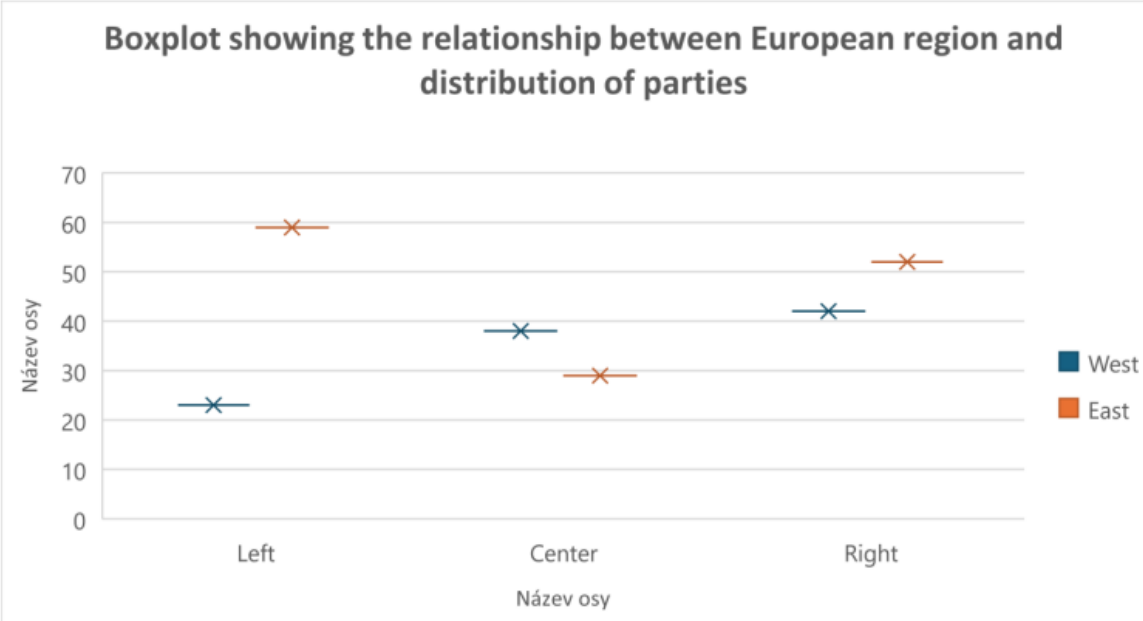
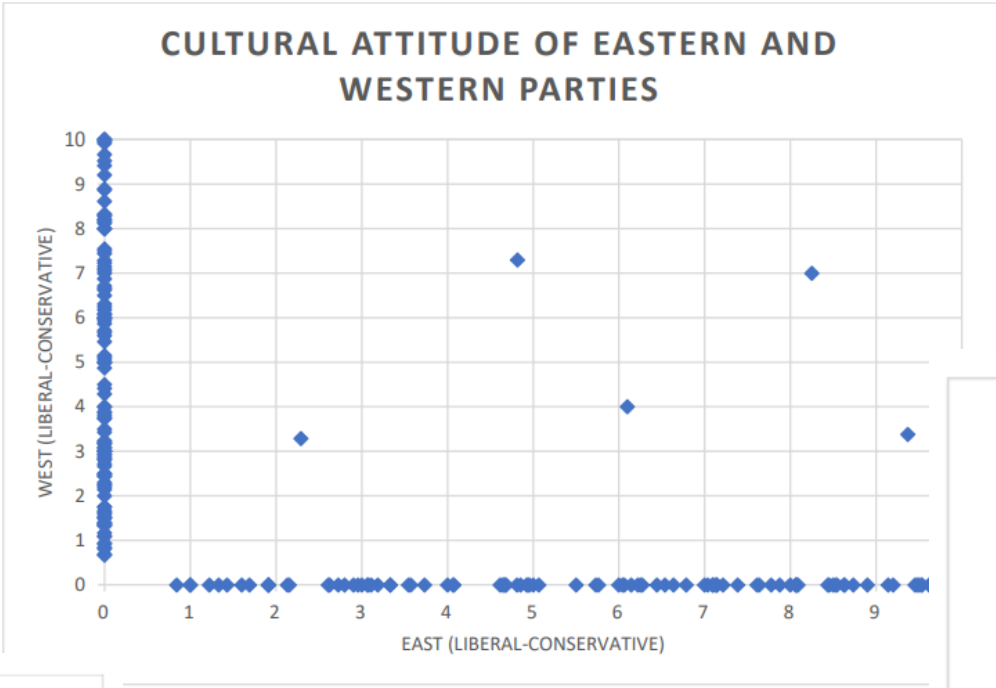
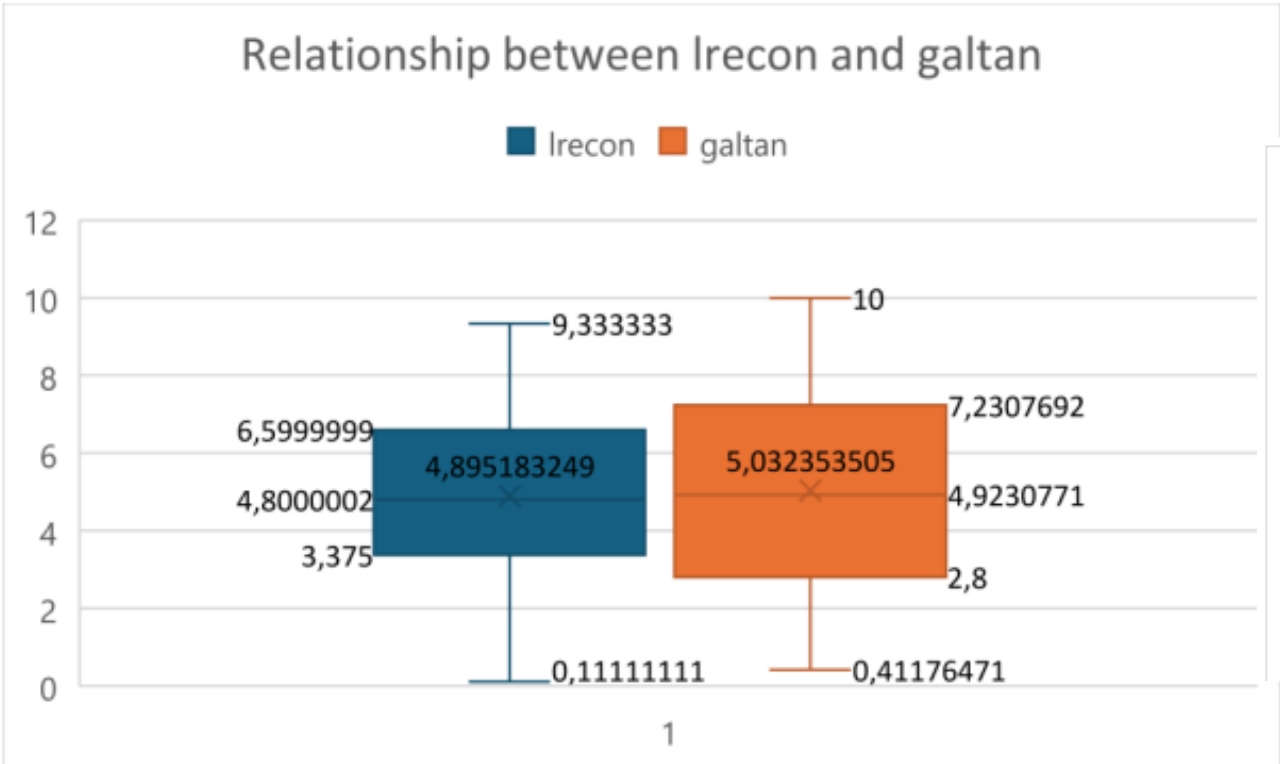
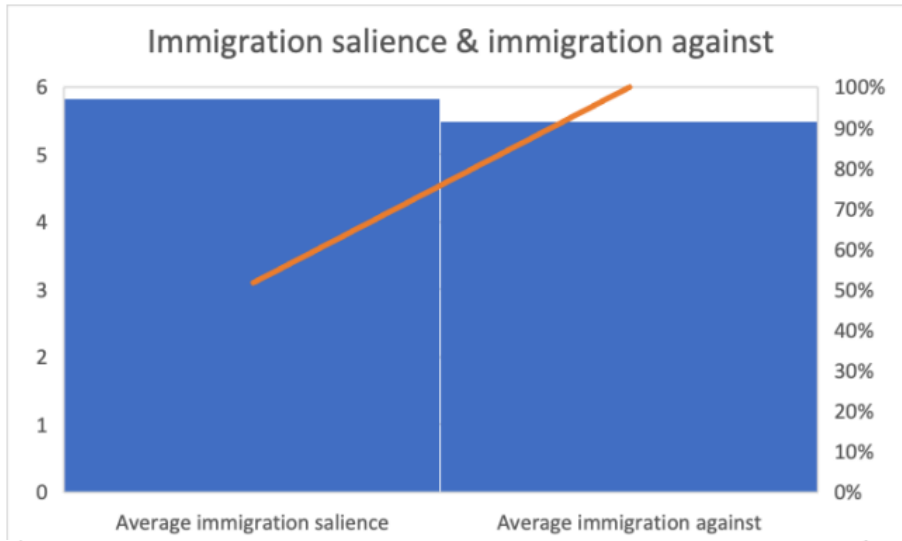
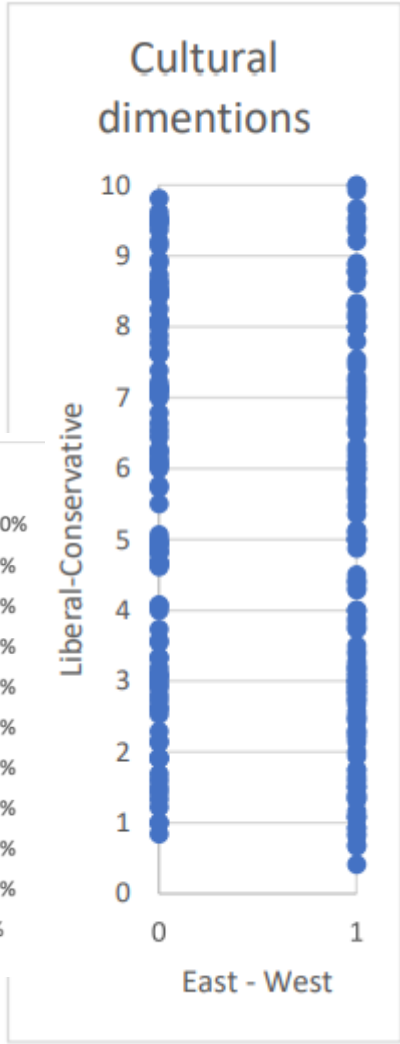
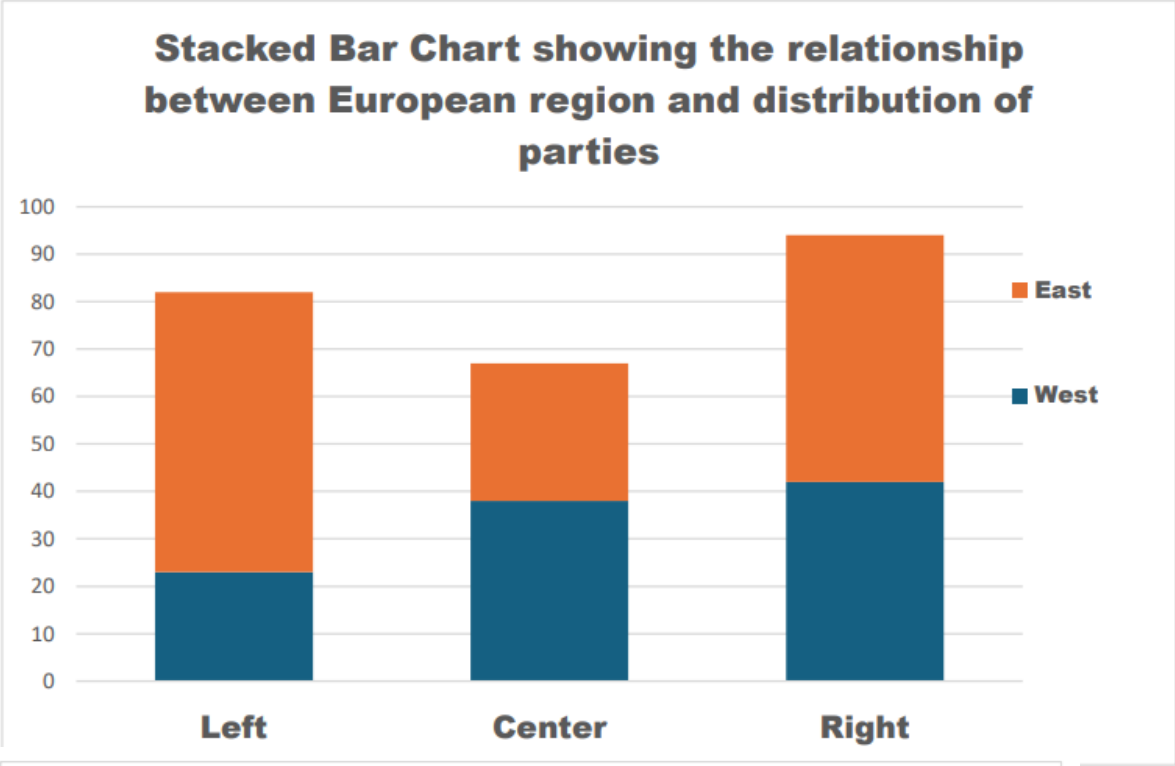

