Decarbonizing Institutional Investor Portfolios

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Motivation

- In order to limit global warming to well below 2°C, decarbonization on a massive scale is going to be required

- **This paper:**
  - Ask a series of questions related to the carbon emissions profiles of institutional investors' equity portfolios

Overview and preview of results

1. Are institutional investors decarbonizing their public equity portfolios?

   → Yes, by about 4-6 percent per annum on average (between 2005-2019)

2. What is the role of investor-led climate initiatives (e.g., CDP or Climate Action 100+)
   a. Do investors from these initiatives (i.e., *"climate-conscious"* investors) have better carbon footprints?
   b. Are they decarbonizing faster?

   → Yes, *climate-conscious* investors tend to have better carbon footprints and also decarbonize faster

3. How are institutional investors decarbonizing? Are they a.) *tilting* or b.) using *shareholder engagement*?

   → Tilting appears to be the predominant approach; but also some evidence of shareholder engagement (in particular in later periods of the sample)

4. (Are institutional investors going beyond carbon emissions and helping achieve a green transition by investing in firms with green revenues and patents?)

   → Climate-conscious investors tilt portfolios to firms generating higher green revenues, but not more green patents

Data and methods

- Data:
  - Combine global institutional investor equity holdings with firm-level GHG emissions (period 2005-2019)
    - Factset: institutional equity holdings
    - S&P Trucost: GHG emissions and disclosure

- Methods:
  - Calculate four portfolio-level carbon measures
    - e.g., Portfolio average Scope 1 emissions, Average Scope 1 intensity, Scope 1 footprint (total Scope 1 emissions “owned” by investor), etc.
  - Examine levels and changes of these portfolio carbon measures

