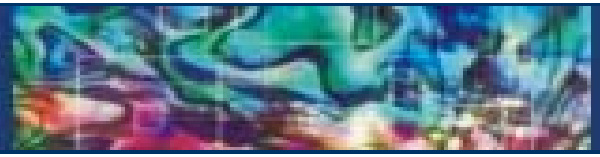
Massey University



Te Kunenga ki Pūrehuroa

Department of Commerce

The Daylight Saving Time Anomaly in Stock Returns: Fact or Fiction?

Russell Gregory Allen (Massey)

Ben Jacobsen (Massey)

Wessel Marquering (Erasmus)

Purpose and main contribution of the paper

- Purpose:
  - We test whether Daylight Saving Time effects are present in 22 stock markets around the world.

- Main contribution:
  - Current evidence of DST effect has been tested in 4 countries only: US, Canada, UK and Germany.

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- 1 hour time change induces impact on system similar to “Jet Lag”
- Accidents have been shown to increase
- DST argument has been “where is the optimal balance”
  - Eg. “Are accidents due to DST < accidents due to driving at dusk?”

Depressed about losing that hour of sleep?

Does this translate to the financial world?

Even assuming DST impact on human system causes driving and industrial accidents:

Would “DST Lagged” portfolio managers be sufficiently depressed and error-prone to see it in stock market returns?

Literature

- Kamstra, Kramer and Levi (AER 2000)
  - US, UK, Canada and Germany DST weekends followed by large negative returns

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- Kamstra, Kramer and Levi (AER 2000)
  - US, UK, Canada and Germany DST weekends followed by large negative returns
- Pinegar (AER 2002)
  - KKL results are driven by two crises
- KKL respond (AER 2002)
  - Pinegar ignored non-US evidence
  - Revisit evidence with same 4 countries

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- We Ask:
  - Why just 4 countries??
- DST effect, if any, should affect all countries “equally”
- So, analyze more countries:
- We examine all countries in MSCI World Index (except Japan and Singapore)

Country	1st DST date	Country	1st DST date
Australia	10/31/1971	Netherlands	4/3/1977
Belgium	4/3/1977	New Zealand	11/3/1974
Canada	4/28/1974	Norway	4/6/1980
Denmark	4/6/1980	Austria	4/6/1980
Finland	3/29/1981	Portugal	3/27/1977
France	3/28/1976	Spain	4/13/1974
Germany	4/6/1980	Sweden	4/6/1980
Greece	4/11/1976	Switzerland	3/29/1981
Ireland	3/18/1973	UK	10/31/1971
Italy	5/22/1966	US	4/30/1967
Luxembourg	4/3/1977	Hong Kong	4/20/1969

Development of DST

- Benjamin Franklin 1784
- William Willett 1907
- Robert Pearce 1908
- Until mid-1960's widespread confusion
- One region enacts it; another rejects
  - Residents must track multiple standards
  - One instance of people having to track 84 standards

Development of DST

- National Standards:
  - Italy, May 1966
  - USA 1967
  - Hong Kong 1969
  - UK & Australia 1971
  - Gradual converts until 1980; most of Europe joins

Current DST standards

- Most north-hemisphere MSCI countries – On
- Australia - Off :
  - last Sunday in March
- US & Canada – On :
  - 1st Sunday in April
- New Zealand – Off :
  - 3rd Sunday in March

Current DST standards

- All north-hemisphere MSCI countries – Off
- Australia - On :
  - last Sunday in October
- New Zealand – On:
  - 1st Sunday in October

Tests

- Basic regressions of form:

$$r_t = \mu + \alpha_1 DST_t^{off} + \alpha_2 DST_t^{on} + \varepsilon_t$$

- Dummy variables DSTon/off
- White std errors to correct for heterscedasticity

Tests

1. Are trading days after DST changes different from other trading days?

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(Number out of 22 significant at 5%):

- ON or OFF : 1 (-ve)
- ON : 0
- OFF : 1 (+ve)

Tests

2. Are trading days after DST changes different from other trading days, after adjusting for weekend effect?

Tests

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(Number out of 22 significant at 5%):

- ON or OFF : 0
- ON : 0
- OFF : 0

Tests

3. Are trading days after DST changes different from other trading days, after adjusting for month of occurrence?

Tests

3. Are trading days after DST changes different from other trading days, after adjusting for month of occurrence?

(Number out of 22 significant at 5%):

- ON or OFF : 0 (2 sig at 10%)
- ON : 0
- OFF : 0

Summary

DST days different from other days: 1 / 22

- At 5% confidence level, this would be expected from pure chance

DST days different after weekend or month adjustment: 0 / 22

Conclusion

We find there is No effect from DST changes discernable in stock market returns if we look at a broader sample of stock markets.