When is Premium Riskier Than Loss?

Stephen Mildenhall and David Wright

May 2021

Live Poll Question

When did the hardest market of the last one hundred years occur?

a. 1929-31 during the great depression
b. 1939-45 during WW2
c. 1973-74 during “stagflation”
d. 1984-86 during the LMX spiral
e. 2000-02 during WTC, the dot com bust, etc.

Answer Slide

Live Poll Question

Historically, hard markets have coincided with

1. Bad catastrophe losses, such as Irma, Katrina and Andrew
2. Cumulative reserve inadequacy
3. Raging inflation

Answers

a. 1 only
b. 2 only
c. 3 only
d. 1 and 2
e. 2 and 3

Answer Slide

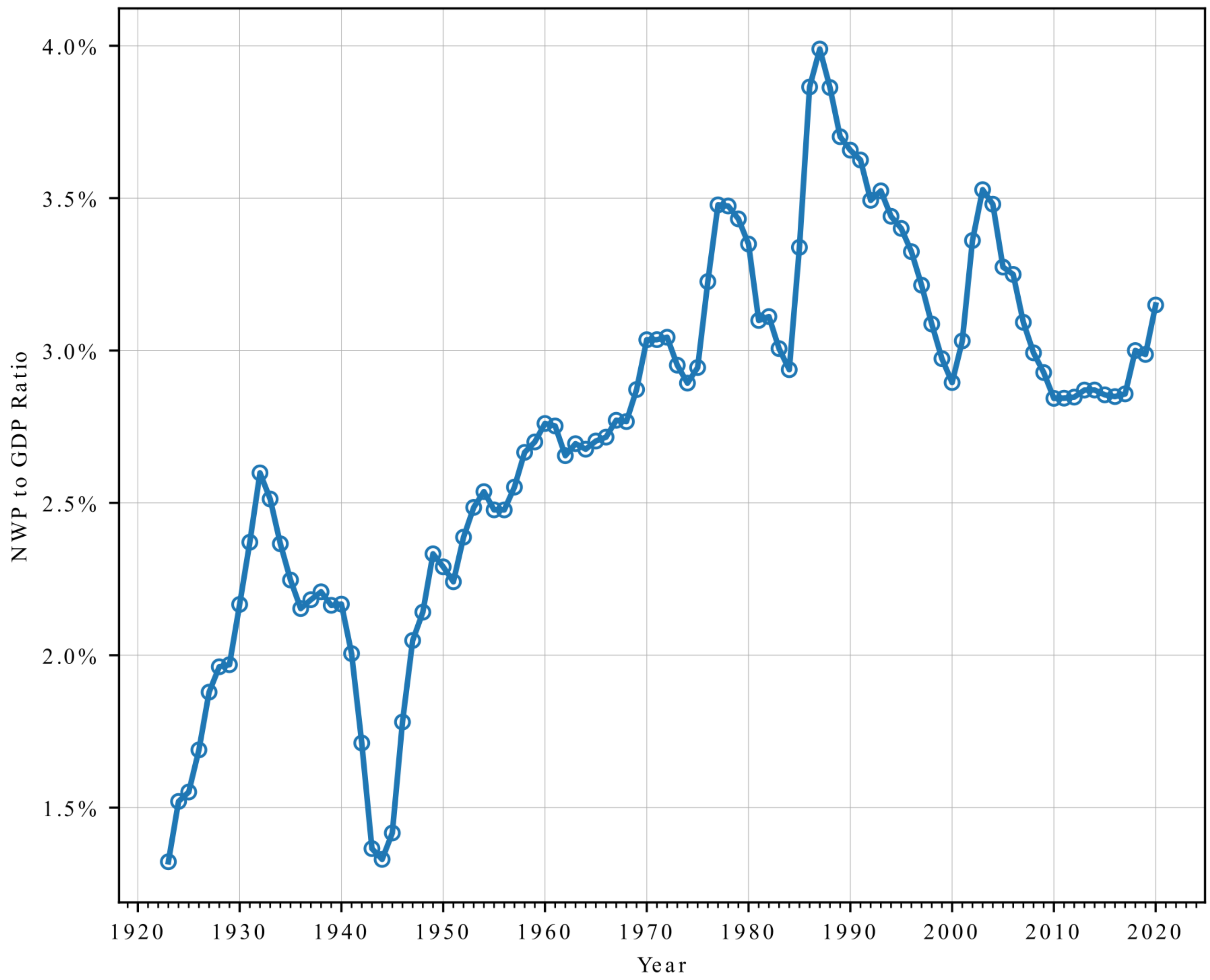
Live Poll Question

The last market-wide hard market occurred

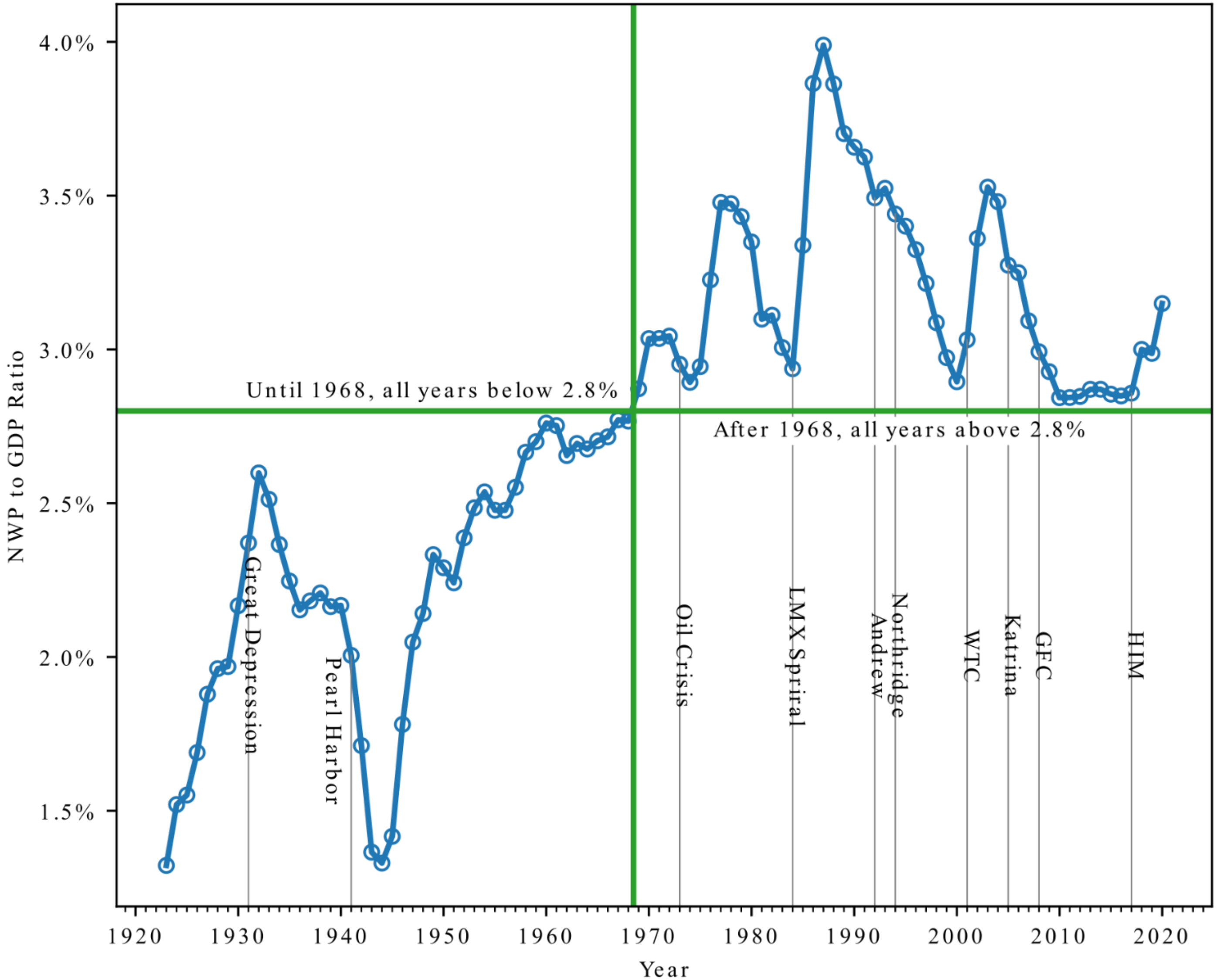
a. 2001 post-WTC
b. 2005 post-Katrina
c. 2008 post-GFC
d. 2012 post-Sandy
e. 2017 post-Irma

