

Abstract Submitted  
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**Is there a “theory” for nuclear proliferation?** R.J. PETERSON,  
University of Colorado — If we take the dates of first demonstration of nuclear weapons by nations, by testing in all but the case of Israel, a smooth trend with time is noted. An assumption that the rate of growth of nuclear nations  $dn(t)/dt$  is determined by pressures, embargoes, and other nonproliferation efforts could result in a dependence on  $1/n(t)$ , where  $n(t)$  is the number of nuclear weapons states at any time. This equation gives  $n(t)$  dependent on the square root of time since 1945, and a one-parameter fit finds excellent agreement for the nine nuclear nations to date. Although the drivers of nuclear proliferation are surely much more complex than in this simple model, its success can be taken to indicate that nonproliferation efforts have indeed been successful in limiting the growth of nuclear-armed states. The simple model even yields a date when nation number ten might be expected to demonstrate a nuclear device.

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