

# Ajuste estacional en el contexto de la pandemia covid-19

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# Contexto general

- La pandemia de la COVID-19 y las medidas sanitarias preventivas que se han tomado en el mundo desde el comienzo del brote traen como resultado una crisis económica mundial sin precedentes
- En Argentina se han tomado medidas orientadas a la prevención del contagio que han implicado, en los hechos, un freno a la actividad económica
- A partir del 20 de marzo de 2020 se restringió la circulación de las personas y consecuentemente algunos sectores siguieron produciendo mientras que otros no lo pudieron hacer.
- Asimismo, la pandemia global de la COVID-19 alteró el normal funcionamiento de las oficinas de estadística oficiales en todo el mundo
- A partir del intercambio con otros institutos de estadística y los organismos multilaterales expertos en la materia (Comisión Económica para América Latina y el Caribe, Fondo Monetario Internacional, Eurostat, entre otros) el INDEC aplicó una serie de recomendaciones para la elaboración y procesamiento de sus estadísticas .

## Problema:

- El ASPO provocó un impacto **sin precedentes** en las actividades económicas
- Incertidumbre sobre la extensión de la cuarentena , al inicio no se preveía un escenario de pandemia con una **extensión indefinida y tan prolongada** como la efectivamente experimentada

## Preguntas al inicio del ajuste estacional

- La caída del nivel de actividad es un efecto extraordinario?
- Afecta a todas las actividades económicas del mismo modo?
- El efecto del ASPO tiene consecuencias permanentes o transitorias?
- Los factores de estacionalidad deben modificarse ?
- Los factores estacionales multiplicativos son proporcionales al nivel . Si el nivel cae abruptamente → Problema potencial un sobre-ajuste en los factores estacionales
- La Tendencia Ciclo debe incorporar el shock? Por cuánto tiempo?

# Antecedentes internacionales

- *US Census Bureau* - Monthly Retail Data → “**additive outlier adjustment**”. This was done in effort to ensure that the published seasonally adjusted values fully include any immediate effects. These effects are not typical May effects and so should not be permitted to influence the seasonal factors for May and surrounding months.
- *BLS* → staff determined that the vast majority of household survey data series had **significant outliers** in April and **manually added outlier terms** to the seasonal adjustment models. .. However, in the presence of a large level shift in a time series, multiplicative seasonal adjustment factors can result in systematic over- or under-adjustment of the series; in such cases, additive seasonal adjustment factors are preferred.
- *ABS* → “Currently it is not known whether the impacts of COVID-19 will be short or medium to long-term and therefore we cannot confidently assign it to the trend or not... Therefore during the COVID-19 period **the ABS will be suspending the publication of trend estimates** until the medium to long-term nature of the impact is understood. To minimize revisions ABS during a period of large and unusual impacts ABS has therefore decided that:
  - Where a time series will be exposed (or anticipated to be exposed) to a significant and prolonged impact from COVID, **fixed forward factors** will be adopted. This is to avoid the need for a number of successive interventions.
  - If a time series is not severely impacted (or anticipated to be impacted) by COVID for a significant and prolonged period, **concurrent seasonal adjustment** should continue, **with interventions** as necessary.

# Eurostat

26/3/20 Eurostat publica : “Guidelines and methodological notes in the context of the COVID-19 crisis“ con la Nota metodológica: “Guidance on time series treatment in the context of the COVID-19 crisis “

...”The crisis period shall be modelled as outliers, depending on the expected impact on a specific domain, and it should be treated at least as an AO. The type of outlier will then be verified when new information will be available, revising it to TC or to LS or staying with the AO “...