Answer Slide

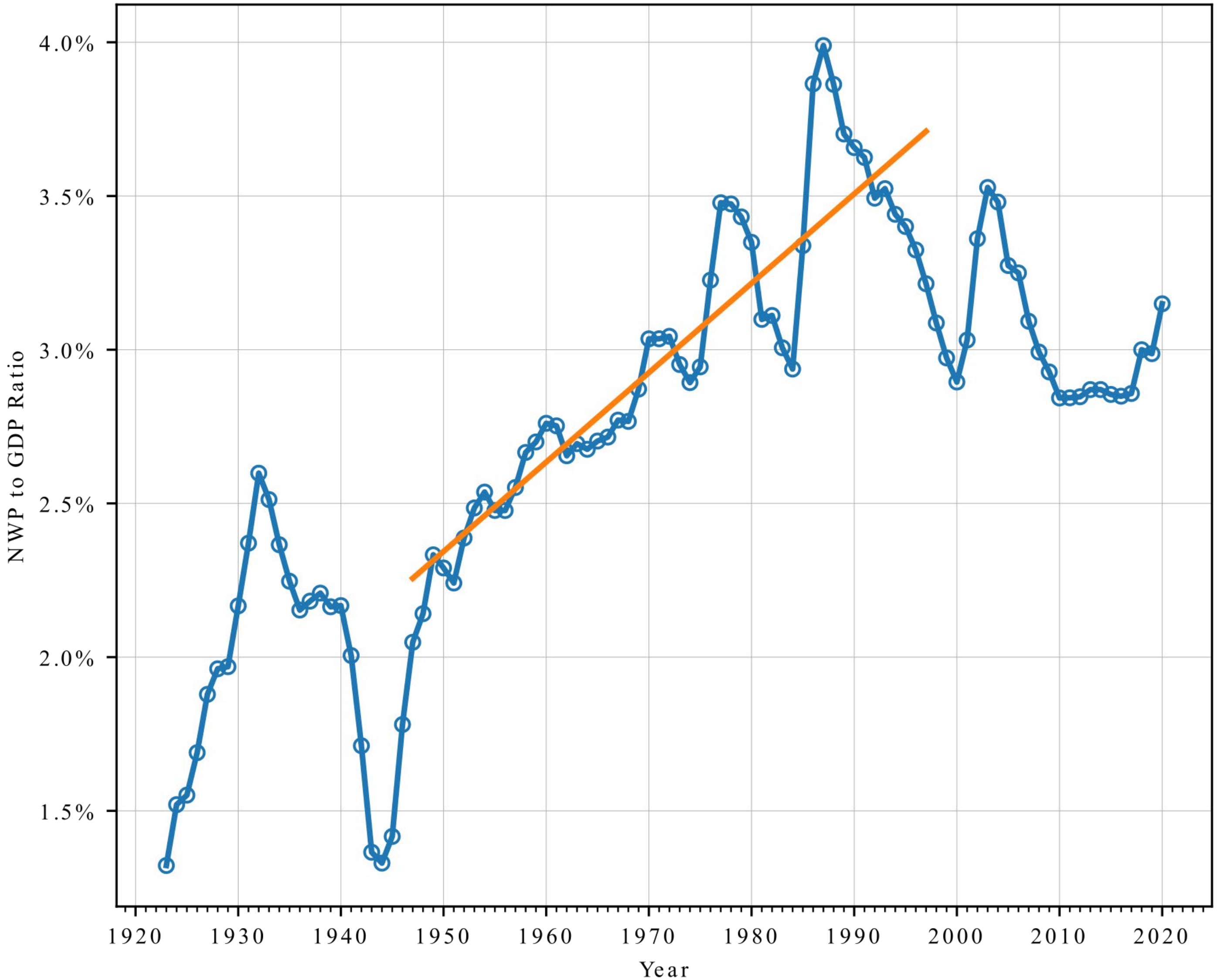
Premium to GDP Ratio



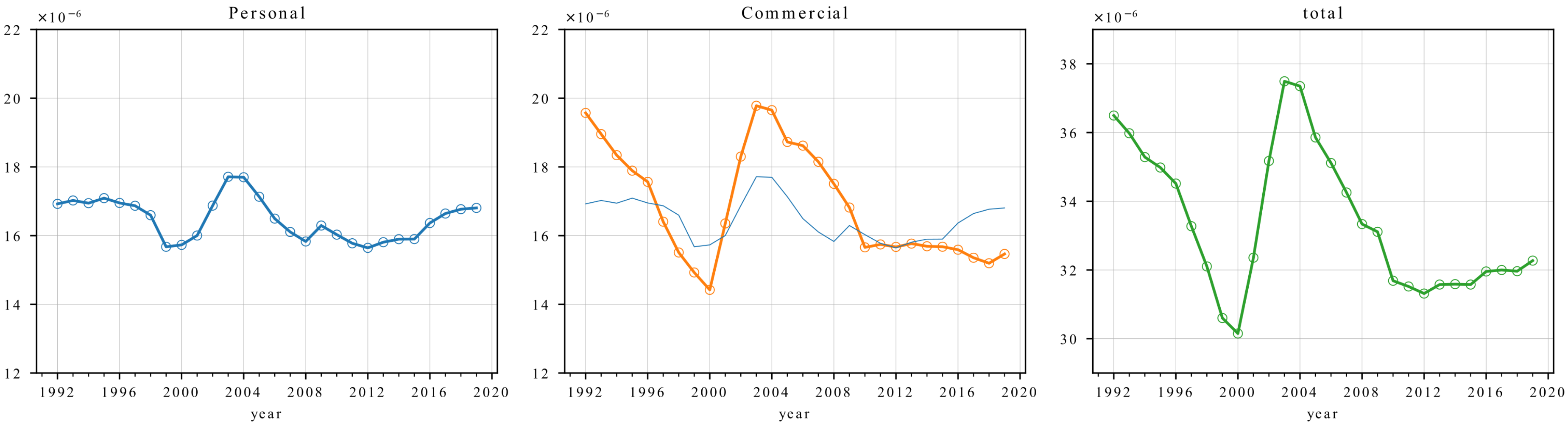
Premium to GDP Ratio
1968 Watershed



Premium to GDP Ratio
Cyclical Growth Between 1947 and 1997

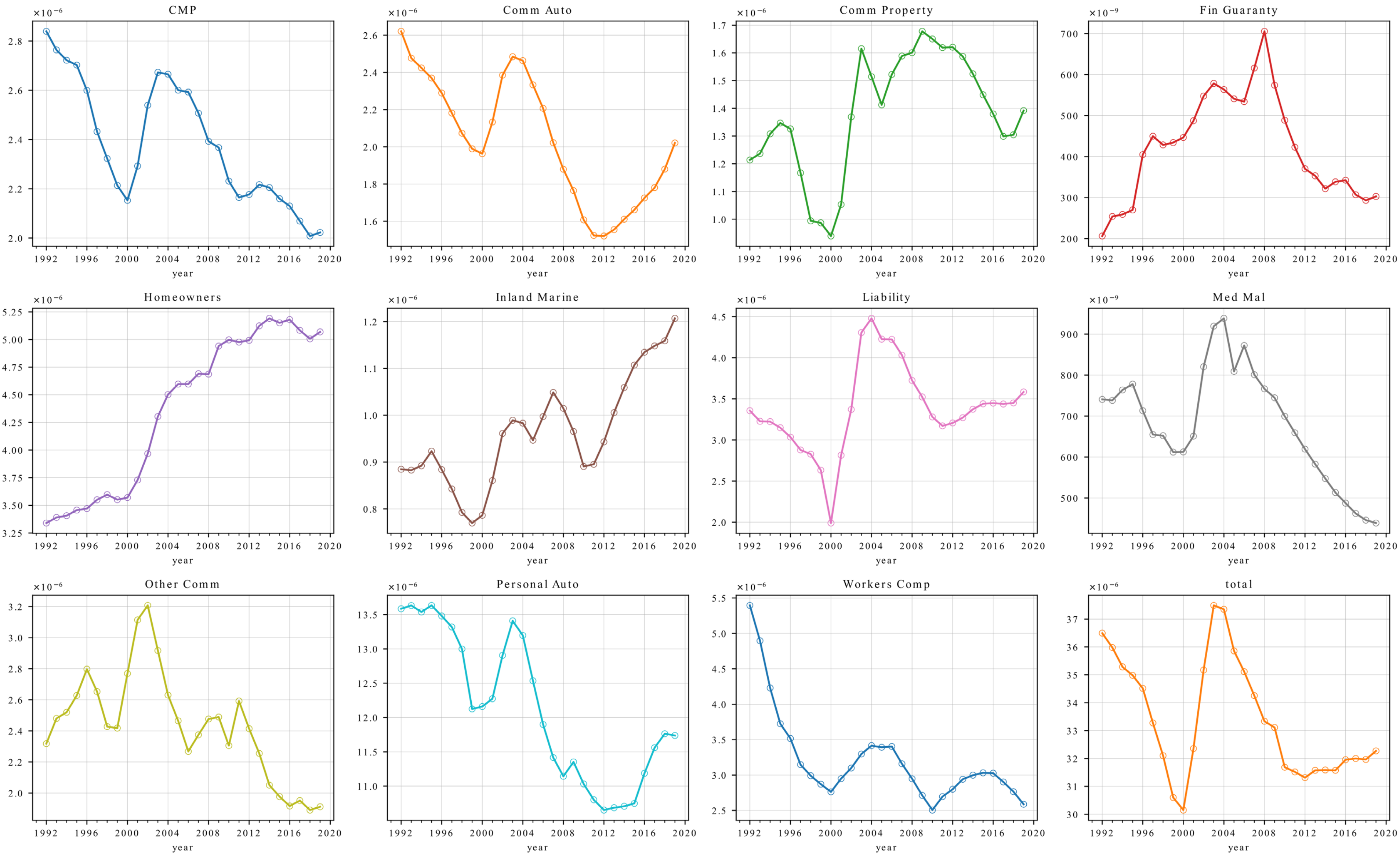


The Underwriting Cycle Is Driven by Commercial Lines



Premium to GDP for personal lines vs. commercial shows the cycle is more driven by commercial

Calm Surface Masks Inner Turmoil



Live Poll Question

Which line of business has seen the **fastest** cumulative premium growth since 1992?

a. Personal Auto
b. Commercial Auto
c. Workers Compensation
d. Homeowners
e. Medical Malpractice