Boxplot showing the relationship between European region and distribution of parties
70
60
50
40
30
20
10
0
Název osy
Left
Center
Right
Název osy
West
East

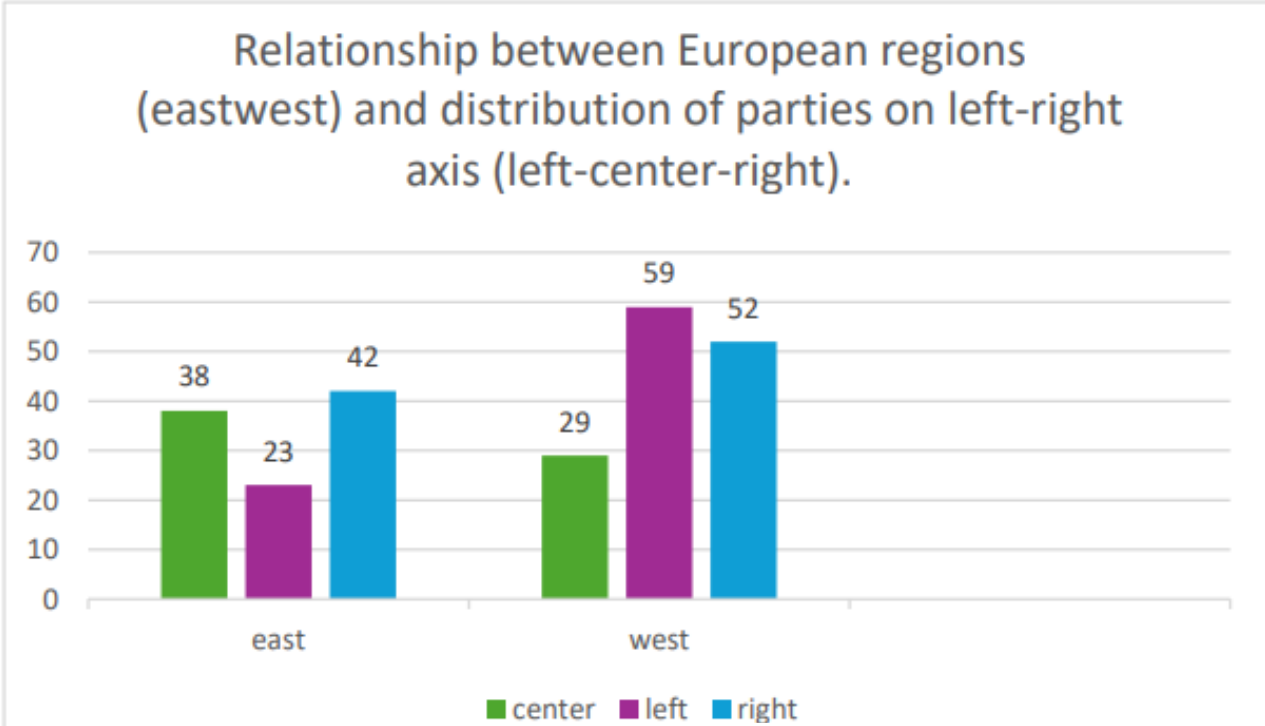

CULTURAL ATTITUDE OF EASTERN AND WESTERN PARTIES
WEST (LIBERAL-CONSERVATIVE)
EAST (LIBERAL-CONSERVATIVE)

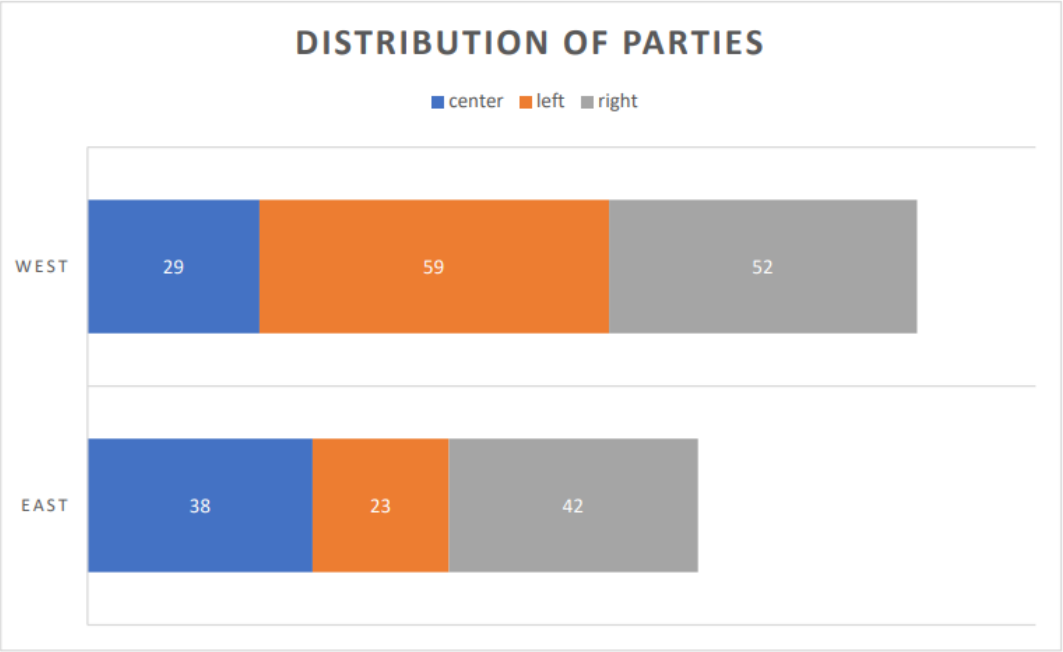

Relationship between lrecon and galtan
lrecon
galtan
9,333333
6,5999999
4,895183249
4,8000002
3,375
0,11111111
10
7,2307692
5,032353505
4,9230771
2,8
0,41176471
1

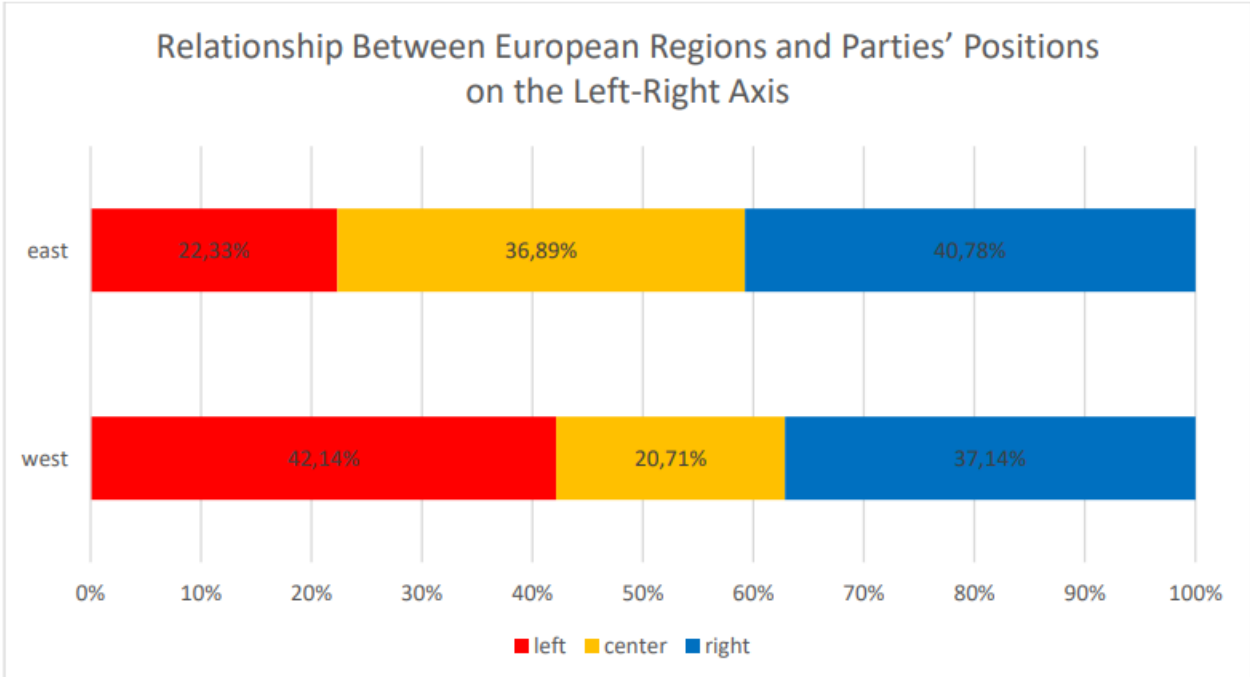

Immigration salience & immigration against
Average immigration salience
Average immigration against

