



## Network Science Center at West Point

**Network Science Center Research** *Exposing the “Hidden Hand” in Historical Social Networks to Model Social Change*

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*We seek to advance basic research in human network structure of social, historical, and conceptual branches of Network Science in the context of civil-military relations and their effect on the stability of Frontier Markets. The Tanzanian Frontier Market has proven difficult to gauge with respect to investor confidence in the post-Socialist Tanzanian hybrid market structure. The United States military is engaged in East Africa due to high instability induced by a lack of quantifiable metrics. Science is currently unavailable for estimating the viability of Frontier Markets, therefore a historical analysis of the sources of Tanzanian state stability combined with Network Science offers the best research approach to quantify the stability of the emerging Tanzanian market.*

**Objective:** The major questions that our Frontier Market Research strives to address are: (1) What metrics of network structure best describe the transition of civil-military relationships and the resiliency of Tanzanian society? (2) What is the relationship between Frontier Market Network Structure and Nation-State stability, especially during periods of formidable economic and social change? (3) Can a Social Network model provide a descriptive model of Frontier Market success/failure? (4) Can the combination of a Social Network Model and historical analysis reveal the basis for Tanzanian state stability and its continued resilience?

**Approach:** As a one-year effort, this research will initially focus on developing the Social Network graphs of past social networks at three major periods in Tanzanian history (1964/65; 1977/78; 1998), establishing structural phenotypes, and creating network-based metrics to describe the differences between past social networks before, during and after major externally-driven events. Concurrently, we will conduct significant travel to and research in Tanzania. The travel will form the corpus of our collection efforts for both English and Swahili-language source material, and provide raw data for the conceptualizing of a stability constant that may assist with evaluating the viability of emerging markets. Our research team’s combined social, political, and military experience will conduct the first-ever historical analysis of African civil-military relationships and their effect on the Tanzanian state’s stability, and potentially assist with creating comparative models for future Frontier Market research. Analyzing the impact of civil-military relations through a longitudinal analytical framework that spans key events from approximately three decades will help uncover previously unexplored political, social, economic and military Social Network relationships. This analytical method has not been attempted before within an African historical context.

**Impact:** This research will enable military decision-makers to better understand the co-joined ‘Military’ and ‘Economics’ legs of the DIME approach to Full-Spectrum Operations (Diplomatic, Infrastructure, Military, and Economic). When combined with future research and applications, this project will allow policy makers to assess the true influence of specific sectors in Tanzanian civil-military networks, and their impact on political and economic spheres. In accordance with Maslow’s theories of development, accurately assessing the stability and resiliency of Tanzania will directly aid in increasing potential investor confidence, and thereby increasing capital necessary for economic



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take-off and the achievement of Frontier Market status. Global investment will be aided by accurate analysis and reassurance regarding the social stability of Tanzanian power structures, social networks, and economic sectors. Global investment encouraged by the presence of an open market system can stabilize a region and reduce the potential for military intervention or shorten the requirement for military presence. This research will be the foundational tools for senior military and diplomatic leaders engaged in shaping economic power projection operations and course of action development.