Answer Slide

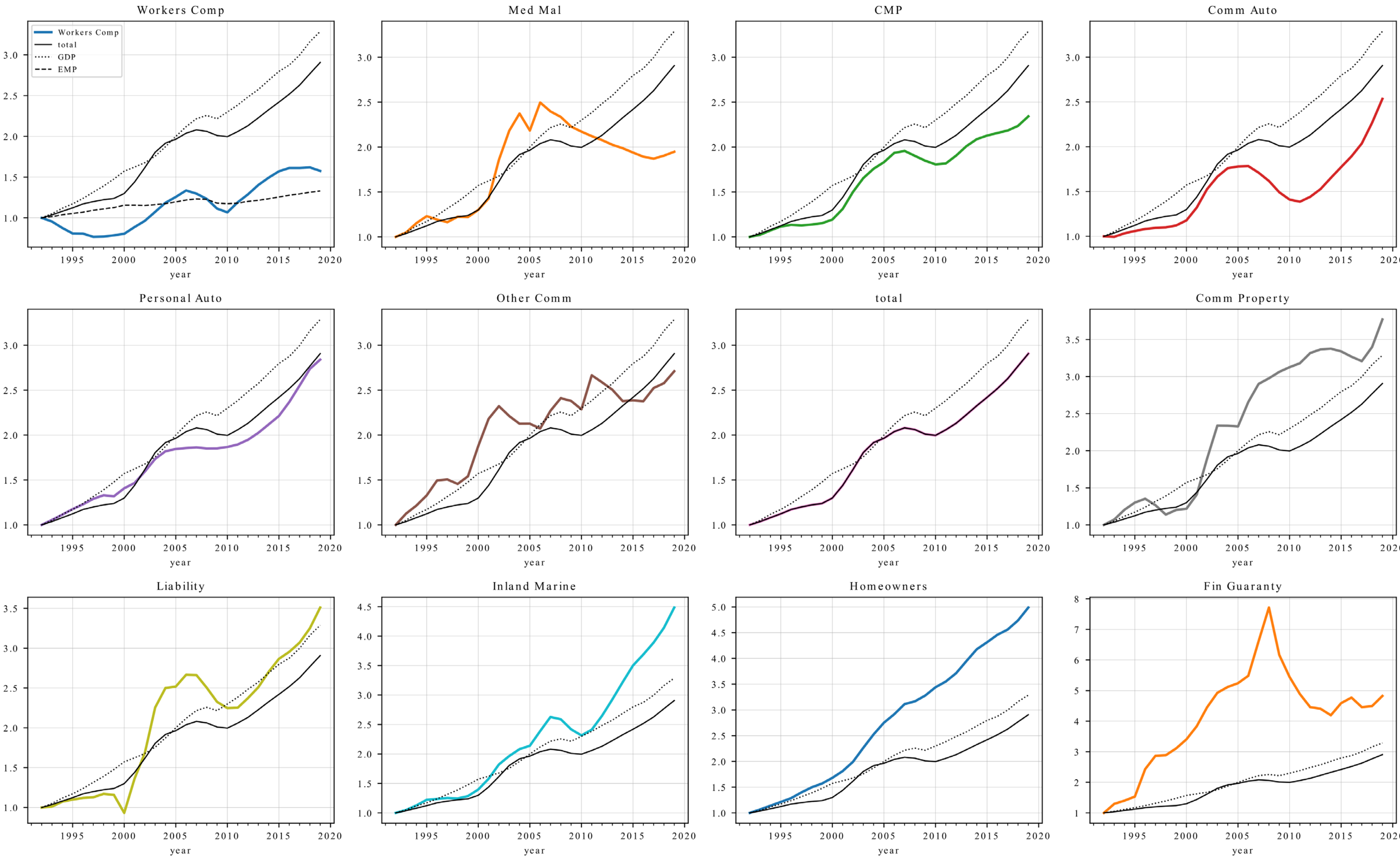
Live Poll Question

Which line of business has seen the **slowest** cumulative premium growth since 1992?

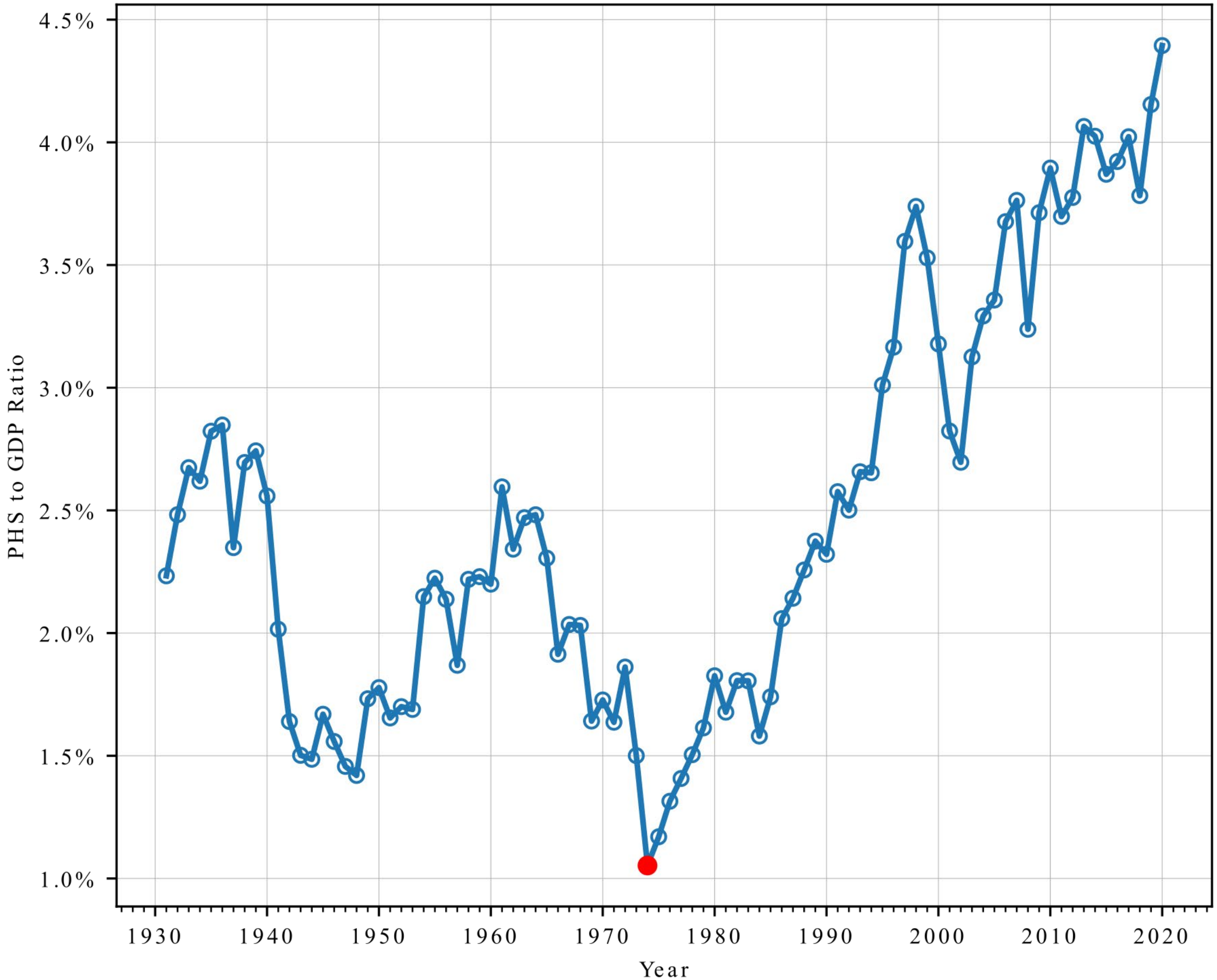
a. Personal Auto
b. CMP
c. Workers Compensation
d. Inland Marine
e. Medical Malpractice

