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# Global stability for price models with delay

ISTVÁN BALÁZS

Bolyai Institute, University of Szeged, Hungary  
balazsi@math.u-szeged.hu

This is a joint work with Tibor Krisztin. We consider the delay differential equation

$$\dot{x}(t) = a \int_0^r x(t-s) d\eta(s) - g(x(t)) \quad (1)$$

and the neutral differential equation

$$\dot{y}(t) = a \int_0^r \dot{y}(t-s) d\mu(s) - g(y(t)), \quad (2)$$

where  $a > 0$ ,  $ug(u) > 0$  for all  $u \in \mathbb{R} \setminus \{0\}$ , and some further conditions hold. Both equations can be interpreted as price models. Global asymptotic stability of  $y = 0$  is obtained, in case  $a \in (0, 1)$ , for (2) by using a Lyapunov functional. Then this result is applied to get global asymptotic stability of  $x = 0$  for (1) provided  $a \in (0, 1)$ . As particular cases, two related global stability conjectures are solved, with an affirmative answer.