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**Liudas Giraitis\*** (l.giraitis@qmul.ac.uk), School of Economics and Finance, Mile End Road, London, E1 4NS, United Kingdom, and **Donatas Surgailis** and **Andrius Skarnulis**. *Integrated AR and ARCH processes and the FIGARCH model: origins of long memory.*

Although properties of ARCH( $\infty$ ) model are well investigated, existence of long memory FIGARCH and IARCH solution was not established in the literature. These two popular ARCH type models which are widely used in applied literature, were causing theoretical controversy because of suspicion that other solutions besides the trivial zero one, do not exist. Since ARCH models with non-zero intercept have a unique stationary solution and exclude long memory, existence of finite variance FIGARCH and IARCH models and, thus, possibility of long memory in ARCH setting was doubtful. The present paper solves this controversy by showing that FIGARCH and IARCH equations have a non-trivial covariance stationary solution, and that such solution exhibits long memory. Existence and uniqueness of stationary Integrated AR( $\infty$ ) processes is also discussed, and long memory as inherited their feature is established. Summarizing, we show that covariance stationary IARCH, FIGARCH and IAR( $\infty$ ) processes exist, their class is wide, and they always have long memory. (Received January 14, 2015)