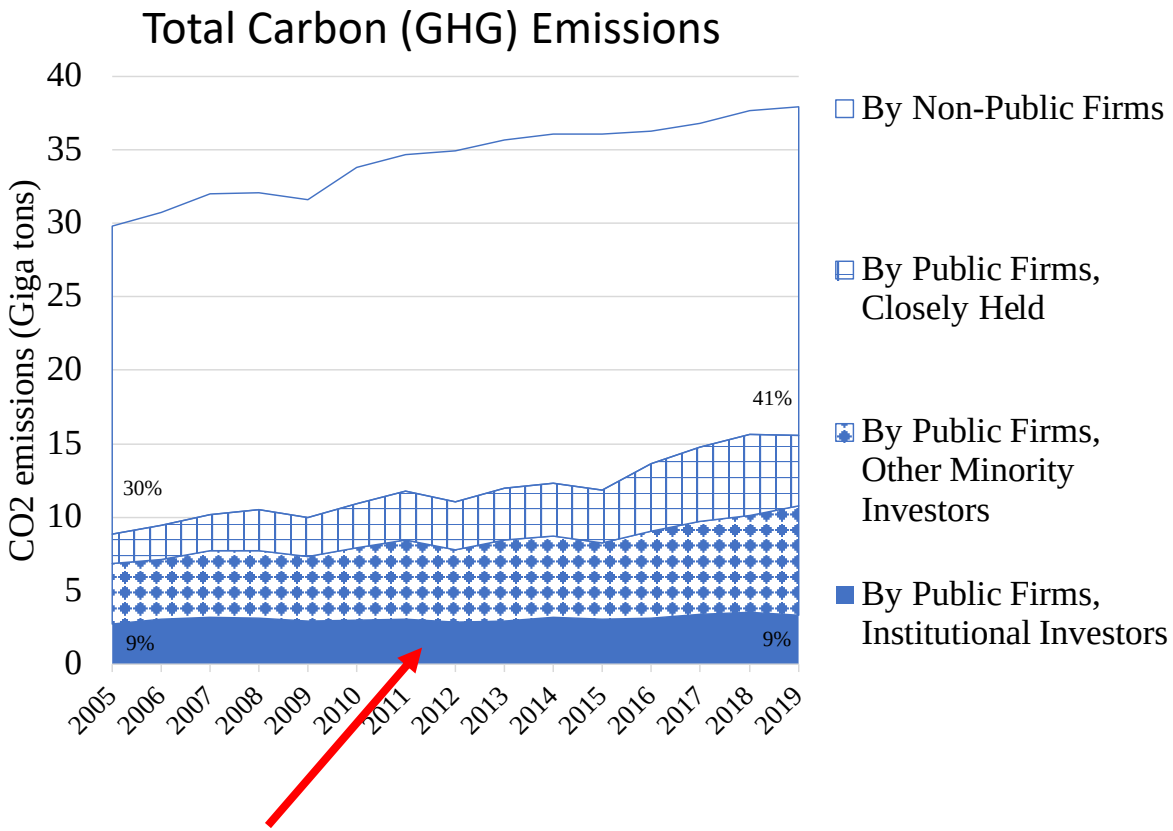
Outline

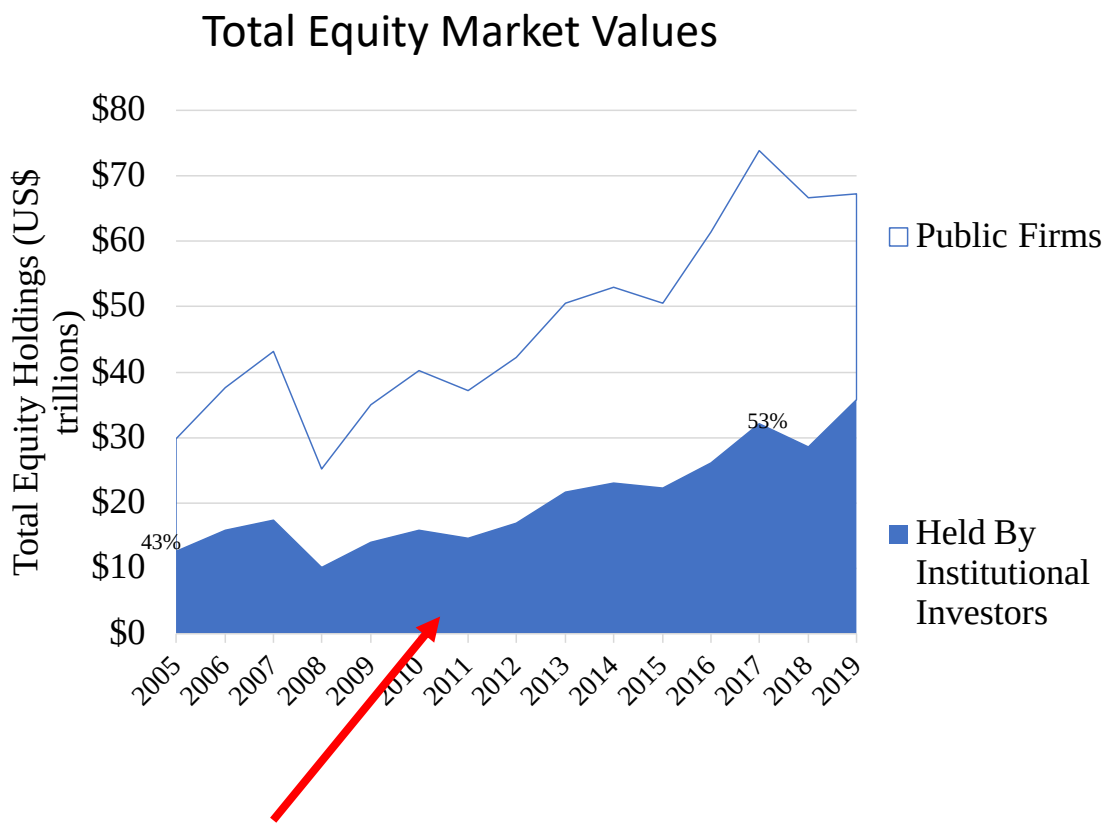
1. Are institutional investors decarbonizing their public equity portfolios?

2. What is the role of investor-led climate initiatives such as CDP or Climate Action 100+
   a. Do investors who are part of these initiatives (i.e., “climate-conscious” investors) have better carbon footprints?
   b. Are they decarbonizing faster?

