

# Análisis de series de tiempo para el reconocimiento de ciclos económicos.

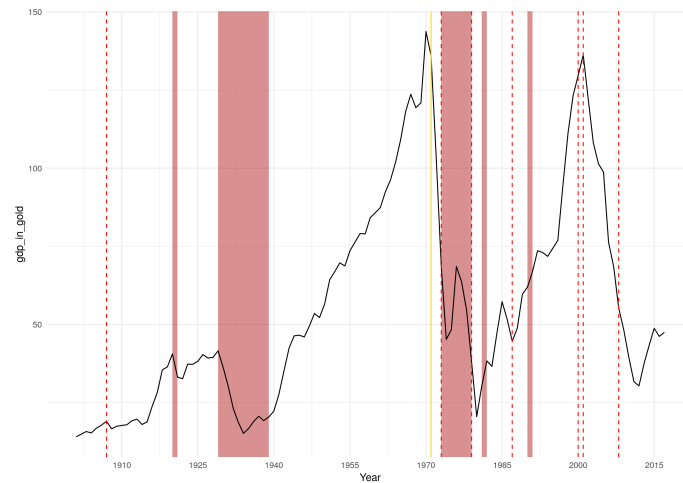
Pablo Santoro, Diego Kozlowski

October 7, 2018

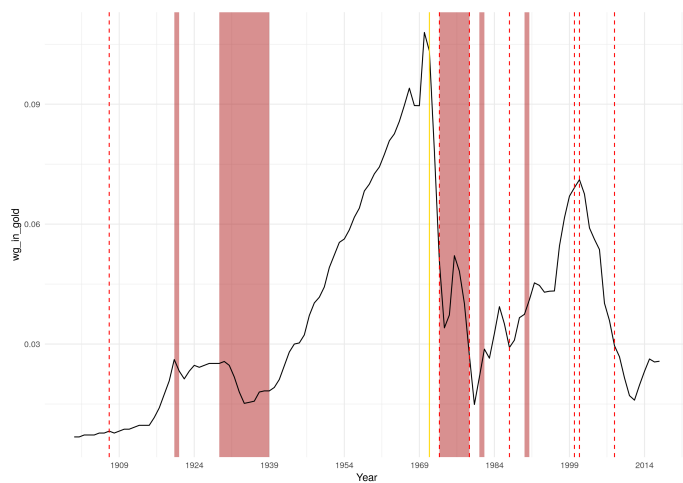
**Abstract**

## 1 Introducción

## 2 Análisis Exploratorio de Datos



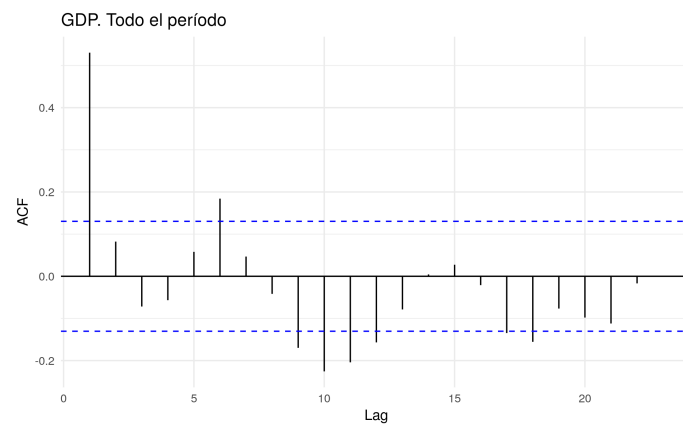
