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In searching for possible relationships between the COVID-19 pandemic and the currency exchange rates via the Dynamic Time Warping method

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The Covid-19 pandemic has affected not only economies of particular countries but the entire world economic system. It is not surprising that also currency exchange rates are not left untouched by the current crisis. The main objective of our study here is to assess the similarity between the time series of currency exchange rates and the Covid-19 time series (e.g., we investigate the relationship between the Euro/USD exchange rate and the ratio of Covid-19 daily cases in Eurozone and the USA). In other words, we want to quantitatively know how various currency exchange rates are associated with the observed development of the pandemic. To achieve this goal and to check if and to what extent the Covid-19 spread is related to the exchange rates, we employ the Dynamic Time Warping (DTW) method. Making use of the DTW method, a distance between analyzed time series can be defined and calculated. Having such a distance makes it possible to group currencies according to their change relative to the pandemic dynamics. Time shifts between daily Covid-19 events and currency exchange rates are also analyzed within the framework of the developed formalism.

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