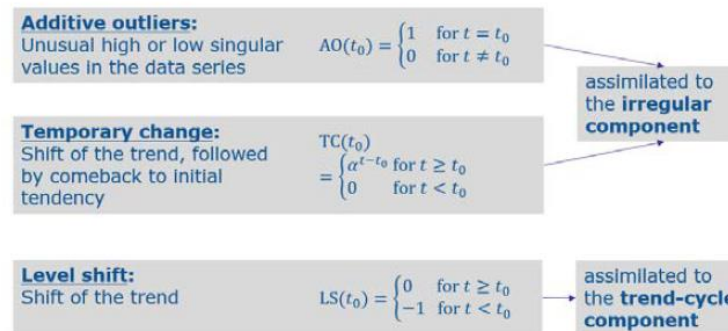
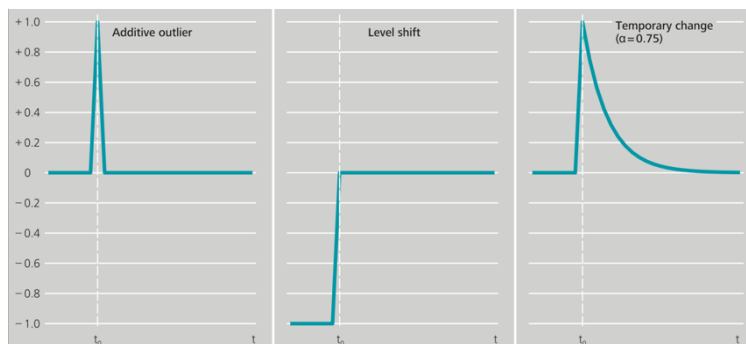


Figure 2 - Source Deutsche Bundesbank

...” The size and direction of the shock might differ by type of economic activity. An indirect approach should also be preferred “...

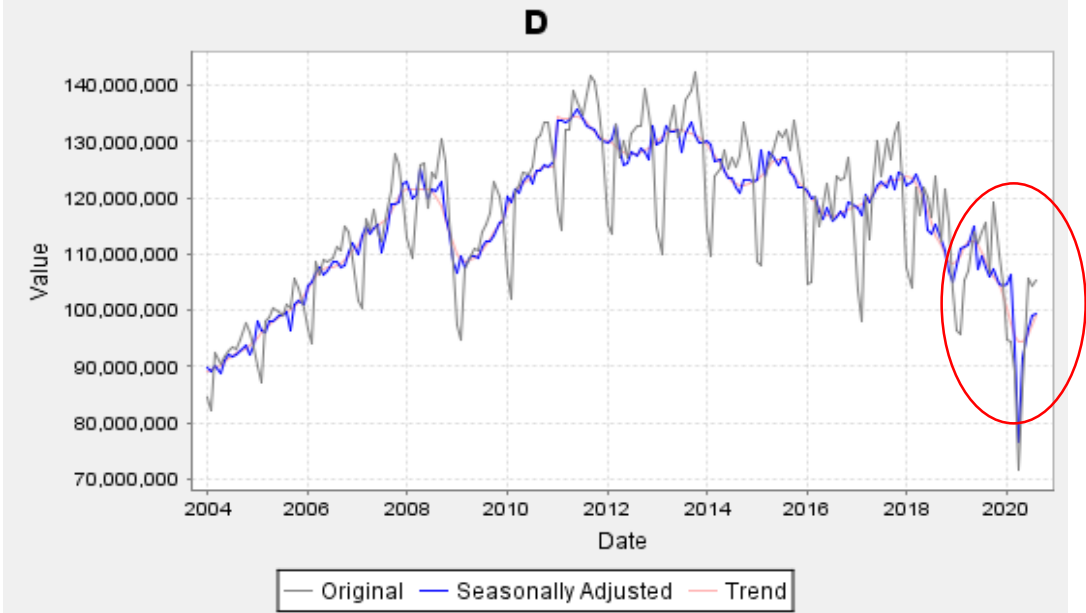
En resumen, Eurostat recomienda intervenir la serie a desestacionalizar por método indirecto

La decisión sobre el tipo de intervención implica decidir si se afecta a:

1. Tendencia-ciclo : Level shift (permanente) o Temporary Change (temporal)
2. Componente irregular : Additive Outlier
3. Otros? Rampas, step outliers...