Answer Slide

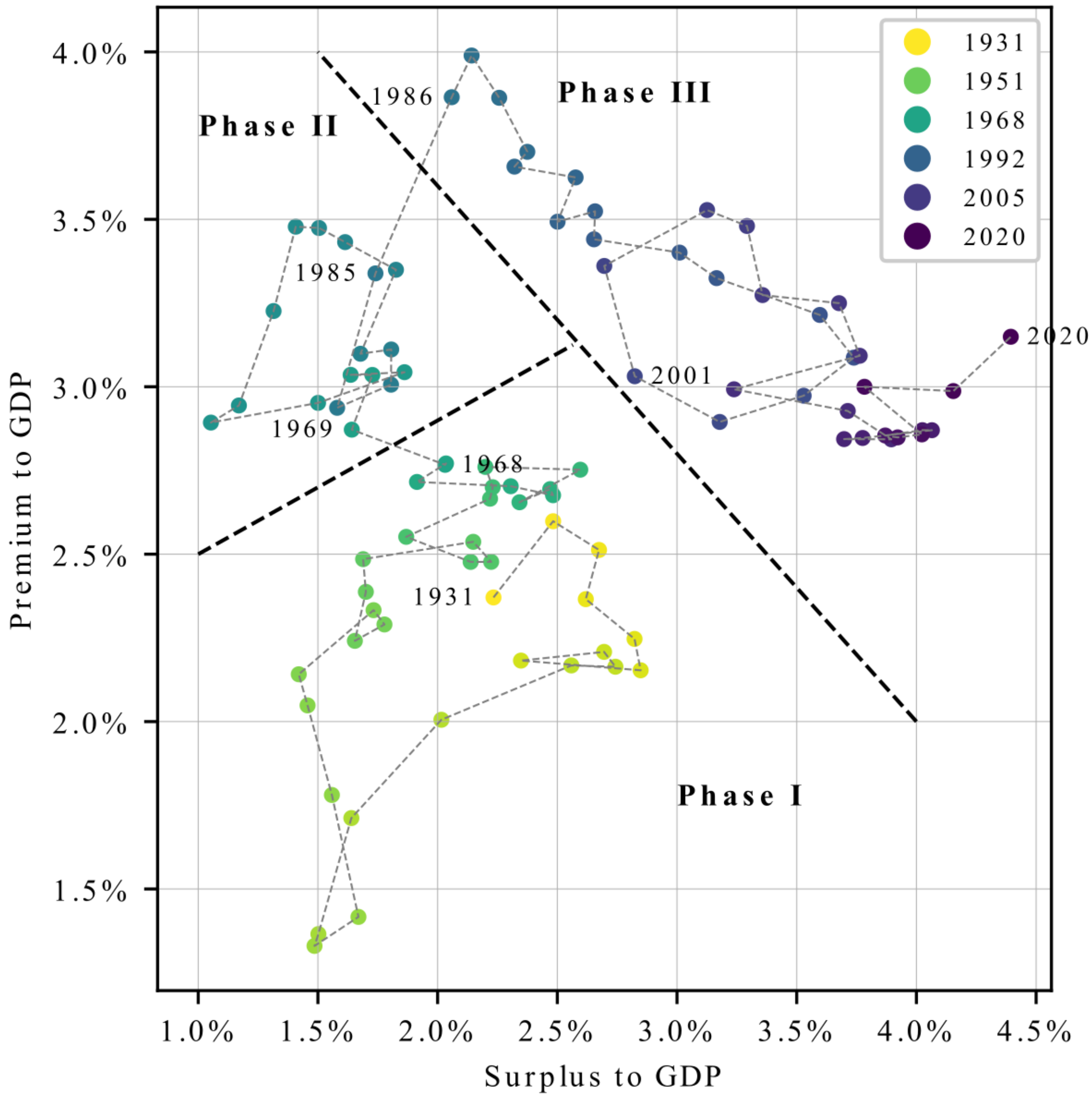
Premium and GDP Growth Since 1992 (1992=1.0)