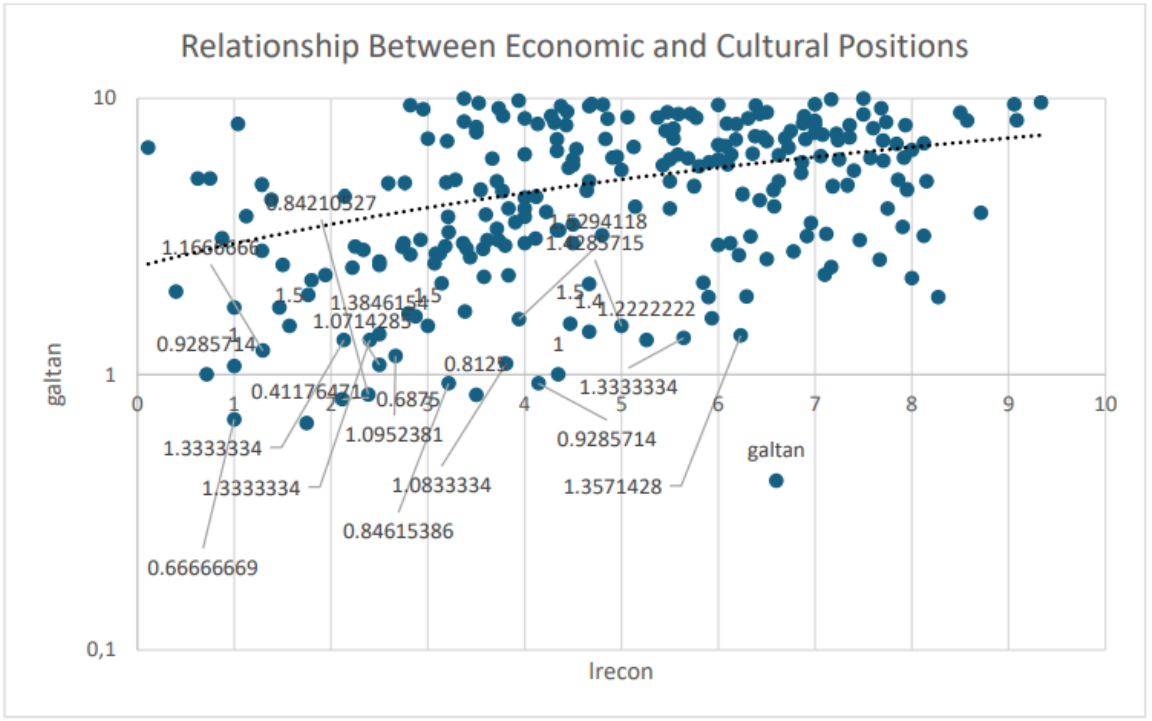

Cultural dimentions
Liberal-Conservative
East - West

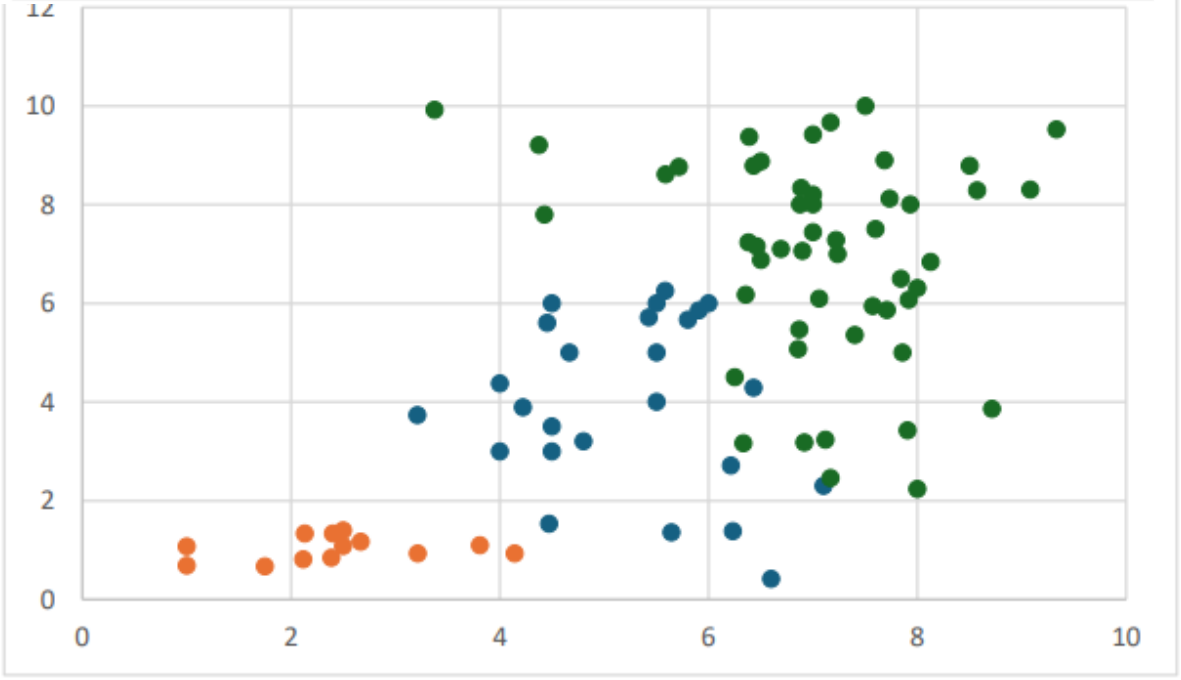

Stacked Bar Chart showing the relationship between European region and distribution of parties
100
90
80
70
60
50
40
30
20
10
0
East
West
Left
Center
Right

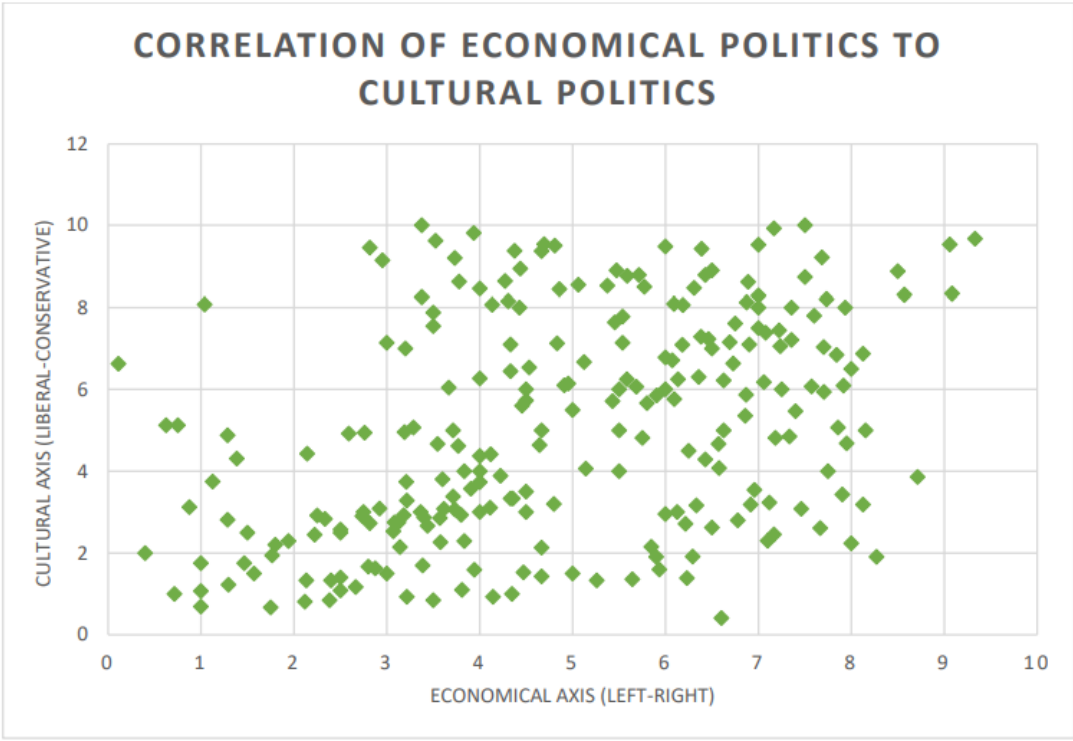

Relationship between European regions (eastwest) and distribution of parties on left-right axis (left-center-right).
70
60
50
40
30
20
10
0
38
23
42
29
59
52
east
west
center
left
right