(a) PBI expresado en Oro



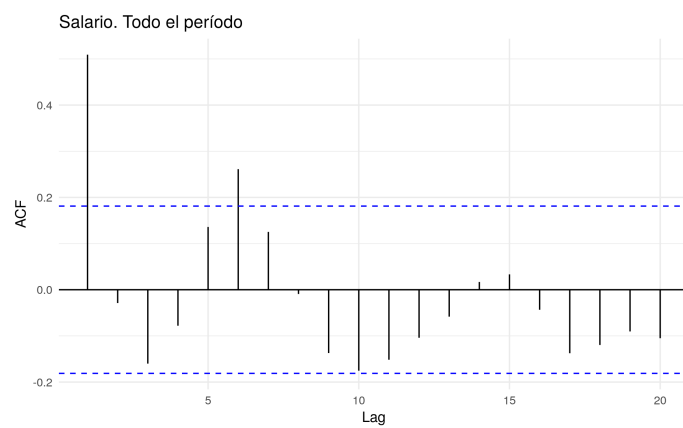
(b) Salario expresado en Oro

Figure 1: Series Expresadas en Oro. Destacado de crisis conocidas

### 3 Autocorrelación



(a) PBI expresado en Oro



(b) Salario expresado en Oro

Figure 2: Autocorrelación de las series

