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Joint temporal and contemporaneous aggregation of random-coefficient AR(1) processes.

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Summary: We discuss joint temporal and contemporaneous aggregation of N independent copies of AR(1) process with random-coefficient $a \in [0, 1)$ when N and time scale n increase at different rate. Assuming that a has a density, regularly varying at $a = 1$ with exponent $-1 < \beta < 1$, different joint limits of normalized aggregated partial sums are shown to exist when $N^{1/(1+\beta)}/n$ tends to (i) ∞ , (ii) 0, (iii) $0 < \mu < \infty$. The limit process arising under (iii) admits a Poisson integral representation on $(0, \infty) \times C(\mathbb{R})$ and enjoys ‘intermediate’ properties between fractional Brownian motion limit in (i) and sub-Gaussian limit in (ii).

MSC:

62M10 Time series, auto-correlation, regression, etc. in statistics (GARCH)
60F05 Central limit and other weak theorems

Cited in **3** Reviews
Cited in **16** Documents

Keywords:

aggregation; random-coefficient AR(1) process; long memory; intermediate scaling; asymptotic self-similarity; Poisson stochastic integral

Software:

longmemo

Full Text: [DOI](#)

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