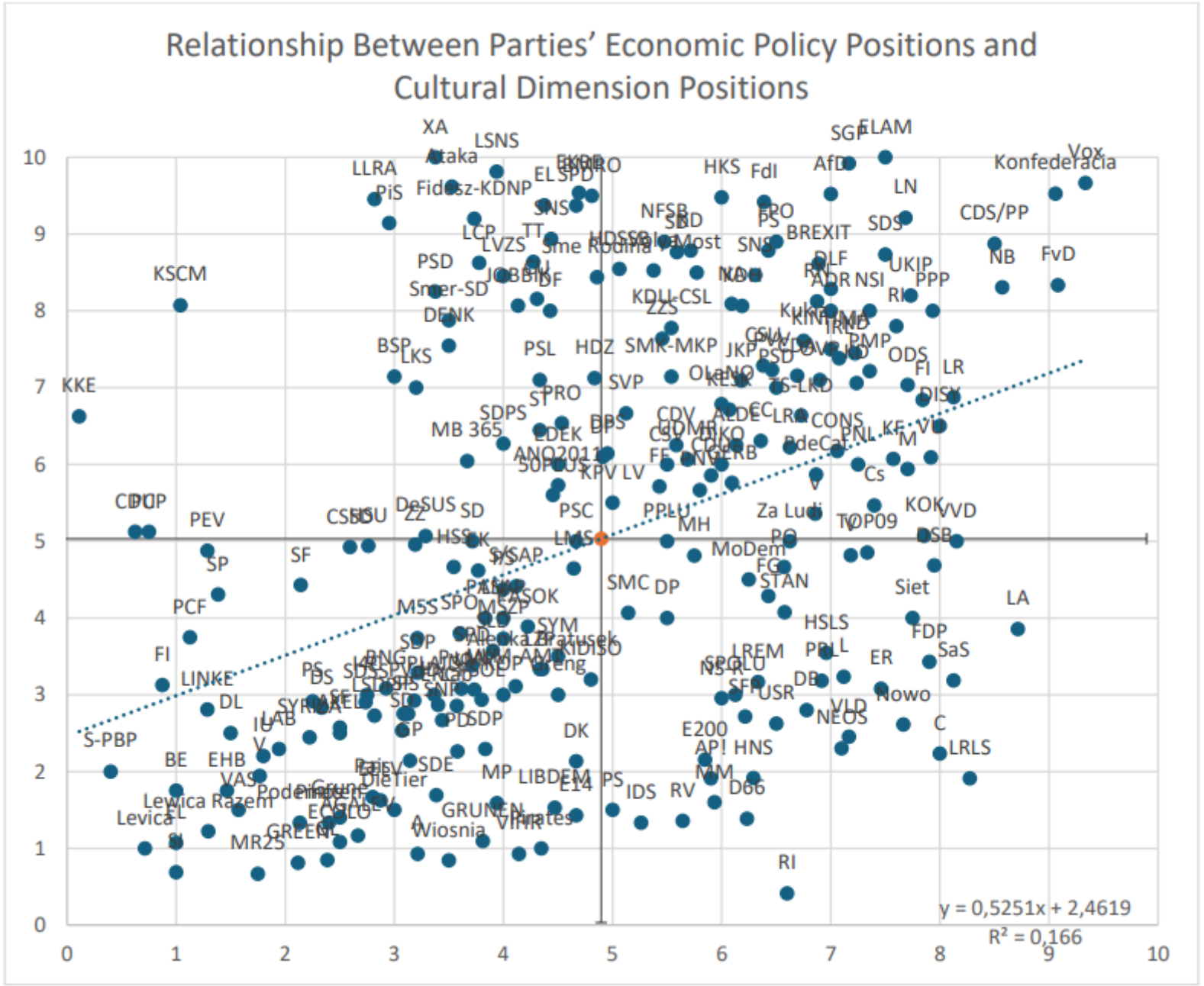

DISTRIBUTION OF PARTIES
center
left
right
WEST
29
59
52
EAST
38
23
42

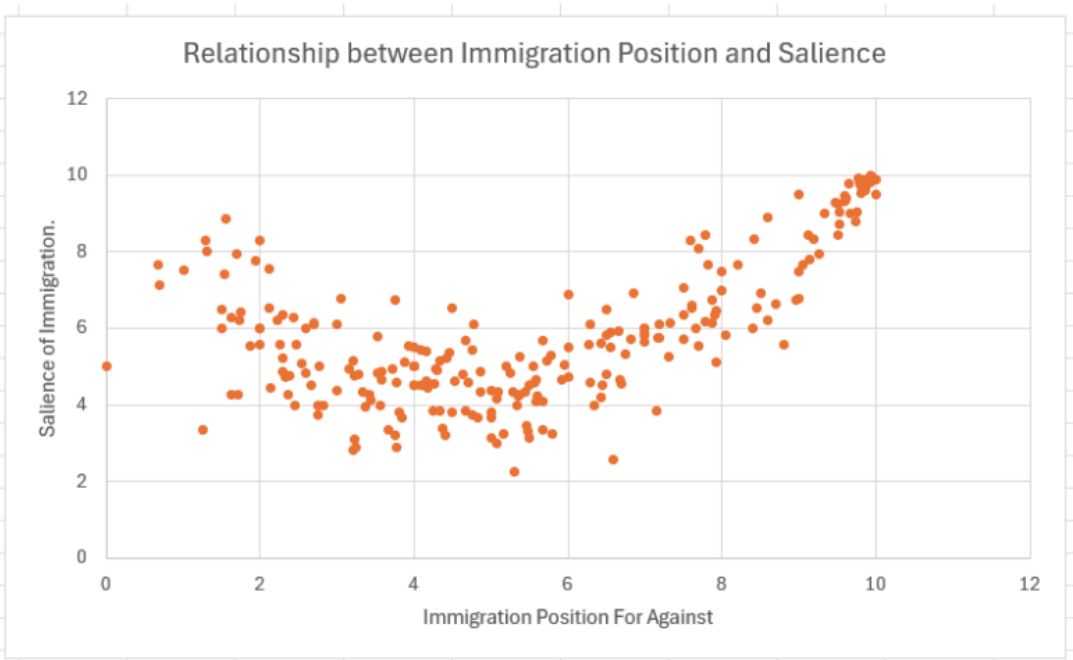

Relationship Between European Regions and Parties' Positions on the Left-Right Axis
east
22,33%
36,89%
40,78%
west
42,14%
20,71%
37,14%
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%
left
center
right

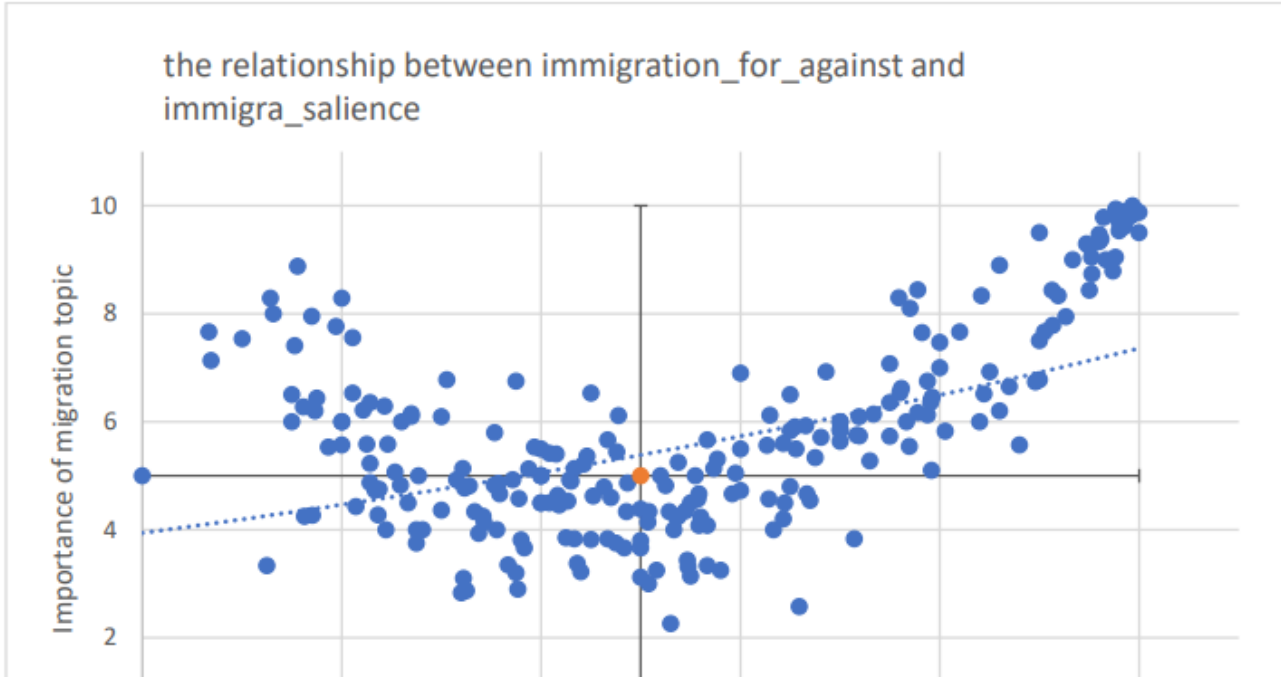

Relationship Between Economic and Cultural Positions
galtan
lrecon
10
1
0,1
0
1
2
3
4
5
6
7
8
9
10
0.84210527
1.1666666
1.5294118
1.4285715
1.5
1.3846154
1.0714285
1.5
1.5
1.4
1.2222222
1
0.9285714
1
0.8125
0.41176471
0.6875
1.3333334
1.0952381
0.9285714
galtan
1.3333334
1.0833334
1.3571428
0.84615386
0.66666669

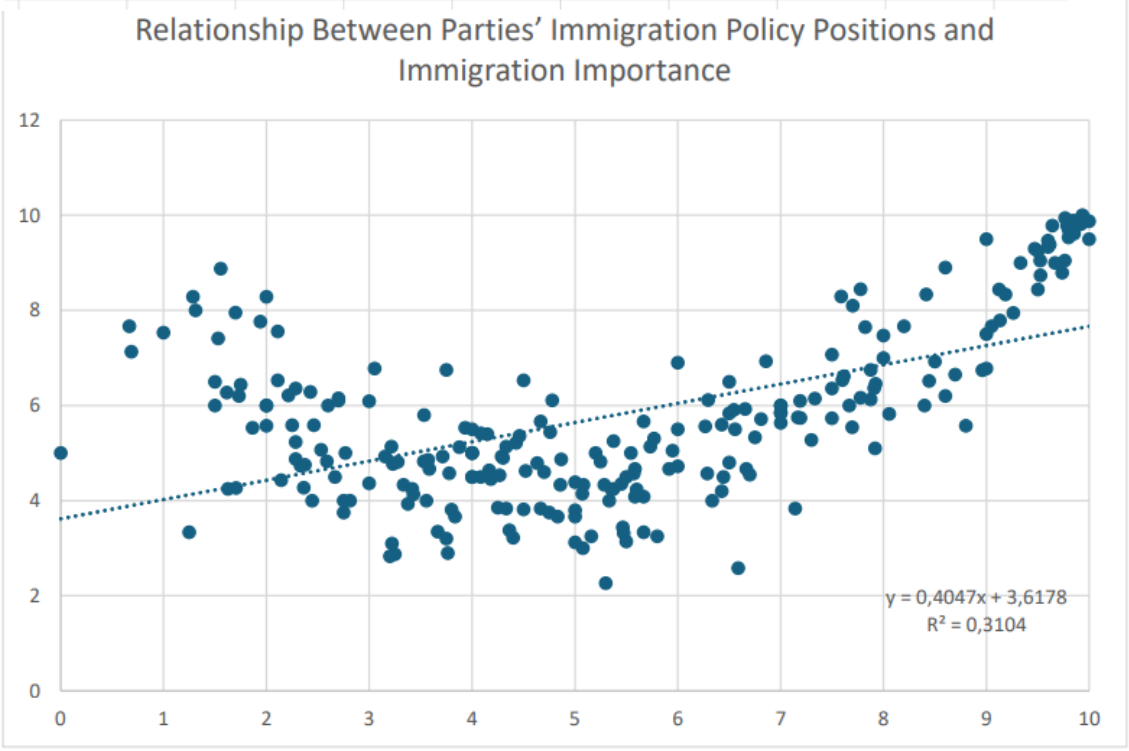

12
10
8
6
4
2
0
0
2
4
6
8
10

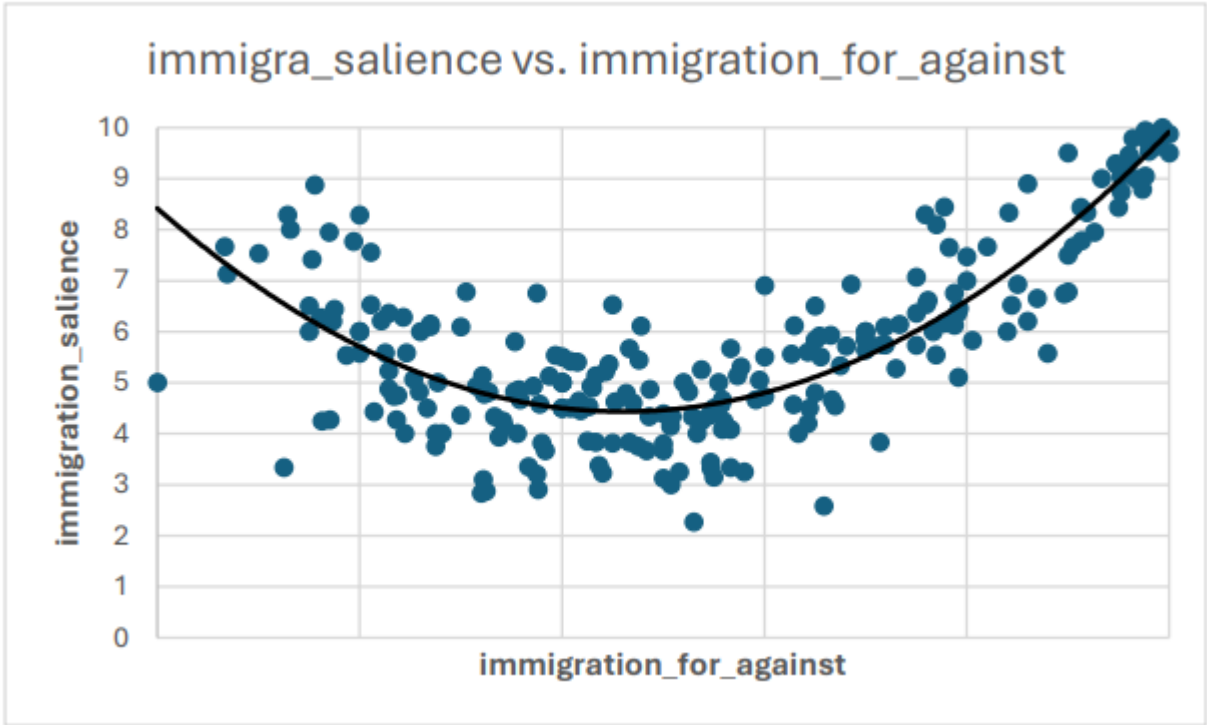

CORRELATION OF ECONOMICAL POLITICS TO CULTURAL POLITICS
CULTURAL AXIS (LIBERAL-CONSERVATIVE)
ECONOMICAL AXIS (LEFT-RIGHT)
12
10
8
6
4
2
0
0
1
2
3
4
5
6
7
8
9
10