3. How are institutional investors decarbonizing?
   a. Are they using tilting, engagement, or both ?

Are institutional investors decarbonizing ? A first pass using aggregate data



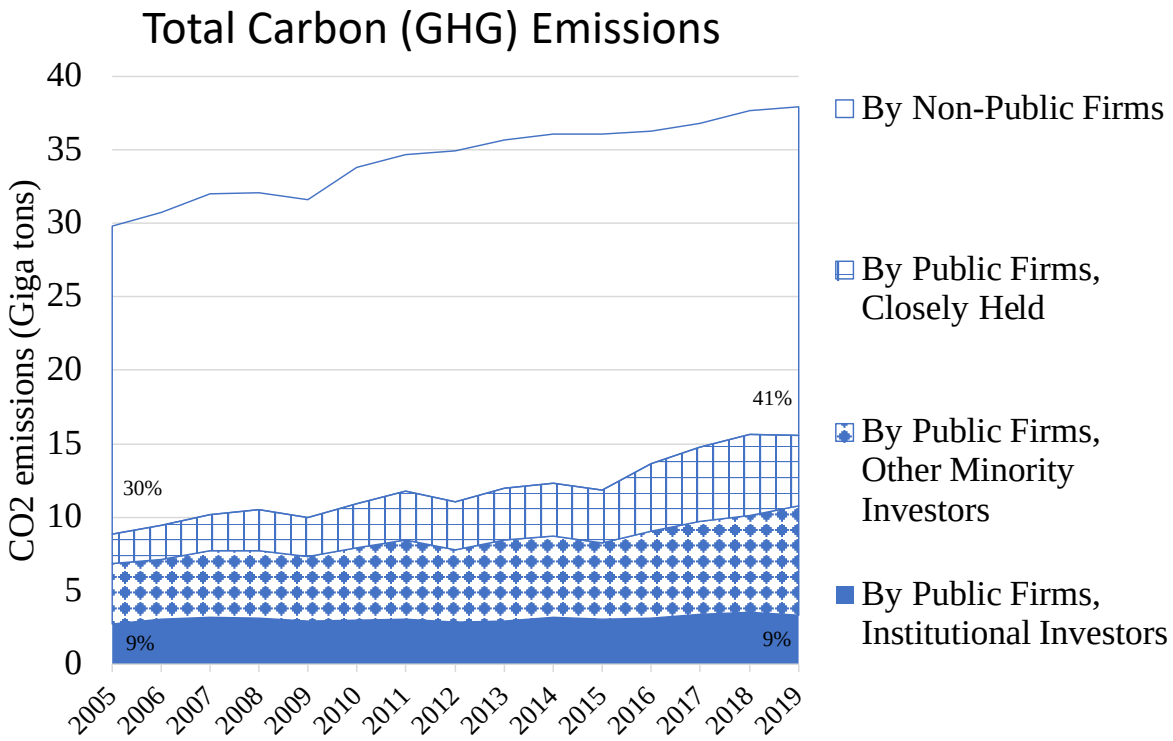


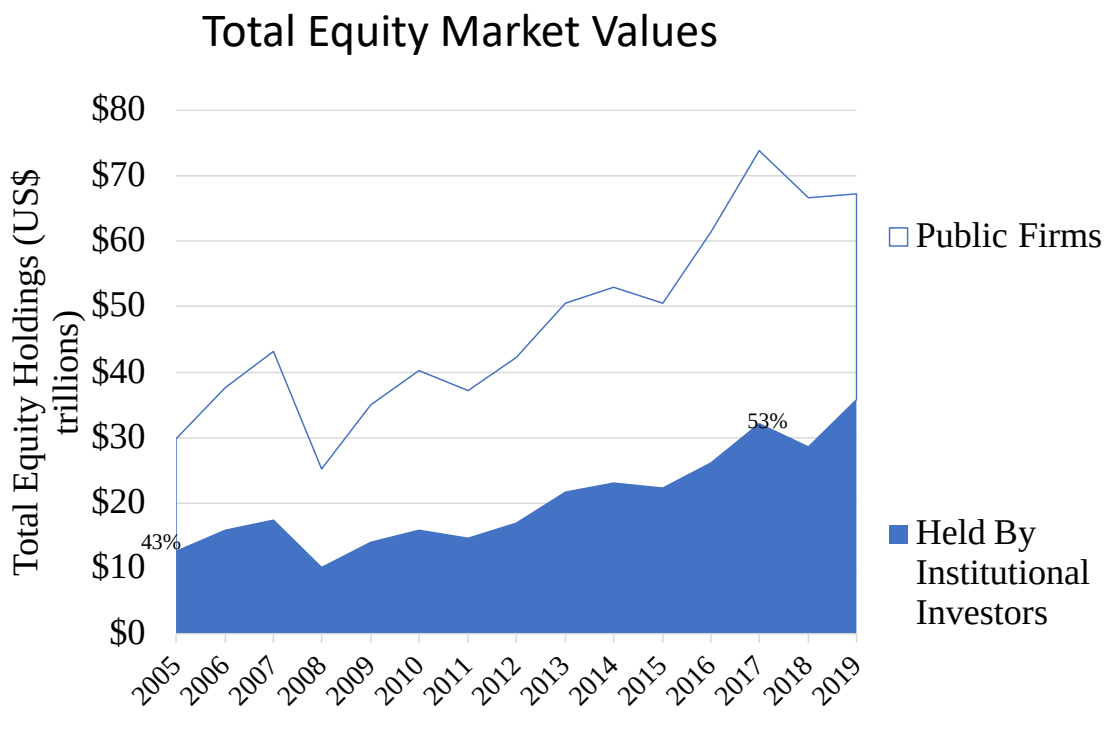
Aggregate GHG emissions apportioned to institutional investor portfolios are essentially flat at 9%

