in its own filtration, is the same as the difference of two independent Poisson processes with the same intensity and its time 1 value satisfies a specific constraint. This construction allows us to show the existence of Glosten-Milgrom equilibrium and its associated optimal trading strategy for the insider. In the equilibrium the insider employs a mixed strategy to randomly submit two types of orders: one type trades in the same direction as noise trades while the other cancels some of the noise trades by submitting opposite orders when noise trades arrive. The construction also allows us to prove that Glosten-Milgrom equilibria converge weakly to Kyle-Back equilibrium, without the additional assumptions imposed in \textit{K. Back and S. Baruch, Econometrica, 72 (2004), pp. 433-465}, when the common intensity of the Poisson processes tends to infinity.

Subjects: **Probability (math.PR)**; Trading and Market Microstructure (q-fin.TR)

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