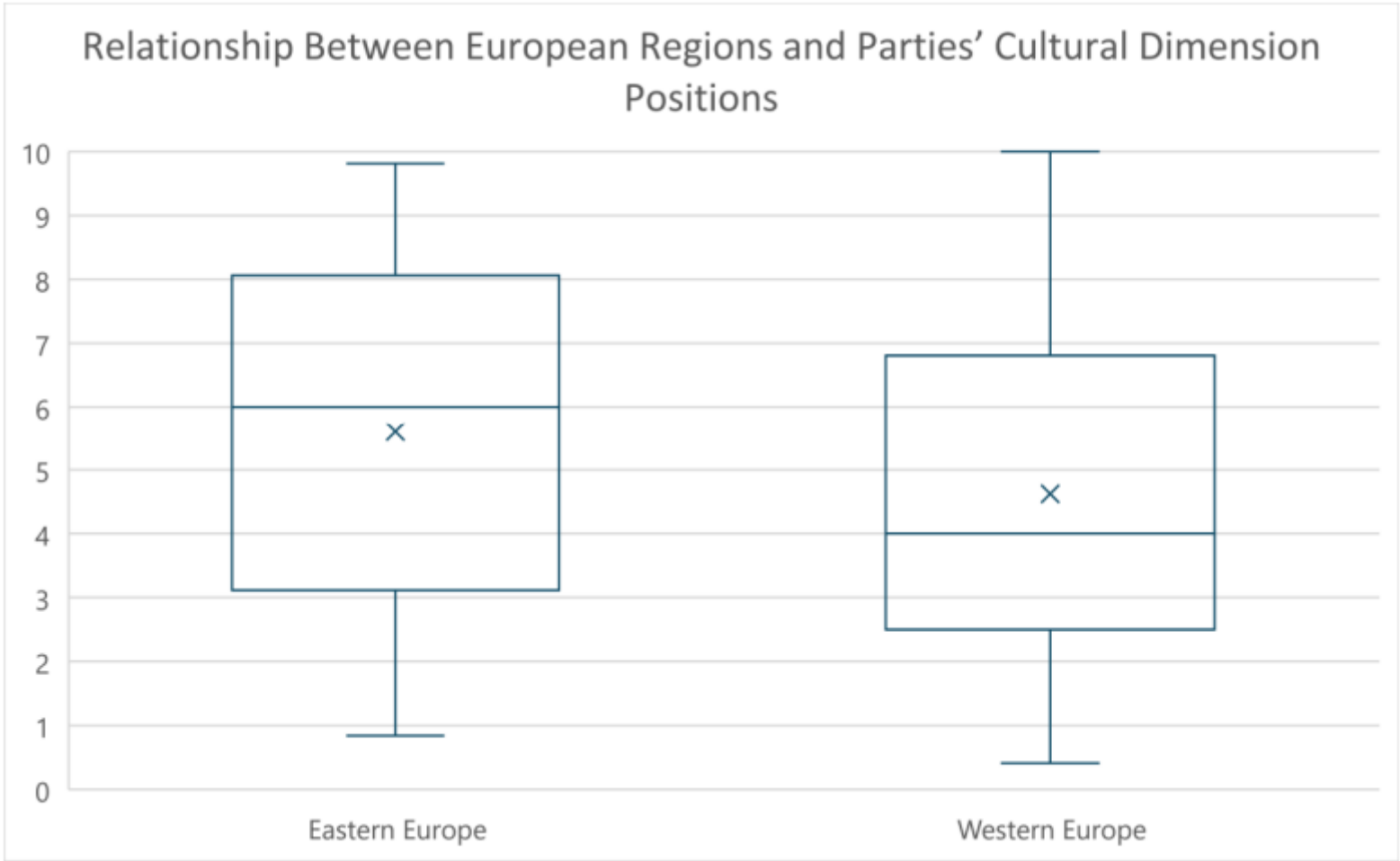

Relationship Between Parties' Economic Policy Positions and Cultural Dimension Positions
y = 0,5251x + 2,4619
R² = 0,166
0
1
2
3
4
5
6
7
8
9
10
XA
LSNS
Ataka
LLRA
PiS
Fidesz-KDNP
ELAM
SGP
Vox
Konfederacja
HKS
FdI
AfD
LN
CDS/PP
NB
FvD
KSCM
PSD
Smer-SD
DENK
BSP
LKS
KKE
PSL
HDZ
SMK-MKP
SVP
SDPS
MB 365
PEV
SF
SP
PCF
FI
LINKE
DL
S-PBP
BE
EHB
Levica
Lewica Razem
MR25
Wiosna
Volt
GRUNEN
Piraci
DK
MP
LIBDEM
E14
PS
IDS
RV
D66
RI
Siet
LA
FDP
SaS
Nowo
C
LRLS
E200
HNS
NEOS
VLD
USR
DB
ER
LREM
SMC
DP
MoDem
STAN
PSC
Za Ludi
KOK
VVD
TOP09
DSB
Cs
ODS
KDU-CSL
ZZS
UKIP
PPP
NSI
DLF
BREXIT
SDS
Most
Sme Rodina
SNS
NFSB
PRO
AfD
FdI
HKS
ELAM
SGP
Vox
Konfederacja
CDS/PP
NB
FvD
LN


Relationship between Immigration Position and Salience
Salience of Immigration.
Immigration Position For Against
0
2
4
6
8
10
12


the relationship between immigration_for_against and immigra_salience
Importance of migration topic
2
4
6
8
10


Relationship Between Parties' Immigration Policy Positions and Immigration Importance
y = 0,4047x + 3,6178
R² = 0,3104
0
2
4
6
8
10
12


immigra_salience vs. immigration_for_against
immigration_salience
immigration_for_against
0
1
2
3
4
5
6
7
8
9
10

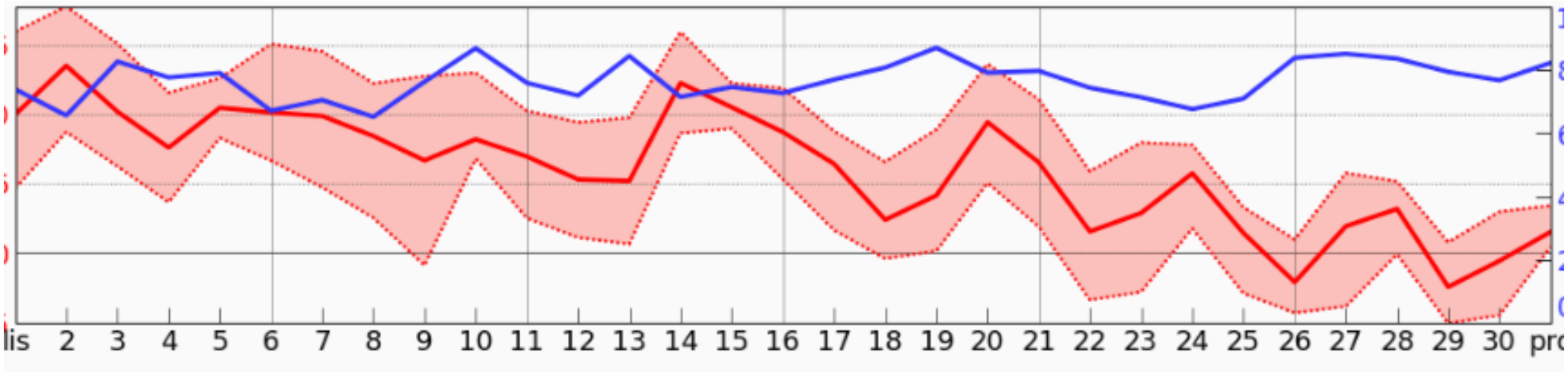

Relationship Between European Regions and Parties' Cultural Dimension Positions
10
9
8
7
6
5
4
3
2
1
0
Eastern Europe
Western Europe

Time data

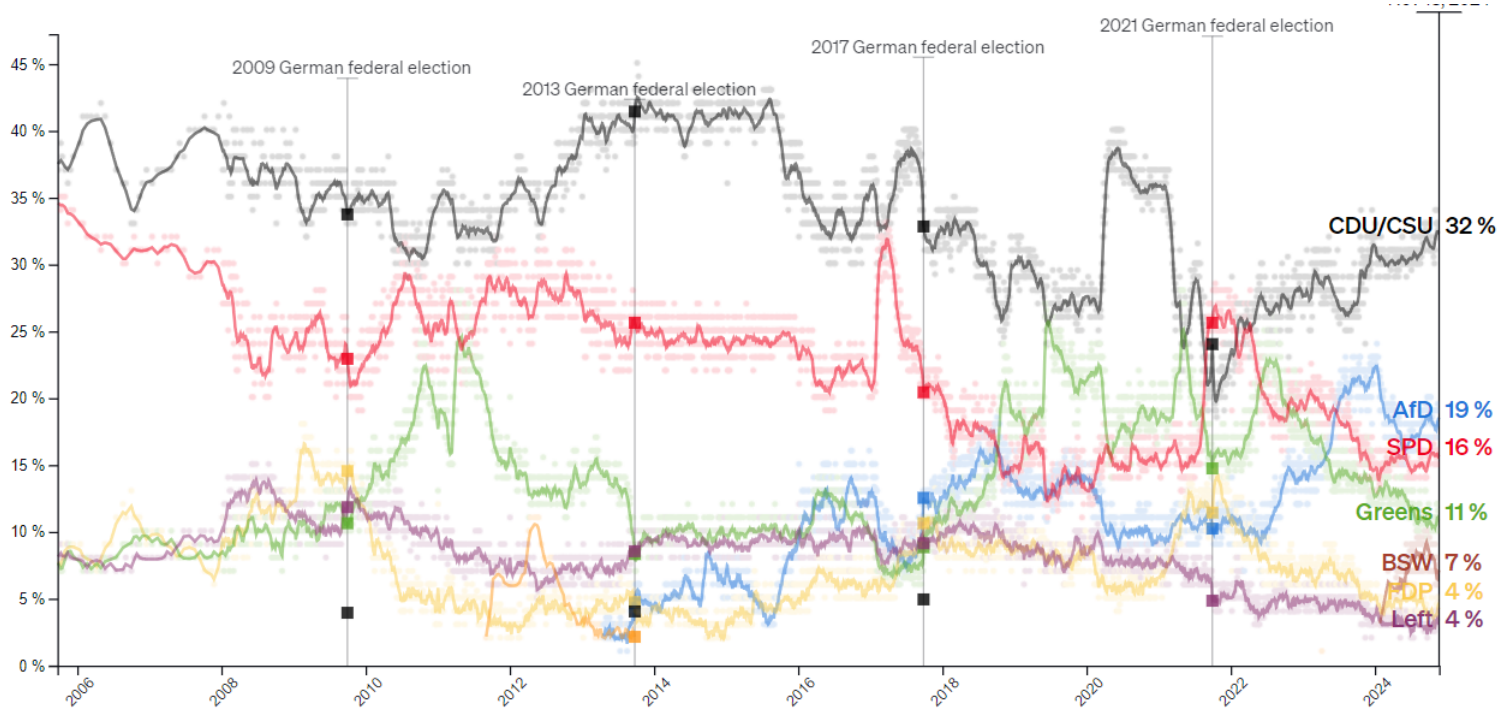
- Continuity - temperature, party support
- Discontuinity – elections

