



Statistical mechanics of the international trade network

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Analyzing real data on international trade covering the time interval 1950-2000, we show that in each year over the analyzed period the network is a typical representative of the ensemble of maximally random weighted networks, whose directed connections (bilateral trade volumes) are only characterized by the product of the trading countries' GDPs. It means that time evolution of this network may be considered as a continuous sequence of equilibrium states, i.e. quasi-static process. This, in turn, allows one to apply the linear response theory to make (and also verify) simple predictions about the network. In particular, we show that bilateral trade fulfills fluctuation-response theorem, which states that the average relative change in import (export) between two countries is a sum of relative changes in their GDPs. Yearly changes in trade volumes prove that the theorem is valid.

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