



## **Hydroclimate and agricultural output in developing countries**

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According to international data on developing countries we observe a strong correlation of their Gross Domestic Product (GDP) to their agricultural output, suggesting that a large fraction of total income in the developing world derives from domestic agricultural value added. In addition, the significant lack of irrigation infrastructure (eg. reservoirs and irrigation networks) forces these countries' income into strong dependence from local hydroclimatological conditions; as the majority of crop output is -in turn- based on rain-fed agriculture. In our work we examine -via annual time-series analysis- the temporal dynamics between hydroclimate data (mainly precipitation), GDP, agricultural value added and the international prices of agricultural commodities, for developing countries, in order to study how these variables are mutually entwined in time. Furthermore, we perform various econometric tests on their correlation validity. An important aspect of our work concerns the detection of change in the composition of the economies of developing countries. Specifically, as developing countries acquire infrastructure it is highly probable to expect a gradual decoupling of the climate-agricultural output-GDP relationship.

**Keywords:** Developing countries, GDP, agricultural output, hydroclimatological conditions, rain-fed agriculture, time-series analysis

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