- Data: Annualy, monthly, daily, (hours, minutes, seconds)
  - Iregular: elections, exams, conflicts

- Easy to find spurios correlation


lis 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 pr

YTD 6M 1Y 3Y 5Y 10Y All
21 Oct 2
35,000
30,000
25,000
20,000
15,000
10,000
5,000
31 Dec 2011
31 Dec 2013
31 Dec 2015
31 Dec 2017
31 Dec 2019
31 Dec
iShares MSCI ACWI UCITS ETF (USD)
MSCI ACWI Index (USD)

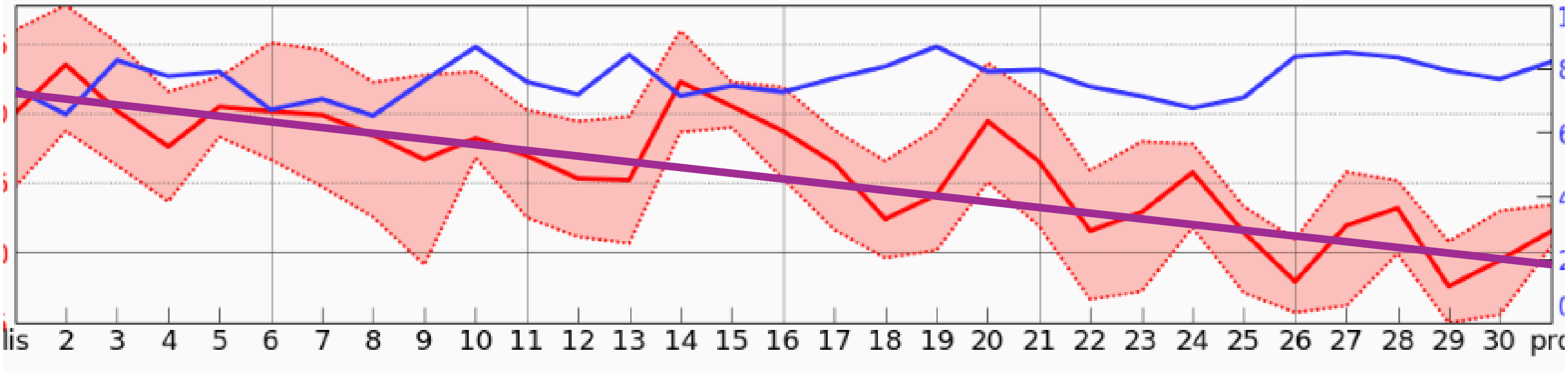

2009 German federal election
2013 German federal election
2017 German federal election
2021 German federal election
45 %
40 %
35 %
30 %
25 %
20 %
15 %
10 %
5 %
0 %
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
CDU/CSU 32 %
AfD 19 %
SPD 16 %
Greens 11 %
BSW 7 %
FDP 4 %
Left 4 %

Three elements of Time Data

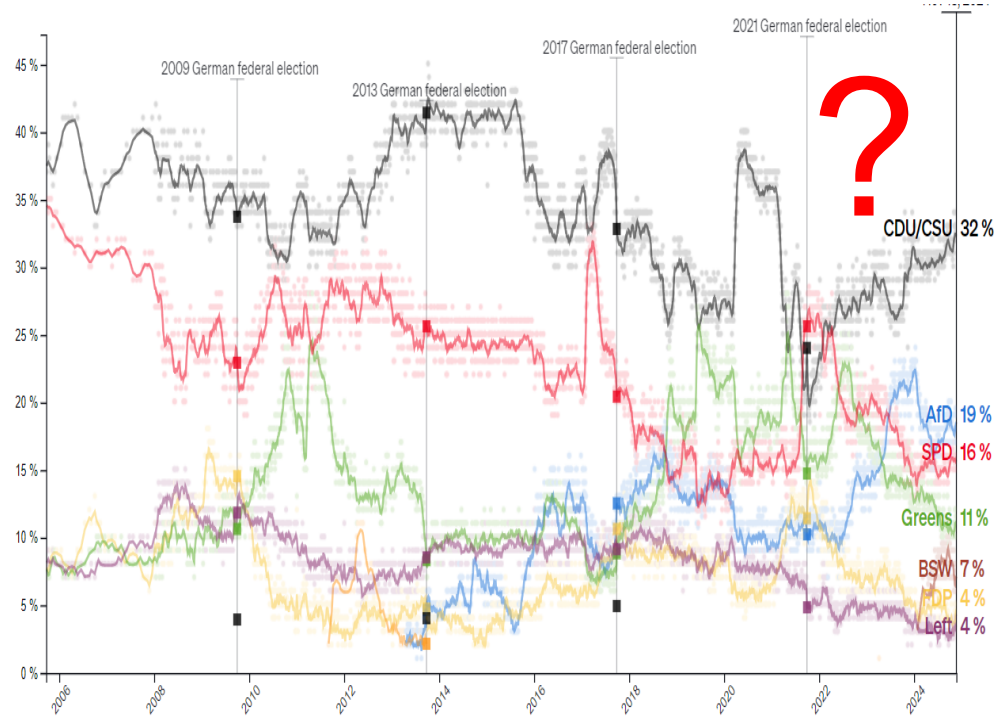
- Trend – the overal direction of evolution
  - E.g. Global warming, increasing prices
- Seasonality – regular changes in data
  - Wheather, unemployment, activity during day
- White noise

Trend

- Usually the most important things
- Allows us to say what is happening
- Forecast (be cautius with that)
- The main source of spurious correlation

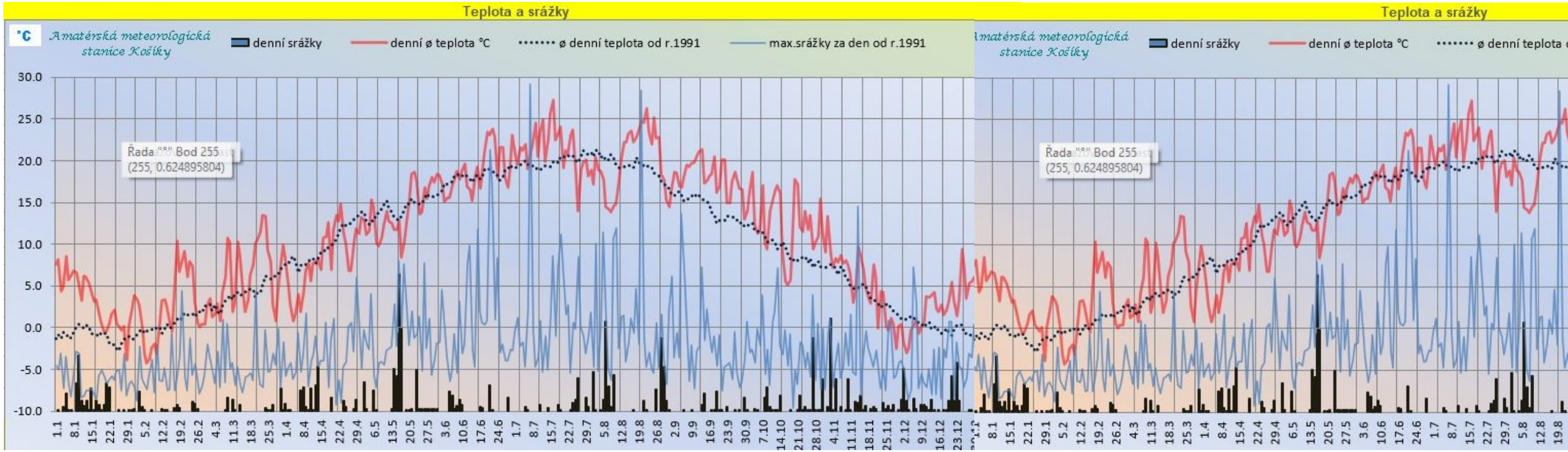

lis 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 pr

YTD 6M 1Y 3Y 5Y 10Y All
21 Oct 2011 to 18 Nov 2024
35,000
30,000
25,000
20,000
15,000
10,000
5,000
31 Dec 2011
31 Dec 2013
31 Dec 2015
31 Dec 2017
31 Dec 2019
31 Dec 2021
31 Dec 2023
iShares MSCI ACWI UCITS ETF (USD)
MSCI ACWI Index (USD)


2009 German federal election
2013 German federal election
2017 German federal election
2021 German federal election
?
CDU/CSU 32 %
AfD 19 %
SPD 16 %
Greens 11 %
BSW 7 %
FDP 4 %
Left 4 %
45 %
40 %
35 %
30 %
25 %
20 %
15 %
10 %
5 %
0 %
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024

Seasonality

- Usually the most anoying aspect of time data
- The solution is to look on the whole season
  - The detail is lost in such case


Teplota a srážky
°C
Amatérská meteorologická stanice Košíky
denní srážky
denní ø teplota °C
ø denní teplota od r.1991
max.srážky za den od r.1991
Řada "5" Bod 255
(255, 0.624895804)
30.0
25.0
20.0
15.0
10.0
5.0
0.0
-5.0
-10.0
1.1
8.1
15.1
22.1
29.1
5.2
12.2
19.2
26.2
4.3
11.3
18.3
25.3
1.4
8.4
15.4
22.4
29.4
6.5
13.5
20.5
27.5
3.6
10.6
17.6
24.6
1.7
8.7
15.7
22.7
29.7
5.8
12.8
19.8
26.8
2.9
9.9
16.9
23.9
30.9
7.10
14.10
21.10
28.10
4.11
11.11
18.11
25.11
2.12
9.12
16.12
23.12

