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Delay can stabilise: population and love affairs dynamics.

It is well known that time delay may lead to destabilisation of a steady state and oscillations may arise due to the Hopf bifurcation. We show that for the system of two equations with one delay the unstable steady state can be stabilised by time delay. Namely, if for delay equal to 0 the steady state is an unstable node or unstable spring, then the steady state may gain stability for larger time delays. We give a condition which guarantees this kind of behaviour and we illustrate it with some linear and non-linear sociological models of romantic relationship.