

Ahn, Soohan; Badescu, Andrei L.; Ramaswami, V.

Time dependent analysis of finite buffer fluid flows and risk models with a dividend barrier.
(English) [Zbl 1124.60067](#)
Queueing Syst. 55, No. 4, 207-222 (2007).

The main contributions of the paper are the following. First, the authors bring together the formulae for the needed kernels and first passage time distributions for fluid models from several of their earlier papers in one place. A particular feature of their approach is the clear demonstration and organization of computations in a way that once the Laplace transform matrix characterizing the busy period is determined, all the other formulae they need flow from it through solutions only of certain linear systems of equations. Then they give a complete set of transform formulae for the time dependent analysis of fluid models with a boundary at a positive level in addition to the one at zero. The authors demonstrate that their transforms can be inverted accurately. The paper contains a set of numerical examples.

Reviewer: [Oleg K. Zakusilo \(Kyiv\)](#)

MSC:

[60K25](#) Queueing theory (aspects of probability theory)
[60J25](#) Continuous-time Markov processes on general state spaces
[60K15](#) Markov renewal processes, semi-Markov processes
[60K37](#) Processes in random environments

Cited in **32** Documents

Keywords:

[fluid flow](#); [finite buffer](#); [transient analysis](#); [insurance risk](#); [dividend barrier](#)

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