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A multiplicative Zak transform was constructed by Auslander, Eichman, Gertner, and Tolimieri and developed by Segman and Schempp. We show how the multiplicative Zak transform on the half line can be used to characterize wavelet frames on the real line in a similar manner as the original Zak transform was used to analyze Gabor systems. This characterization requires two applications of the multiplicative Zak transform and the concept of a superframe for its proof. (Received September 13, 2007)