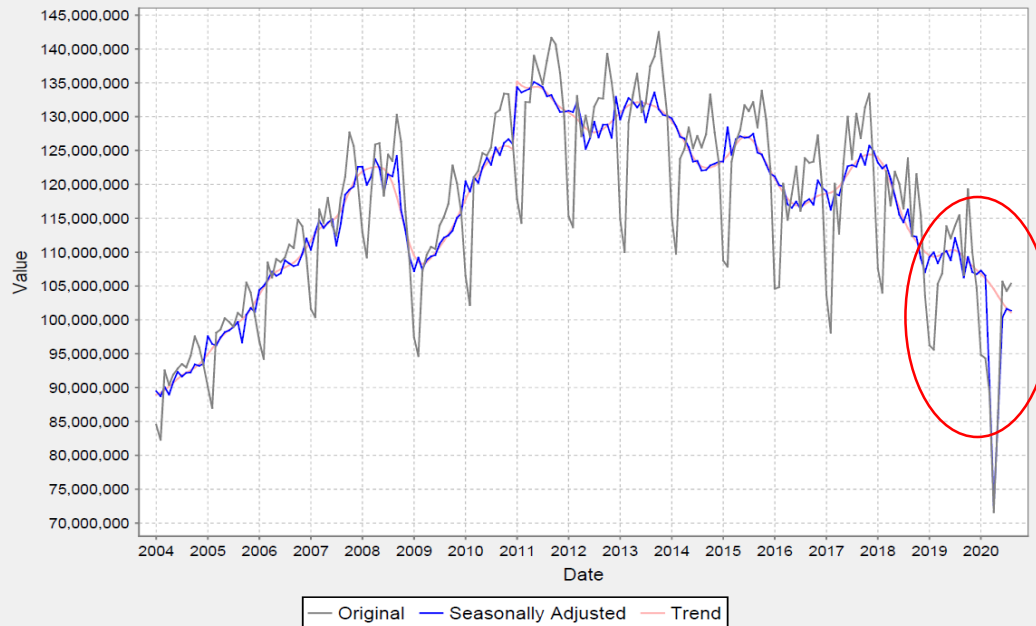
# SIN INTERVENCION DE OUTLIERS

Original Series, Seasonally Adjusted Series, and Trend - Letra D



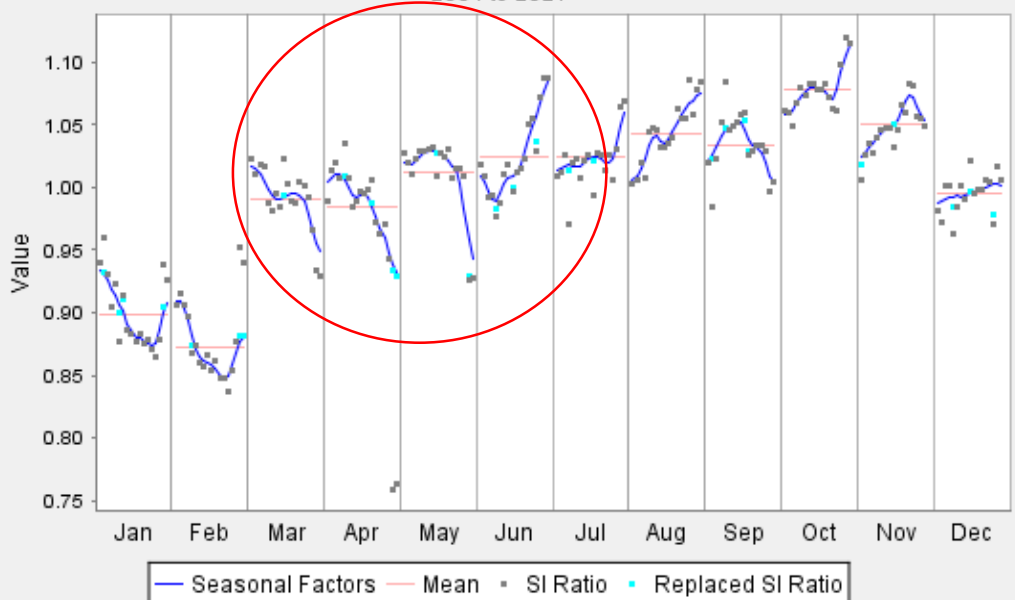
# CON INTERVENCION DE OUTLIERS

Original Series, Seasonally Adjusted Series, and Trend - Letra D