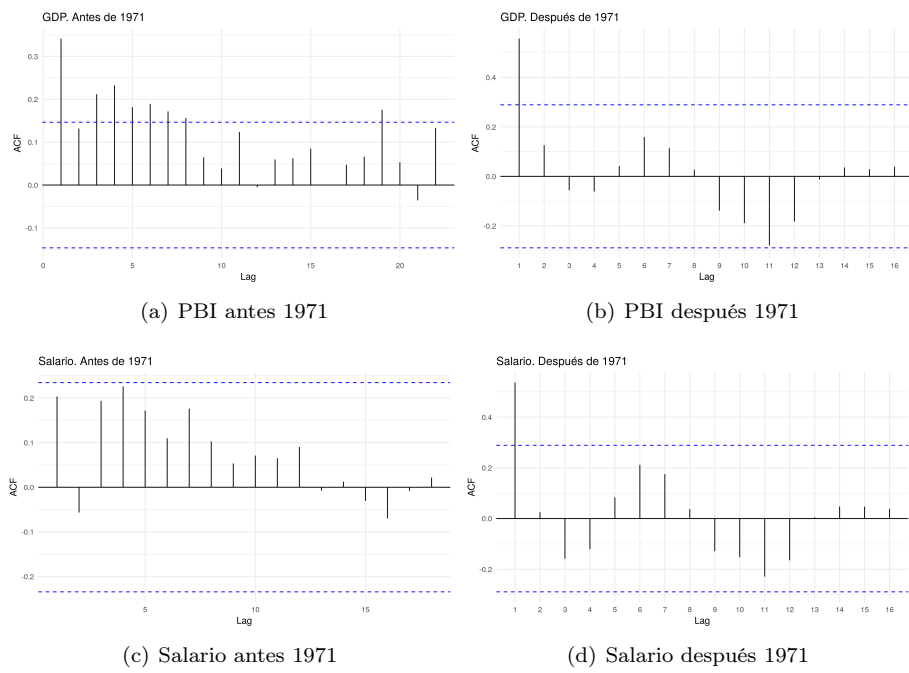


Figure 3: Autocorrelación de las series

## 4 ARIMA

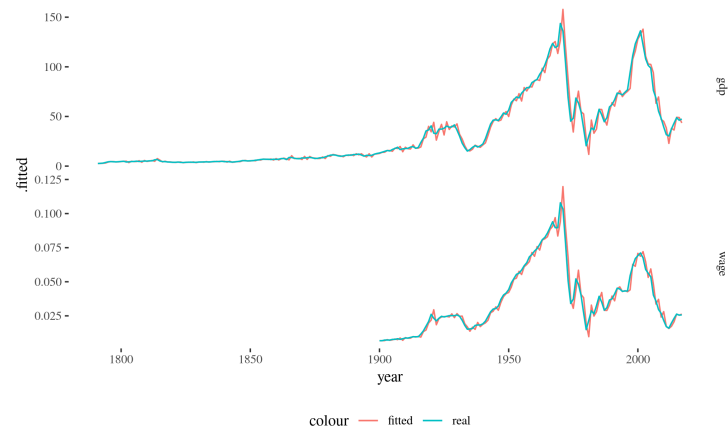


Figure 4: Predicción ARIMA

## 5 Wavelets

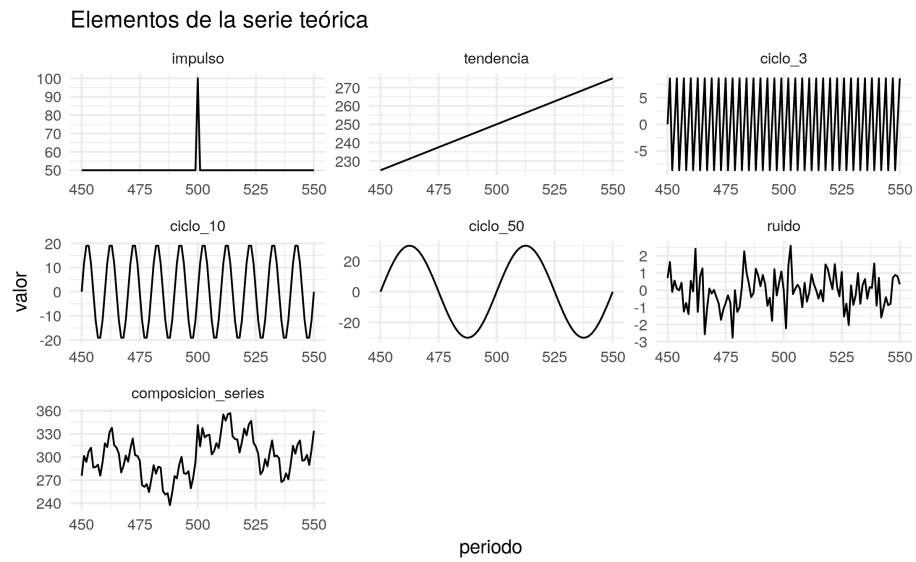
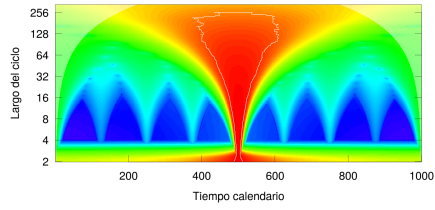
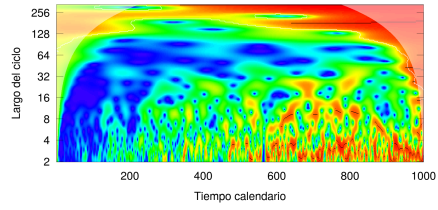