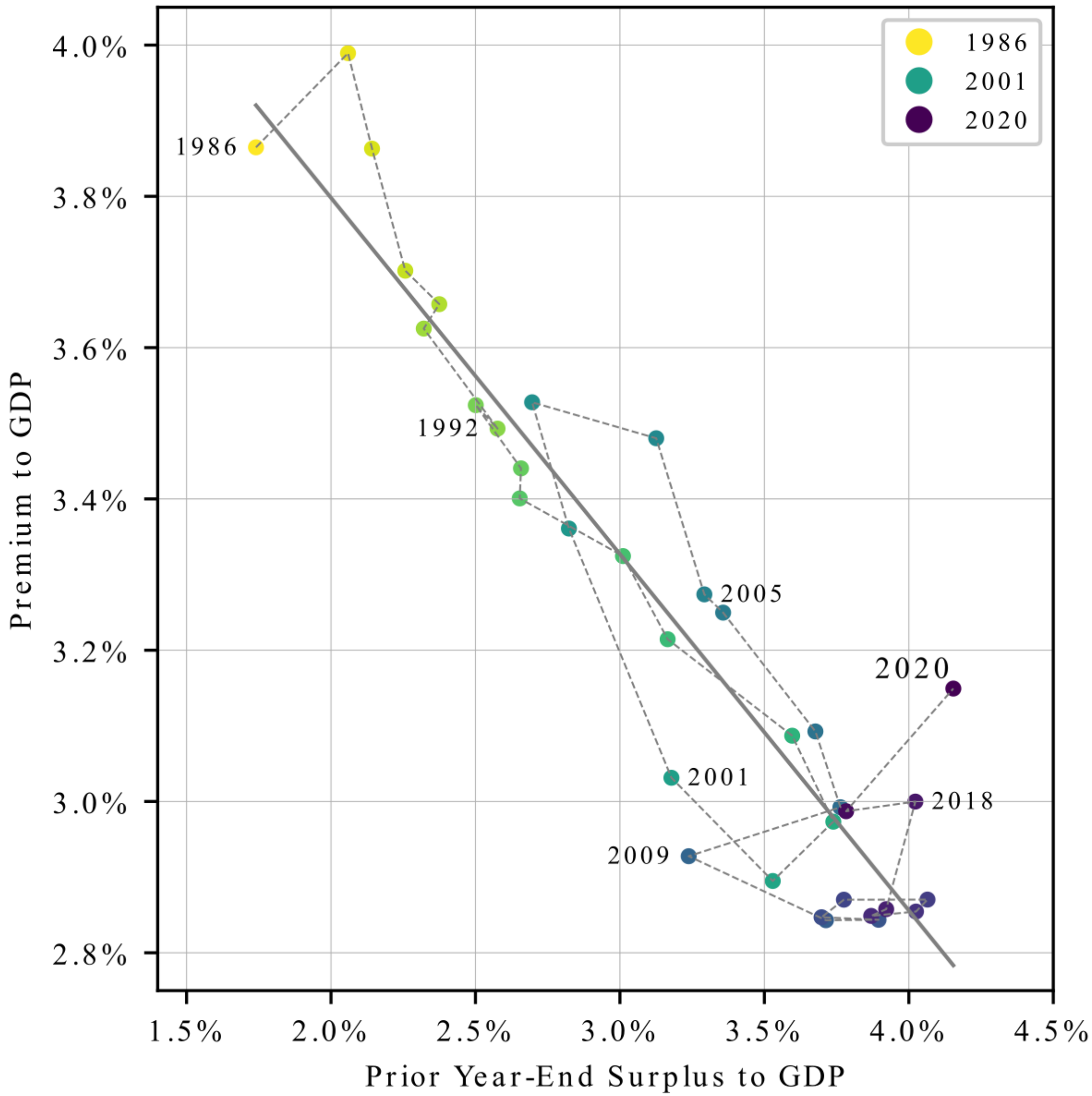
Surplus to GDP Ratio, 1931-2020e



Three Phases of Market Dynamics Since 1931



Market Dynamics Since 1986 Explained by Prior Year Surplus Levels



Live Poll Question

Which line of business has seen the **highest** standard deviation of loss ratio since 1992

a. Commercial Auto
b. CMP
c. Workers Compensation
d. Financial Guaranty
e. Homeowners

Answer Slide

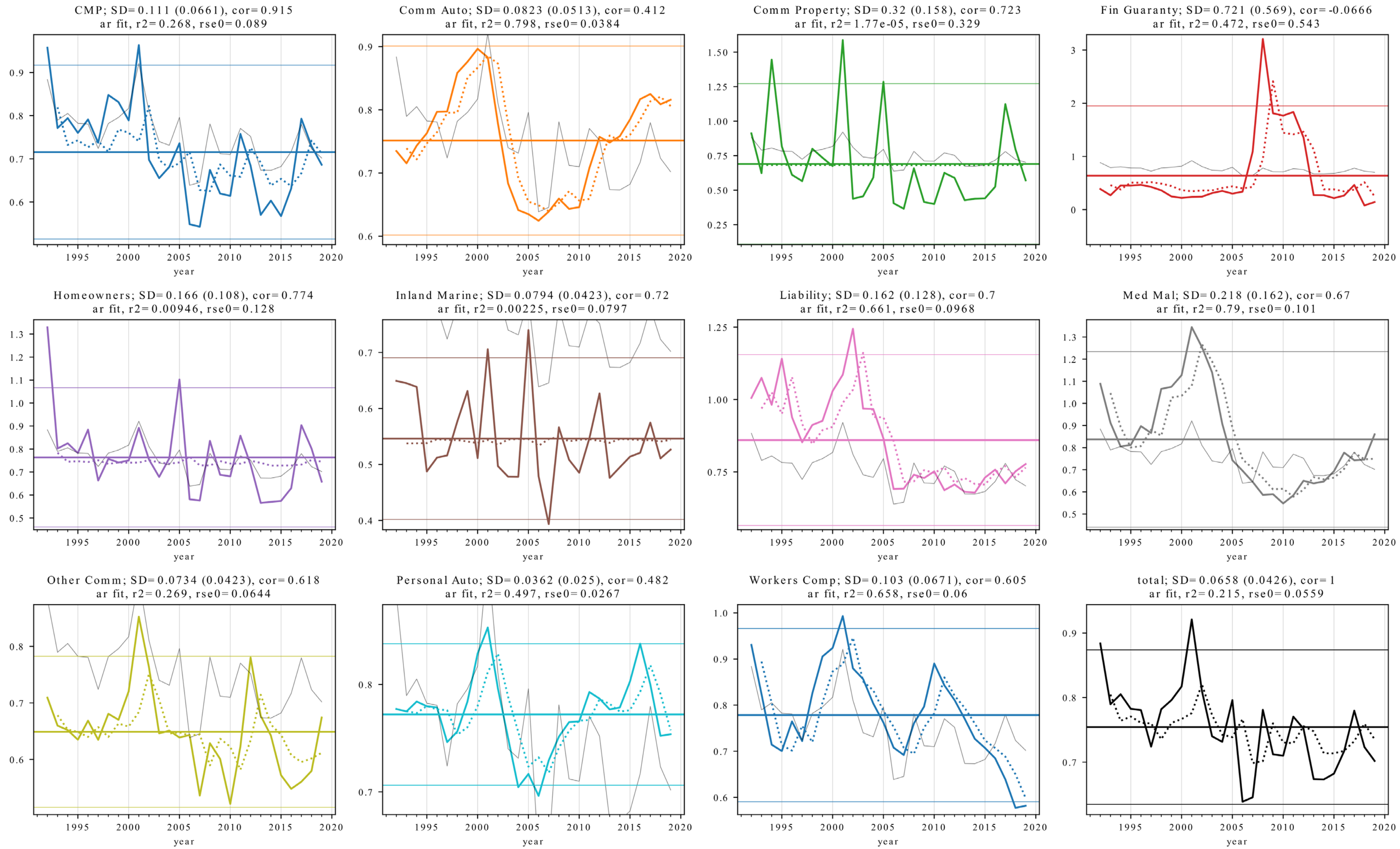
Live Poll Question

Which line of business has seen the **lowest** standard deviation of loss ratio since 1992

a. Commercial Auto
b. Personal Auto
c. Workers Compensation
d. General Liability
e. Homeowners