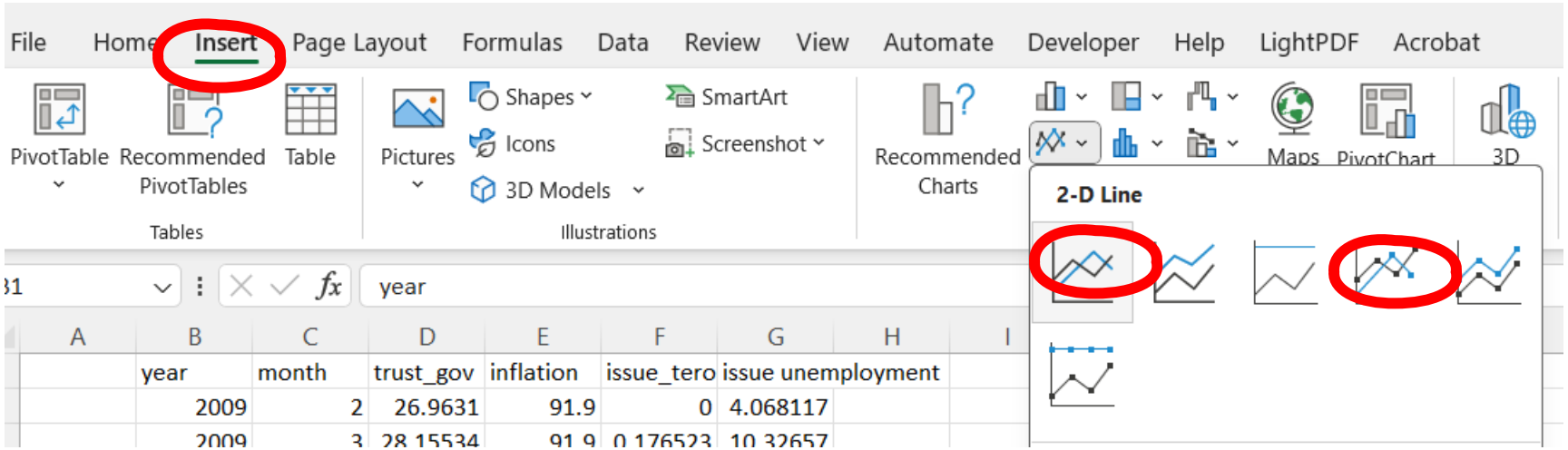
Teplota a srážky
Amatérská meteorologická stanice Košíky
denní srážky
denní ø teplota °C
Řada "5" Bod 255
(255, 0.624895804)
1.1
8.1
15.1
22.1
29.1
5.2
12.2
19.2
26.2
4.3
11.3
18.3
25.3
1.4
8.4
15.4
22.4
29.4
6.5
13.5
20.5
27.5
3.6
10.6
17.6
24.6
1.7
8.7
15.7
22.7
29.7
5.8
12.8
19.8

White noise

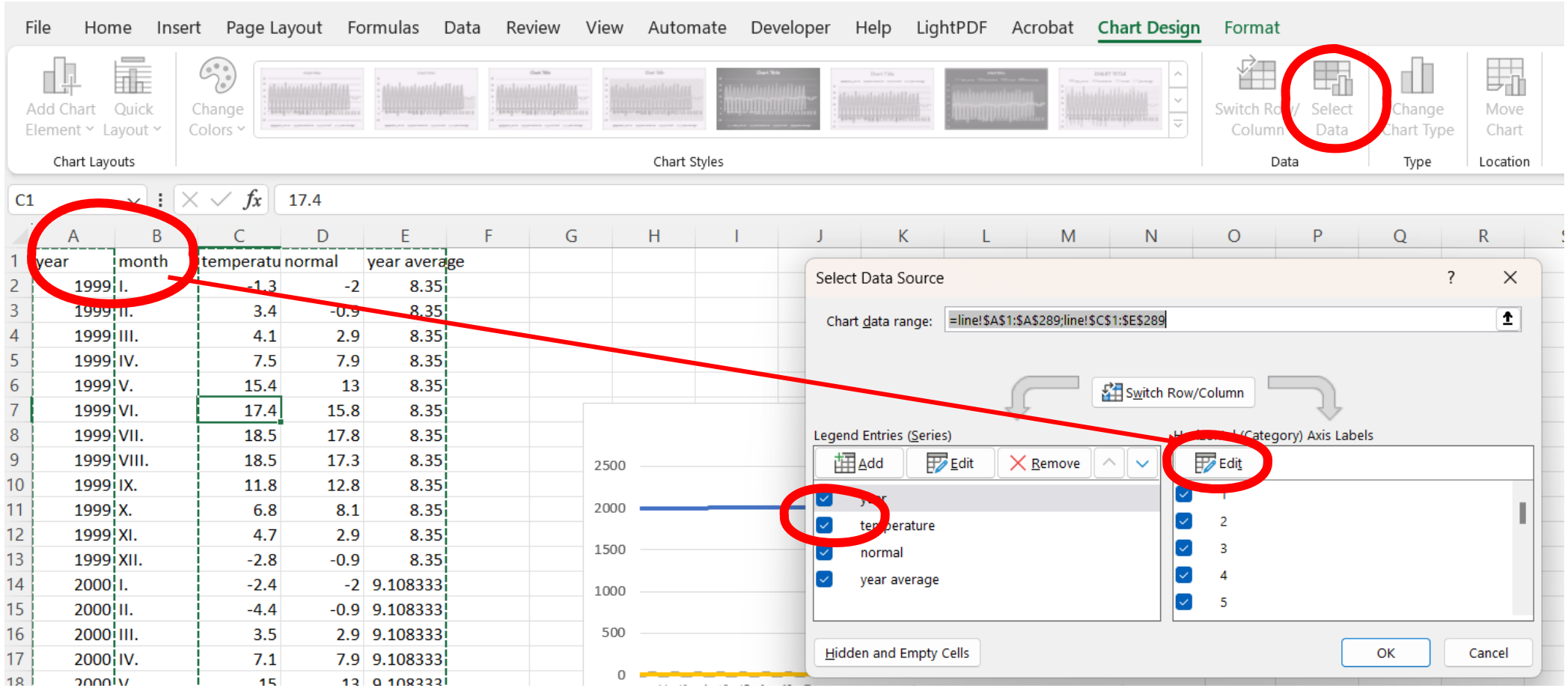
- Short term irregular deviations
- Important when we want to see impact of some event

- Make the general information hard to see
- Moving average – replace current value by average of neighbouring values
  - Usualy 3, 5 or 7
  - Depends on data (e.g. Monthly temperature)

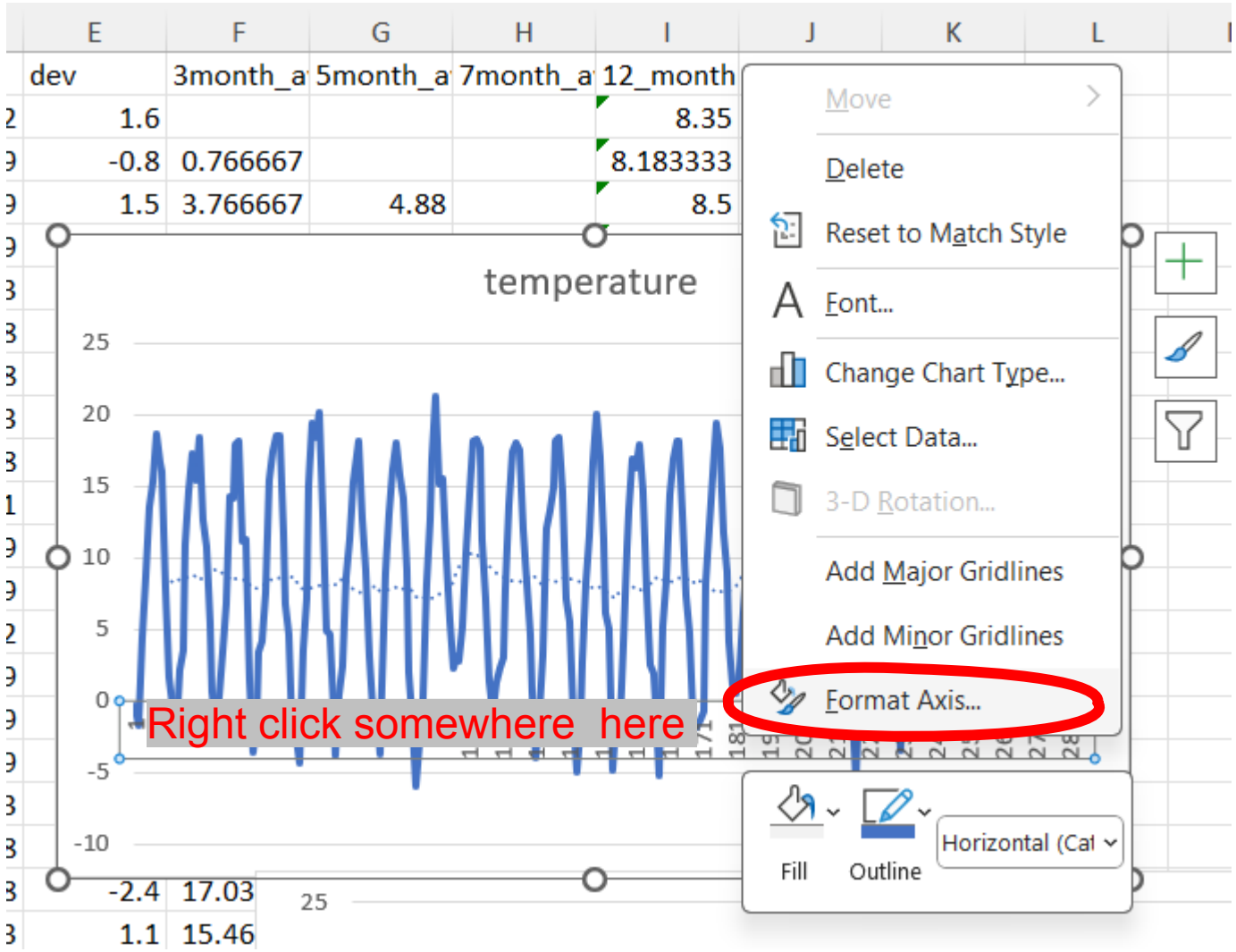
Plot of monthly temperature – line chart