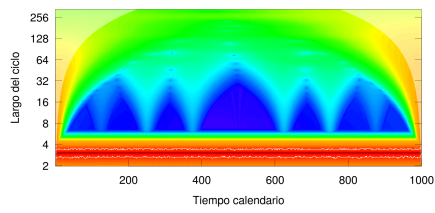
Figure 5: Serie Teórica



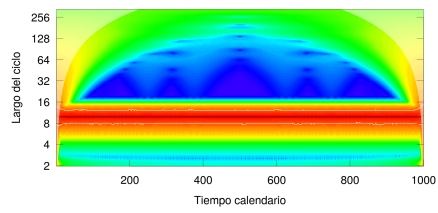
(a) impulso



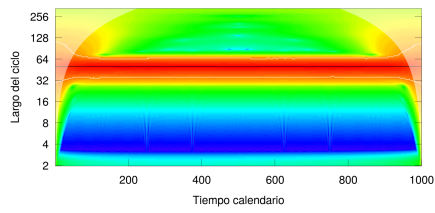
(b) tendencia



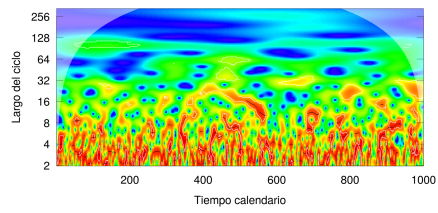
(c) ciclo de 3 años



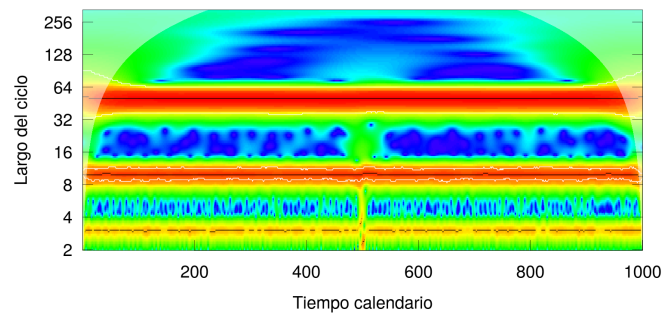
(d) ciclo de 10 años



(e) ciclo de 50 años



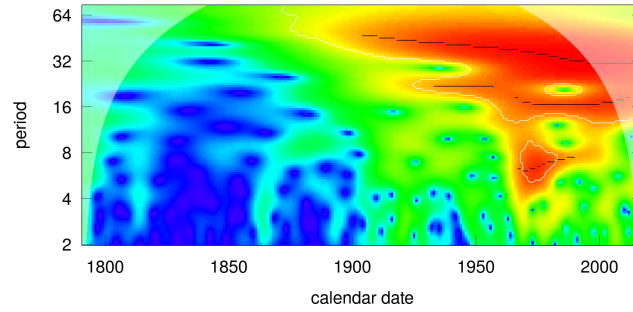
(f) ruido normal



(g) composición de series

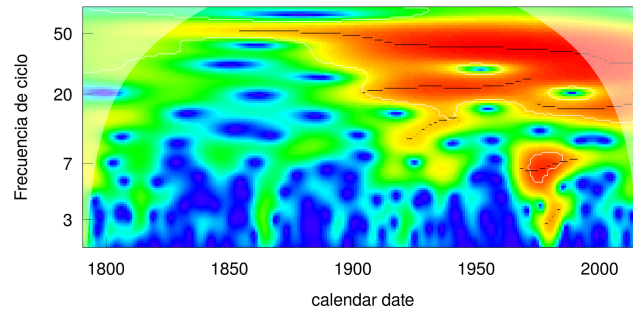
Figure 6: Espectogramas Teóricos

**Espectograma PBI en oro**



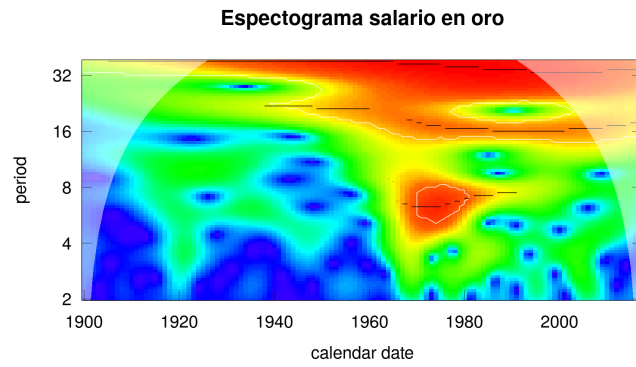
(a) PBI

**Espectograma  $\log(\text{PBI en oro})$**

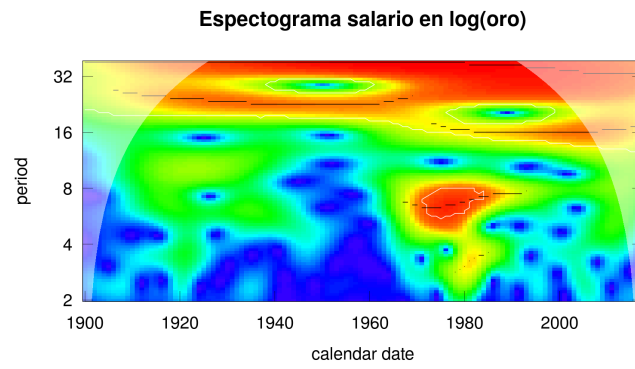


(b)  $\log(PBI)$

Figure 7: Espectograma PBI en oro



(a) Salario



(b)  $\log(\text{Salario})$

Figure 8: Espectograma Salario en oro

## 6 Conclusiones