Answer Slide

Direct Loss Ratio Time Series by Major Line

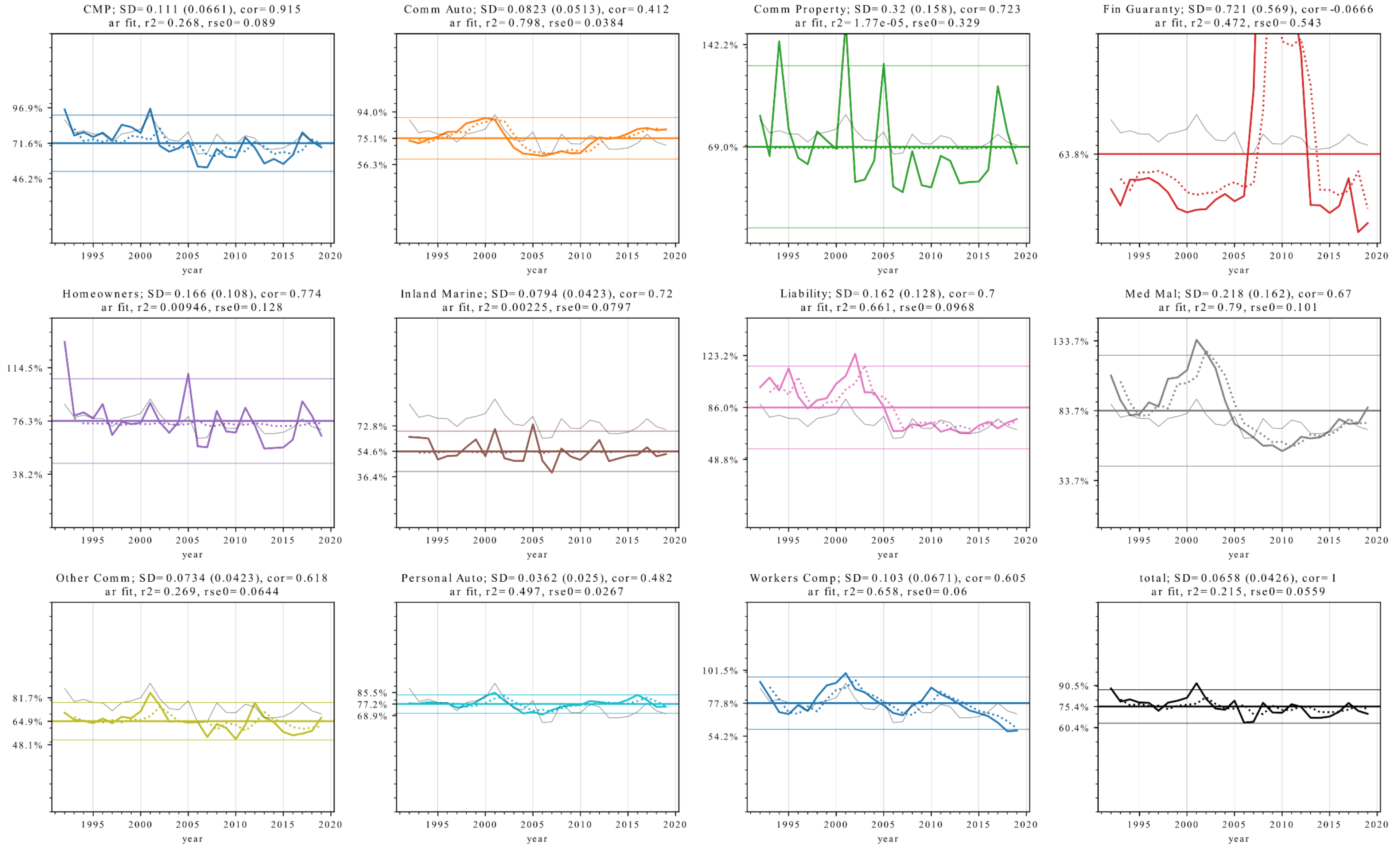


Loss Ratio Time Series by Major Line

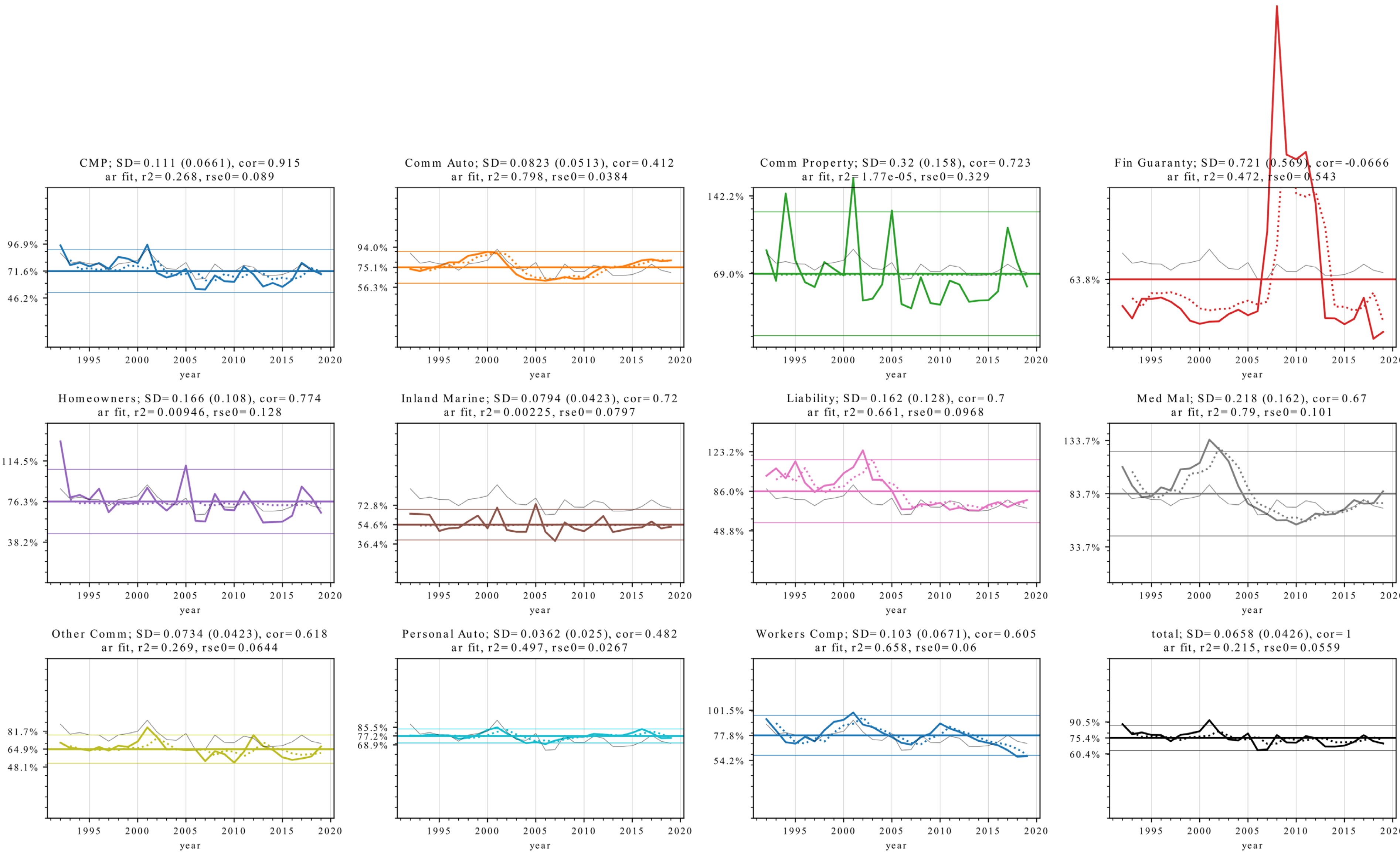
- Title decoder: CMP; SD=0.111 (0.0661), cor=0.915 ar fit, r2=0.268, rse0=0.089
  - Line; standard deviation
  - Down-side semi-deviation is shown in parenthsis (explain)
  - Correlation of the line with total on the first line
  - (second line) shows the R^2 and residual standard error of an autoregressive loss ratio model
- Interpretation
  - When the rse is much lower than SD it suggests the market cycle is predictable
  - Tends to occur in casualty lines (e.g., commercial auto, medical malpractice, private passenger auto, and workers compensation)
  - The cycle for property lines tends to be idiosyncratic, for obvious reasons.
- Line Legend
  - Thin gray line in each plot shows the total loss ratio, for context
  - The horizontal lines show the mean (thicker) and mean $\pm\Phi^{-1}(22/23) = \pm 1.71$ standard deviations
    - If the loss ratios were normally distributed, we expect all observations from 22 years (1996-2017) to fall within these tram lines
    - They provide a surprisingly good estimate of the range of loss ratio, except for Financial Lines (which uses a different tick spacing, note).

