PhD Defence: Sosso Feindouno

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Location

Pôle Tertiaire - Site La Rotonde - 26 avenue Léon Blum - 63000 Clermont-Ferrand

Room Pascal - 313

Structural vulnerability and fragility : an assessment based on composite indicators

JURY

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SUMMARY

Vulnerability and fragility are at the heart of the global debate arising from the definition and implementation of the **sustainable development goals**. This PhD dissertation offers enhanced tools to assess structural vulnerability and fragility from various aspects: economic, social, and environmental. The proposed approach for apprehending these concepts is based on the construction and refinement of composite indicators. It is divided into four chapters.

In Chapter 1, we build the retrospective series of the **economic vulnerability index (EVI)**(https://www.un.org/development/desa/dpad/least-developed-country-category/evi-indicators-ldc.html), proposed by the United Nations' Committee for Development Policy (CDP). Some choices and measures are discussed, such as the methodology used to calculate the instabilities of exports and agricultural production. From our analyses, it appears that the structural economic vulnerability of LDCs is still higher compared to non-LDCs. As well, focusing on the African context, we show that fragile African states are economically more

vulnerable than non-fragile African states, and the difference between the two groups of countries seems to come from the difference in the magnitude of shocks. Finally, employing a stochastic dominance approach and using a five-year testing horizon to assess the evolution of the EVI and its main components over time, we observe that there is no real decline of the EVI and its main components at the first order sense. But, an overall decrease can be concluded at the second order sense of dominance.

The second chapter focuses on the issue of structural resilience through the **Human Assets Index (HAI)**(https://www.un.org/development/desa/dpad/tag/human-asset-index/), another index designed by the UN-CDP for identification of LDCs. We start with a presentation of retrospective series of the HAI and its components, for which, to a limited extend, we have used econometric tools to consistently impute missing data. Secondly, we analyze the HAI's dynamics by assessing the contributions of each component to this. Finally, we debate about the choice of equal weighting for the four components in the HAI. Taking into account the fact that the correlation between indicators is closely linked to the issue, we propose a new scheme pattern based on the correlation ratio and linearity (or nonlinearity) dependence between components.

The third chapter is devoted to the **climate change vulnerability**. We design a composite indicator called "Physical Vulnerability to Climate Change (PVCCI)". This indicator based only on the physical characteristics of climate change is independent of present and future country policy, and aims to be used for international allocation of resources. After explaining the specific methodology used to build the PVCCI and presenting the results for developing countries, we investigate the relationship between civil conflict and vulnerability to climate change measured here by the PVCCI. We show that, the PVCCI has a positive and significant effect on civil conflict. This effect is particularly relevant when the conflict is proxied by incidence. But once the conflict is measured by onset, we notice a weakness in the relationship between the PVCCI and civil conflict.

The starting point of the fourth chapter is that African countries are still lagging behind when it comes to attracting **Foreign Direct Investments (FDI)**. We suspect the structural economic vulnerability, measured by the Economic Vulnerability Index (EVI), in part, responsible for the relative lack of interest of foreign investors towards Africa. We estimate a spatial error correction model during the time period from 1980 to 2010 to assess the dynamic relationships between FDI and its determinants. Our finding reveals that in the long run, there is a significant negative relationship between FDI and EVI. The results also suggest that a high EVI in neighboring countries negatively affects the amount of FDI into a host country. Later on, we also observe that structural economic vulnerability plays an important role in explaining the FDI gap between African Low-Income Countries and African Middle-Income Countries. The share of agriculture, forestry and fishery in GDP appears as the strongest contributing factor to this difference.

KEYWORDS

Vulnerability; Fragility; Human capital; Sustainable development; Imputation; Composite; Hypothesis testing; Comparative studies of countries; Climate change; Civil conflict; Foreign direct investment; Spatial Error Correction Model; Cointegration.

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