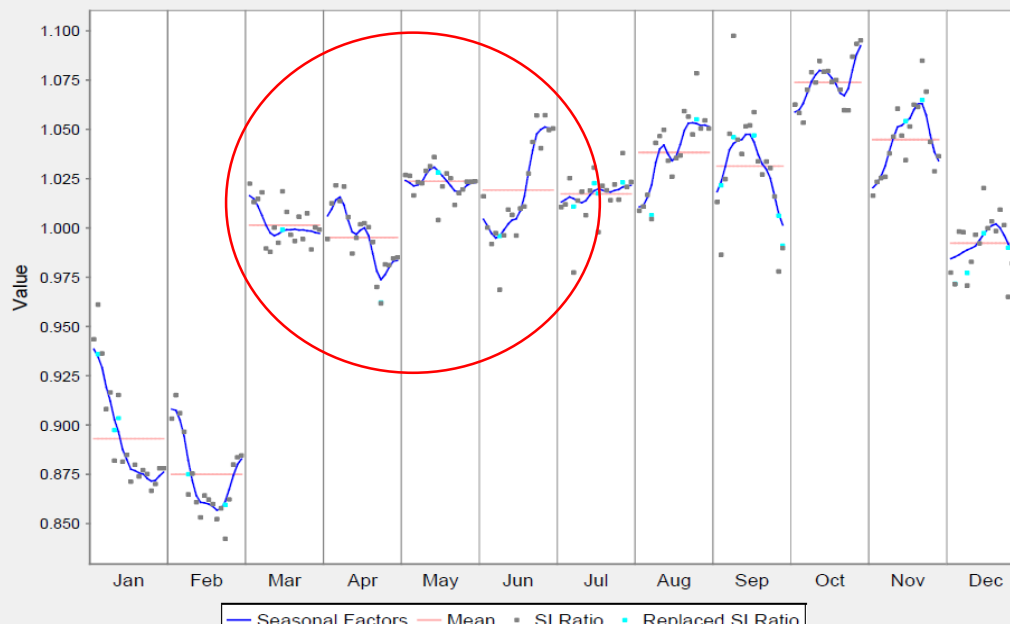
Seasonal Factors and SI Ratios by Month - Letra D

2004 to 2021



Seasonal Factors and SI Ratios by Month - Letra D

2004 to 2021



Modelos  
actualización  
concurrente

AO en un principio y desde julio se  
considera la modificación por Transitory  
Change según la serie

