



Assessment of the determinants of inflation in times of crisis : the case of Morocco via ML approaches

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Abstract

This paper presents a systematic review aimed at establishing a rigorous foundation for evaluating inflation drivers in Morocco through hybrid machine learning frameworks capable of capturing structural instability and complex dynamic interactions. Crisis episodes fundamentally reshape inflation dynamics by disrupting transmission channels, amplifying external vulnerabilities, and generating instability in price formation processes. Although inflation determinants are widely examined in the literature, relatively few empirical studies explicitly distinguish crisis regimes from normal macroeconomic conditions, particularly in emerging economies.

Adopting a transparent and replicable selection process, the review synthesizes empirical research analyzing inflation behavior during financial crises, pandemic shocks, commodity and energy price surges, exchange-rate depreciations, monetary tightening cycles, and global supply-chain disruptions. The analysis is structured around three core dimensions: 1- The nature and persistence of shocks affecting price dynamics; 2- The principal transmission channels identified in the literature—exchange-rate pass-through, imported inflation, fiscal imbalances, monetary expansion, demand compression, and expectations formation; and 3- The capacity of existing empirical models to capture nonlinearities, asymmetries, and regime shifts.

The evidence indicates that crisis periods tend to intensify exchange-rate pass-through, increase inflation persistence, and amplify the influence of supply-side and financial factors. However, most empirical contributions rely on linear specifications that assume parameter stability and rarely model crises as structurally distinct regimes. Nonlinear interactions between domestic and external drivers remain insufficiently explored. Moreover, emerging economies—particularly Morocco—are underrepresented in crisis-focused empirical analyses. While machine learning techniques are increasingly employed for inflation forecasting, they are seldom embedded within structurally interpretable frameworks tailored to crisis conditions.

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