

ENGEN'S EXTENDED NEGATIVE BINOMIAL MODEL REVISITED

NOBUAKI HOSHINO

*Faculty of Economics, Kanazawa University, Kakuma-machi, Kanazawa-shi, Ishikawa 920-1192,
Japan*

(Received September 19, 2003; revised June 23, 2004)

Abstract. The present article shows that a limiting argument that is essentially the law of small numbers produces a proper discrete multivariate distribution from any generalized Poisson distribution. Based on this result, Engen's Extended Negative Binomial (ENB) model is derived from the Poisson-Pascal distribution, which is a generalization of the inverse Gaussian-Poisson distribution. The ENB model is also derived from Sichel's generalized inverse Gaussian-Poisson distribution. The application of the ENB model is discussed thereto.

Key words and phrases: Compound Poisson, conditional inverse Gaussian Poisson, infinitely divisible, random clustering, species abundance.