Serie	model span	ARIMA	regresores	Tipos de outliers y test t
A	2011.01 to 2020.08	(2 0 0)(0 1 0)	Outliers	AO2012.12[t-4.55] TC2018.04[t-8.80] TC2020.03[t-1.63] LS2011.Jul[t-4.48] LS2018.May[t-4.77] LS2018.Jul[t6.71]
B	2011.01 to 2020.08	(0 0 0)(0 1 1)	Constant + Identified Outliers	AO2012.Jun[t-3.93] LS2019.May[t-4.99] TC2020.Jun[t-6.14]
C	2011.01 to 2020.08	(1 1 0)(0 1 1)	Outliers	TC2011.Apr[t-8.12] TC2020.4[t-13.92]
D	2010.01 to 2020.08	(1 0 0)(1 1 0)	Trading Day + Outliers+ User-defined Holiday	LS2011.1[t3.83] AO2015.2[t2.99] AO2018.11[t-0.87] AO2019.06[t-1.11] AO2020.3[t-7.38] AO2020.4[t-14.61] AO2020.05[t-7.68] AO2020.06[t-0.82]
E	2011.01 to 2020.08	(0 1 1)(0 1 1)	Easter[1]+ Outliers +User-defined Holiday + Trading Day	AO2020.03[t0.37] AO2020.04[t-3.77] AO2020.05[t-3.35] AO2020.06[t-1.97]
F	2010.01 to 2020.08	(2 1 2)(0 1 1)	Outliers + 1-Coefficient Trading Day	AO2016.08[t1.90] AO2020.03[t-11.60] TC2020.04[t-19.17]
G	2008.01 to 2020.08	(3 1 1)(0 1 1)	Easter[15] + Outliers +User-defined Holiday + 1-Coefficient Trading Day	AO2020.03[t-5.68] AO2020.04[t-12.90] AO2020.05[t-7.10] AO2020.06[t-0.30]
H	2010.01 to 2020.08	(1 1 1)(0 1 1)	Easter[1] + Outliers + User-defined Holiday	TC2020.03[t-13.90] TC2020.04[t-22.43]
I	2011.01 to 2020.08	(1 0 1) (2 0 2)	Trading Day + Constant + Outliers	AO2020.03[t-4.53] AO2020.04[t-9.17] AO2020.05[t-2.50] AO2020.06[t0.00]
J	2004.01 to 2020.08	(0 1 1)(0 1 1)	Outliers+ 1-Coefficient Trading Day +User-defined Holiday	AO2020.03[t0.97] AO2020.04[t0.73] AO2020.05[t-1.11] AO2020.06[t0.17]
K	2009.01 to 2020.08	(0 1 1)(0 1 1)	Trading Day + Leap Year + Outliers + User-defined Holiday	LS2010.01[t4.87] AO2015.07[t3.90] AO2020.03[t5.73] AO2020.04[t2.17] AO2020.05[t1.78] AO2020.06[t1.29] TC2020.Mar[t-6.72]
L	2009.01 to 2020.08	(0 1 1)(0 1 1)	Outliers	LS2009.Jul[t4.55] LS2010.Jul[t-3.91] AO2013.Feb[t6.30] AO2020.03[t-3.29] AO2020.04[t-32.67] AO2020.05[t-26.36] AO2020.06[t-23.09] AO2020.07[t-15.53] AO2020.08[t-15.71]
M	2010.01 to 2020.08	(0 1 0)(0 1 1)	Outliers	AO2020.03[t-1.66] TC2020.4[t-16.23]
N	2004.01 to 2020.08	(0 1 1)(0 1 1)	Outliers	AO2005.03[t6.94] TC2005.06[t5.75] LS2006.01[t-7.45] AO2009.06[t-4.55] LS2010.01[t-5.45] AO2010.07[t5.94] LS2012.01[t6.91] TC2020.03[t-15.00] TC2020.4[t-52.35] AO2020.05[t8.94] AO2020.07[t11.27]
O	2010.01 to 2020.08	(1 0 0) (0 1 1)	Outliers	AO2020.03[t-2.22] TC2020.04[t-20.02]
ImpNet	2010.01 to 2020.08	(3 1 0)(1 0 1)	Easter[1] + Outliers	AO2020.03[t-4.00] AO2020.04[t-7.89] TC2020.05[t-3.20]