Direct Loss Ratio Time Series by Major Line

Loss Ratio Scale 0 to 150 Percent



Some Lines Are More Volatile Than Others…



Live Poll Question

For which of the following lines is premium riskier than loss?

1. Personal Auto
2. Commercial Auto
3. Homeowners
4. Workers Compensation

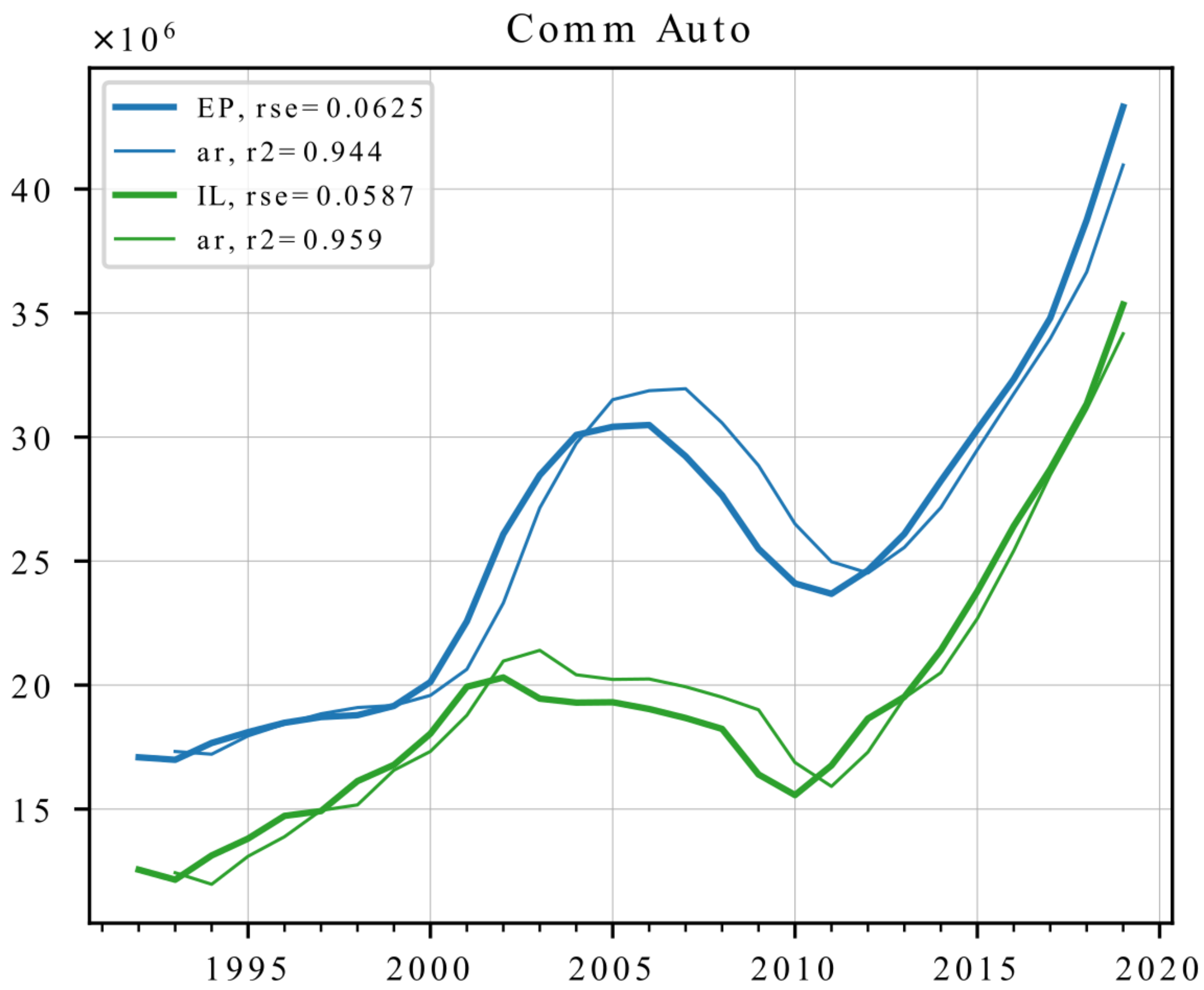
Answers

a. 1 and 2
b. 1 and 3
c. 2 and 4
d. 1, 2, and 4
e. None of the above

Answer Slide

Direct Premium and Loss Dynamics

Direct Premium and Loss Dynamics



More Resources

- Steve Mildenhall & David Wright on the Macro Environment In Insurance - YouTube
- Steve Mildenhall & David Wright on Macro History of Insurance Part 2 – YouTube
- https://www.convexrisk.com/pirc
- https://podcast.notunreasonable.com/