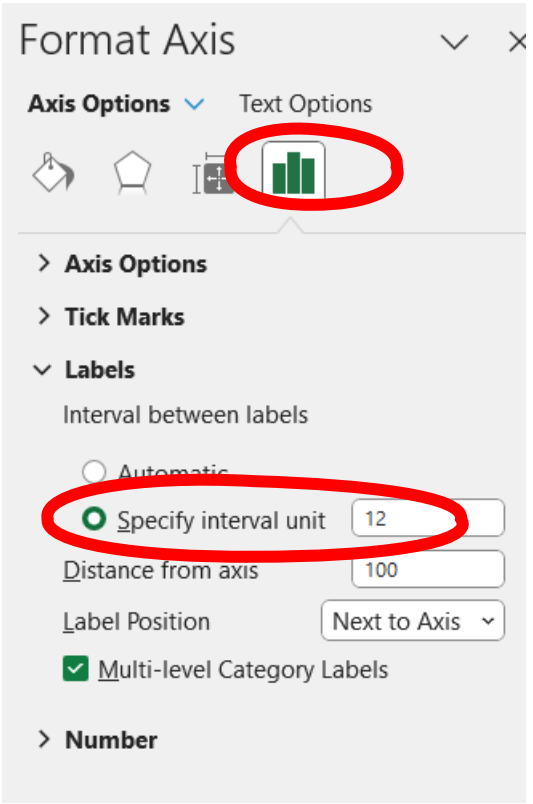


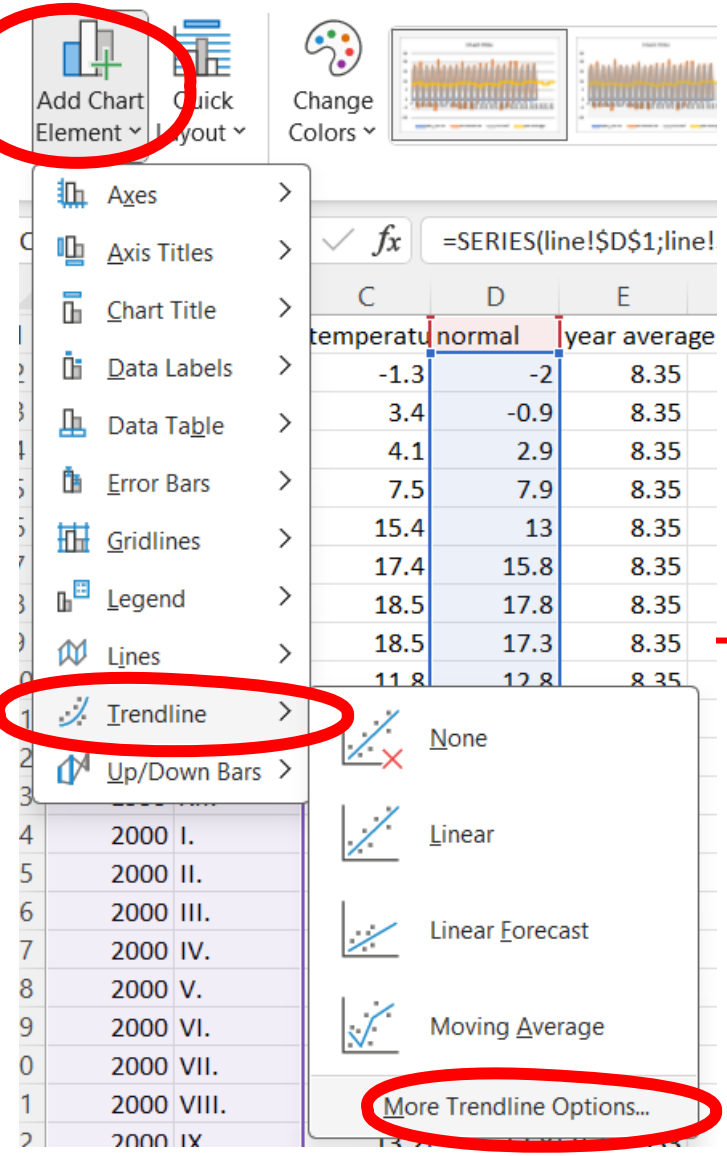
Change of labels and content

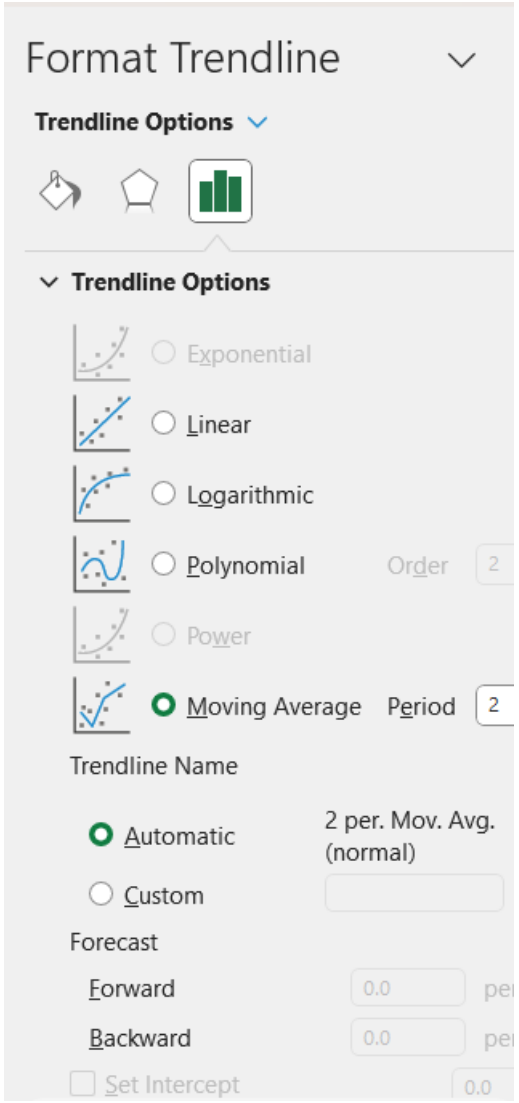


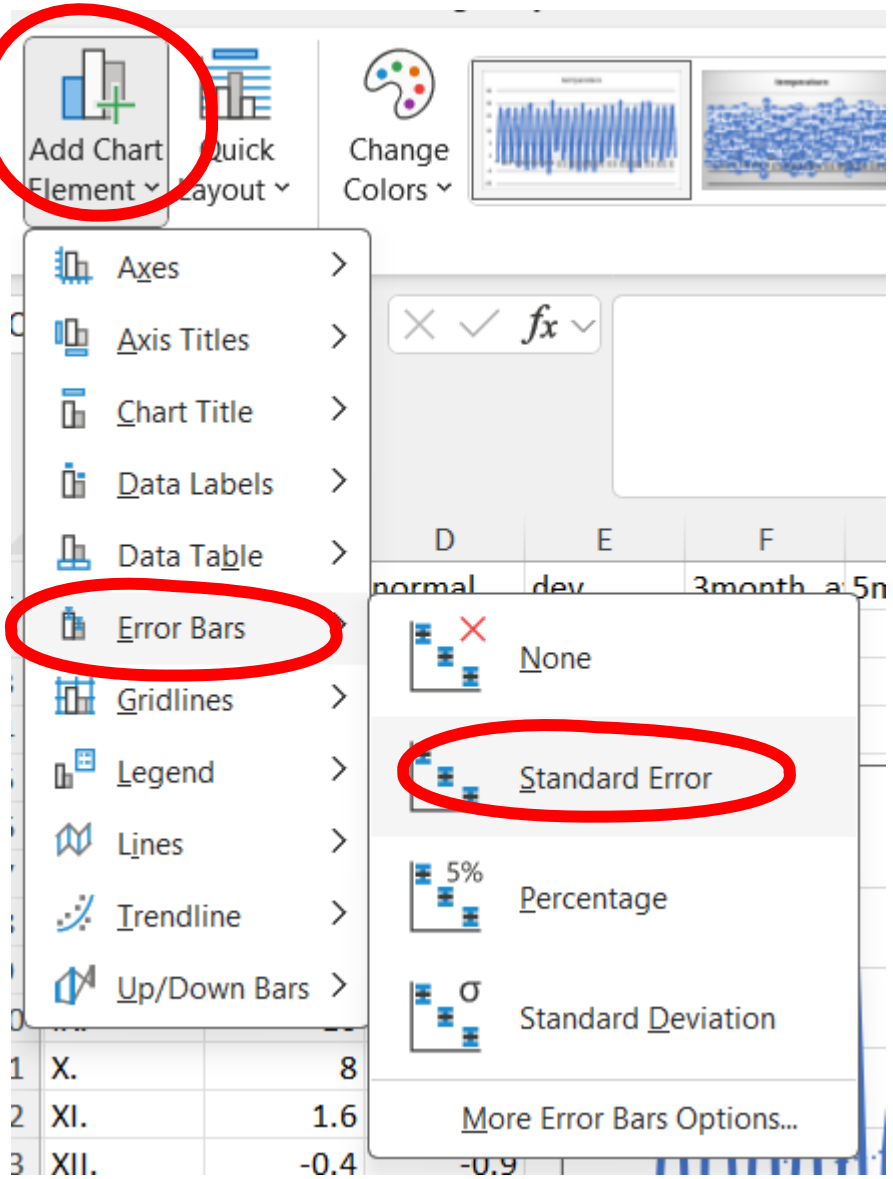
year	month	temperatu	normal	year average
1999	I.	-1.3	-2	8.35
1999	II.	3.4	-0.9	8.35
1999	III.	4.1	2.9	8.35
1999	IV.	7.5	7.9	8.35
1999	V.	15.4	13	8.35
1999	VI.	17.4	15.8	8.35
1999	VII.	18.5	17.8	8.35
1999	VIII.	18.5	17.3	8.35
1999	IX.	11.8	12.8	8.35
1999	X.	6.8	8.1	8.35
1999	XI.	4.7	2.9	8.35
1999	XII.	-2.8	-0.9	8.35
2000	I.	-2.4	-2	9.108333
2000	II.	-4.4	-0.9	9.108333
2000	III.	3.5	2.9	9.108333
2000	IV.	7.1	7.9	9.108333


E
F
G
H
I
J
K
L
dev
3month_a
5month_a
7month_a
12_month
1.6
8.35
-0.8
0.766667
8.183333
1.5
3.766667
4.88
8.5
-2.4
17.03
1.1
15.46
temperature
25
20
15
10
5
0
-5
-10
25
Right click somewhere here
Move
Delete
Reset to Match Style
Font...
Change Chart Type...
Select Data...
3-D Rotation...
Add Major Gridlines
Add Minor Gridlines
Format Axis...
Fill
Outline
Horizontal (Cat


Format Axis
Axis Options
Text Options
Axis Options
Tick Marks
Labels
Interval between labels
Automatic
Specify interval unit
12
Distance from axis
100
Label Position
Next to Axis
Multi-level Category Labels
Number


Add Chart Element
Quick Layout
Change Colors
Axes
Axis Titles
Chart Title
Data Labels
Data Table
Error Bars
Gridlines
Legend
Lines
Trendline
Up/Down Bars
None
Linear
Linear Forecast
Moving Average
More Trendline Options...
=SERIES(line!D1;line!
C
D
E
temperatu
normal
year average
-1.3
-2
8.35
3.4
-0.9
8.35
4.1
2.9
8.35
7.5
7.9
8.35
15.4
13
8.35
17.4
15.8
8.35
18.5
17.8
8.35
18.5
17.3
8.35
2000 I.
2000 II.
2000 III.
2000 IV.
2000 V.
2000 VI.
2000 VII.
2000 VIII.
2000 IX


Format Trendline
Trendline Options
Trendline Options
Exponential
Linear
Logarithmic
Polynomial
Order
2
Power
Moving Average
Period
2
Trendline Name
Automatic
2 per. Mov. Avg. (normal)
Custom
Forecast
Forward
0.0
Backward
0.0
Set Intercept
0.0

Just for the assignment

- Error bars
  - When the data are based on representative sample
  - There is uncertainity around obtained number
  - Standard error: interval where the true value is probably located