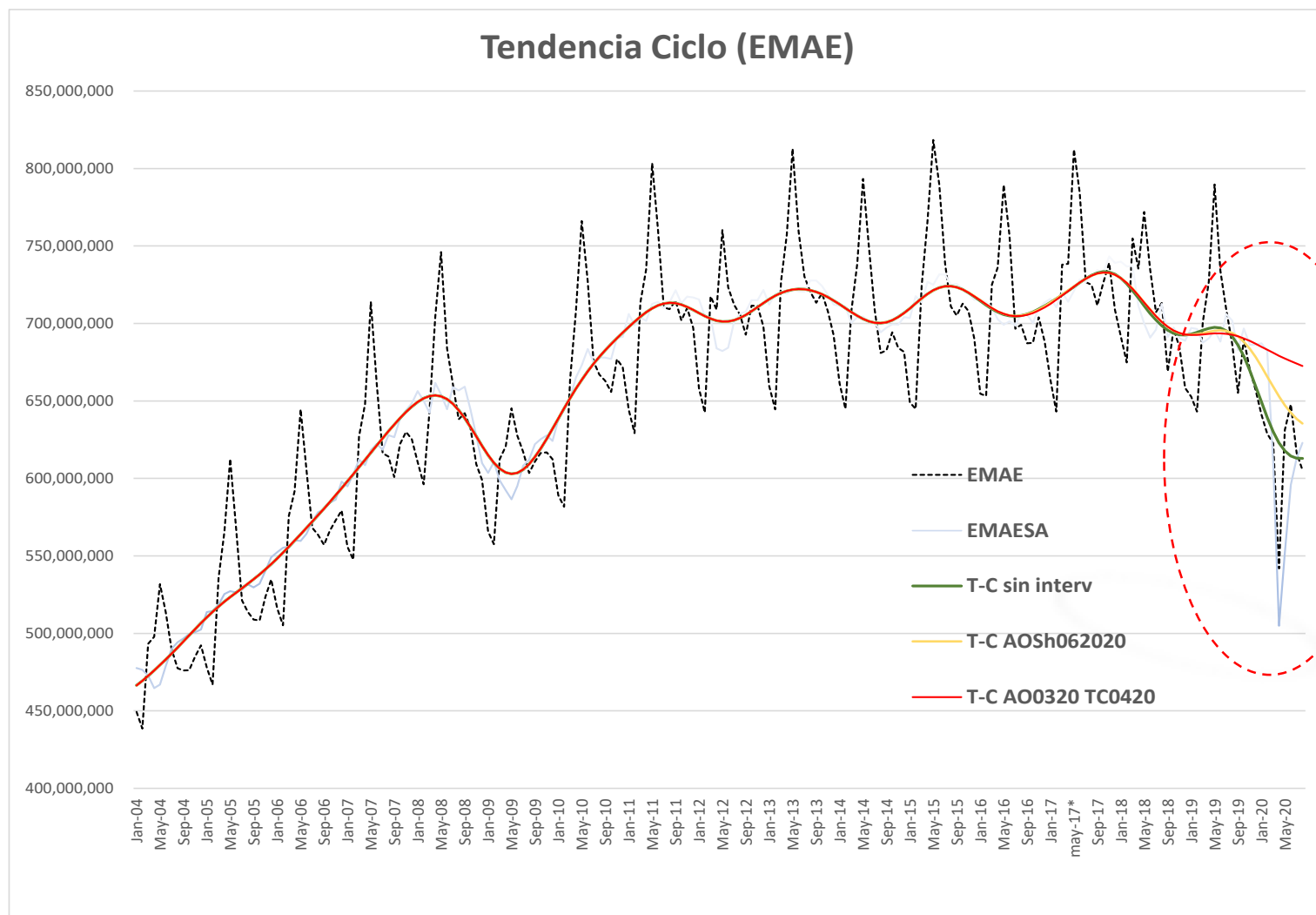
No se ha  
decidido la  
intervención  
permanente  
de la T-C  
mediante LS

