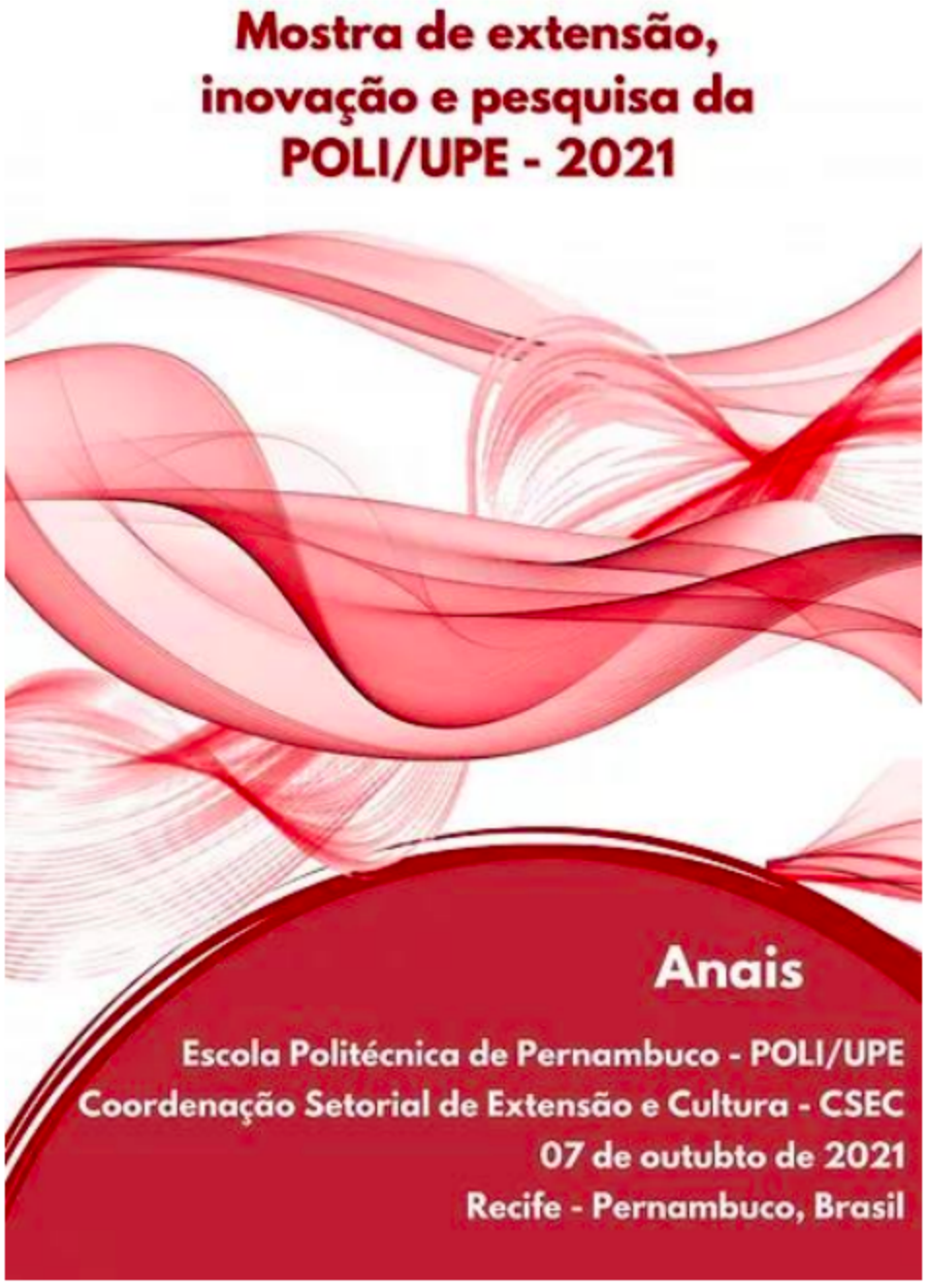
Worker-Employer Money Flow

A Model for Economic Health



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Summary

In the early days of civilization, transactions were carried out through barter. As civilizations became more organized, there was the emergence of what is currently known as money. Money, or currency, is present in the lives of all those who live in economic societies. Individuals provide services or sell goods in exchange for money, which in turn is used to purchase goods or services from other people. Money allows the professionalization and specialization of individuals in a society, given that it can pay for basic needs and recreational activities that would otherwise be impossible to produce or obtain simultaneously with specialized work. The constant flow of money within a civilization allows for the centralization of the production and distribution of goods and services, as well as facilitating access to these goods and services. Those responsible for logistics and coordination are called Employers, and those responsible for carrying out the assigned role are called Workers. In a society with a healthy economy, a high monetary flow is expected. However, political, social, economic and health uncertainties cause fear in the population, which in response reduces their spending. Reduction of monetary flow within a society reduces the ability of Employers to maintain their Workers and, therefore, end up closing their doors. Major global crises have happened and will happen due to high fear among the population, generating a major reduction in monetary flow, collapsing Employers. It is extremely important to study the relationship between a population's perception of the situation in society and the influence of this fear on the financial health of society itself. Econophysics is an area of interdisciplinary research that aims to apply physical and statistical methods to the study of economic systems. In this work, complex networks popularized by Barabási were used to model interaction networks between Employers and Workers. The dynamics of interactions between the system's agents were then modeled based on parameters such as the number of agents and currencies in the system, Workers/Employer and Salary/(Total coins) ratios, and the fear perceived by the population, called temperature. The system is then simulated for several iterations and, using statistical methods, indices are calculated to observe the situation of the economy for given parameters such as the temporal average of the money flow and the respective variance. The presence of phase transitions was observed in the proposed model, showing the existence of a critical temperature at which the system passes from a state of relative economic health to an economic crisis. The results of this work are important for understanding and possibly preventing serious socioeconomic problems.

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