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Svetlana Boyarchenko and **Sergei Levendorskii*** (leven@eco.utexas.edu), 1 University Station C3100, Austin, TX 78712. *The Wiener-Hopf method in applications to optimal stopping problems in Finance and Economics.*

A new approach to optimal stopping problems based on systematic use of expected present value operators (resolvents) under supremum and infimum processes is presented. General theorems for several types of perpetual American options and real options in continuous time for wide classes of payoff streams that are functions of Levy processes are proved. In the framework of Carr's randomization, the explicit solution of the time-discretized problems with finite time horizon is also given. Among other applications, the option values of multi-stage investment/disinvestment problems (sequences of embedded options, which we call Russian dolls), are calculated, and two models of expansion of a monopoly are studied. In the first model, each time when the stochastic demand reaches the boundary of the inaction region or crosses it, the monopoly increases capital stock but uses the same production technology. We assume that above a certain level, the stochastic demand factor increases slower than in the standard geometric Levy models, and demonstrate that then the investment threshold is lower than in the standard models. (Received January 17, 2006)