# PIB . X13-RegARIMA

Serie	model span	ARIMA	regresores	Tipos de outliers y test t
A	2004.01 to 2020.03	(1 0 0) (0 1 1)	Outliers	AO2004.2[t-6.05] AO2009.2[t-8.93] AO2012.2[t-6.14] AO2018.2[t-7.81] AO2020.1[t-0.45] AO2020.2[t-2.52]
B	2010.01 to 2020.03	(1 0 0)(0 1 0)	Constant + Outliers + User-defined Holiday	AO2020.1[t-3.43] AO2020.2[t-1.44]
C	2004.01 to 2020.03	(1 0 1) (1 0 1)	Constant + Outliers	AO2005.4[t-5.04]AO2008.2[t-8.34] LS2010.4[t-5.35] AO2011.2[t-9.80] AO2017.2[t-2.95] AO2020.1[t1.99] AO2020.2[t-5.92]
D	2004.01 to 2020.03	(1 1 0) (1 1 0)	Outliers + User-defined Holiday	AO2008.4[t5.80] LS2008.4[t-7.68] LS2012.2[t-3.02] AO2020.1[t-2.95] AO2020.2[t-14.36]
E	2005.01 to 2020.03	(0 1 1) (0 1 1)	Outliers+ User-defined Holiday	AO2017.4[t-1.27] AO2020.1[t0.52] AO2020.2[t-4.18]
F	2004.01 to 2020.03	(0 1 1) (0 1 1)	Outliers + User-defined Holiday	AO2020.1[t-1.85] AO2020.2[t-24.70]
G	2004.01 to 2020.03	(2 1 1)(0 1 0)	Outliers + User-defined Holiday	LS2008.4[t-3.79] AO2020.1[t-2.08] AO2020.2[t-8.19]
H	2010.01 to 2020.03	(1 0 0) (0 1 0)	Outliers	AO2020.1[t-7.26] AO2020.2[t21.84] TC2020.2[t-29.10]
I	2010.01 to 2020.03	(1 1 0) (0 1 0)	Outliers	TC2012.2[t-4.10] LS2018.2[t-6.49] AO2020.1[t-4.77] AO2020.2[t-18.44]
J	2004.01 to 2020.03	(0 1 1) (0 1 1)	Constant Outliers + User-defined Holiday	AO2020.1[t-1.11] AO2020.2[t-1.80]
K	2010.01 to 2020.03	(0 1 1) (0 1 1)	Outliers	AO2020.1[t-0.41] AO2020.2[t-12.54]
L	2011.01 to 2020.03	(1 1 0) (0 1 0)	1-Coefficient Trading Day + Leap Year +Outliers	LS2015.3[t1.67] AO2020.1[t3.50] AO2020.2[t-16.45]
M	2004.01 to 2020.03	(1 0 0) (2 0 0)	Outliers	AO2008.1[t-5.13] TC2009.1[t-5.09] AO2009.2[t-6.75] LS2015.2[t3.77]AO2020.1[t10.73] AO2020.2[t-9.03]
N	2004.01 to 2020.03	(2 1 0) (0 1 0)	Constant + Outliers	LS2006.1[t-7.09] LS2012.1[t3.78] TC2020.1[t-10.10] AO2020.1[t9.83] AO2020.2[t0.85]
O	2010.01 to 2020.03	(1 0 0) (0 1 0)	Outliers	AO2020.1[t-3.08] AO2020.2[t-29.40]
P				
ImpNet	2010.01 to 2020.03	(1 0 0)(1 0 0)	Constant + Outliers	AO2020.1[t-0.55] AO2020.2[t-3.41]



# Extracción de la Tendencia Ciclo



## Cuestiones a considerar:

- La TC como producto potencial
- La TC como predictor de un turning point.

## Tipos de Intervención evaluadas

1. Sin intervención
2. AO hasta junio 2020
3. AO marzo 2020 y Transitory Change en abril 2020.

# Conclusiones



**Muchas gracias**

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