This occurs despite total equity holdings of institutional investors growing from 43% to 53%

Data sources: EDGAR (Emissions Database for Global Atmospheric Research), Factset, and S&P Trucost

Are institutional investors decarbonizing ? A first pass using aggregate data





Crude approximation: institutional investors' portion of aggregate GHG emissions should have grown proportionately from 9% to 15% if no decarbonization

Data sources: EDGAR (Emissions Database for Global Atmospheric Research), Factset, and S&P Trucost

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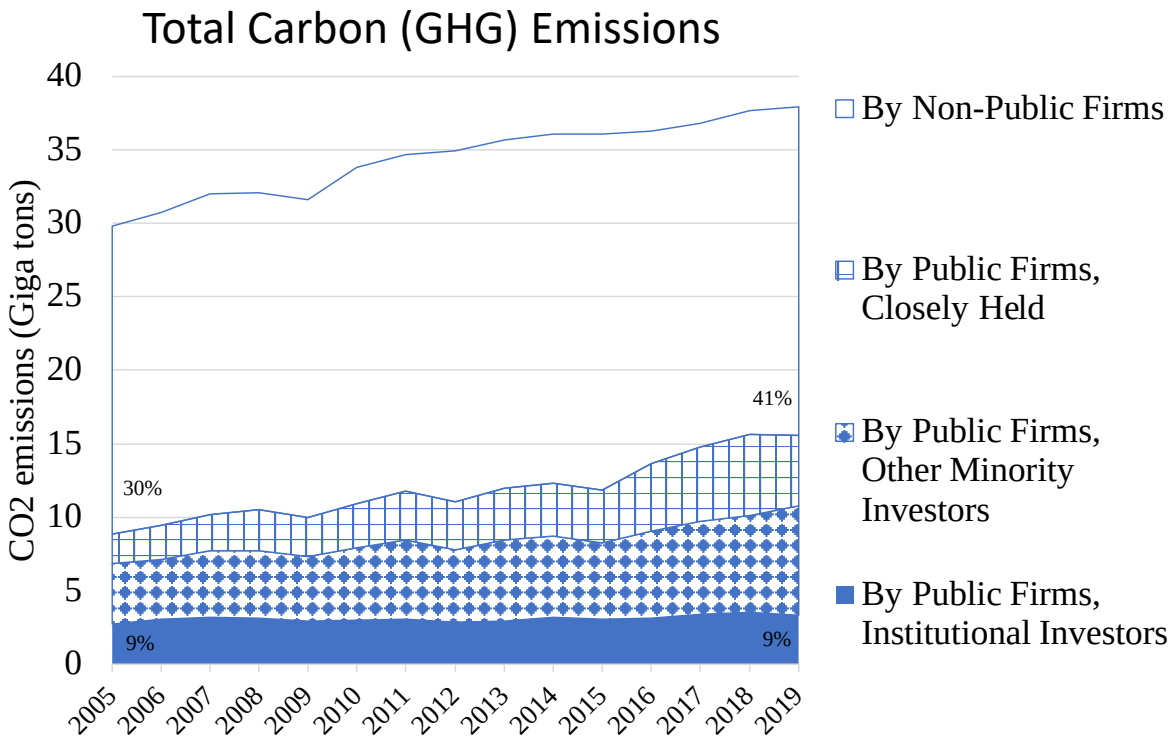

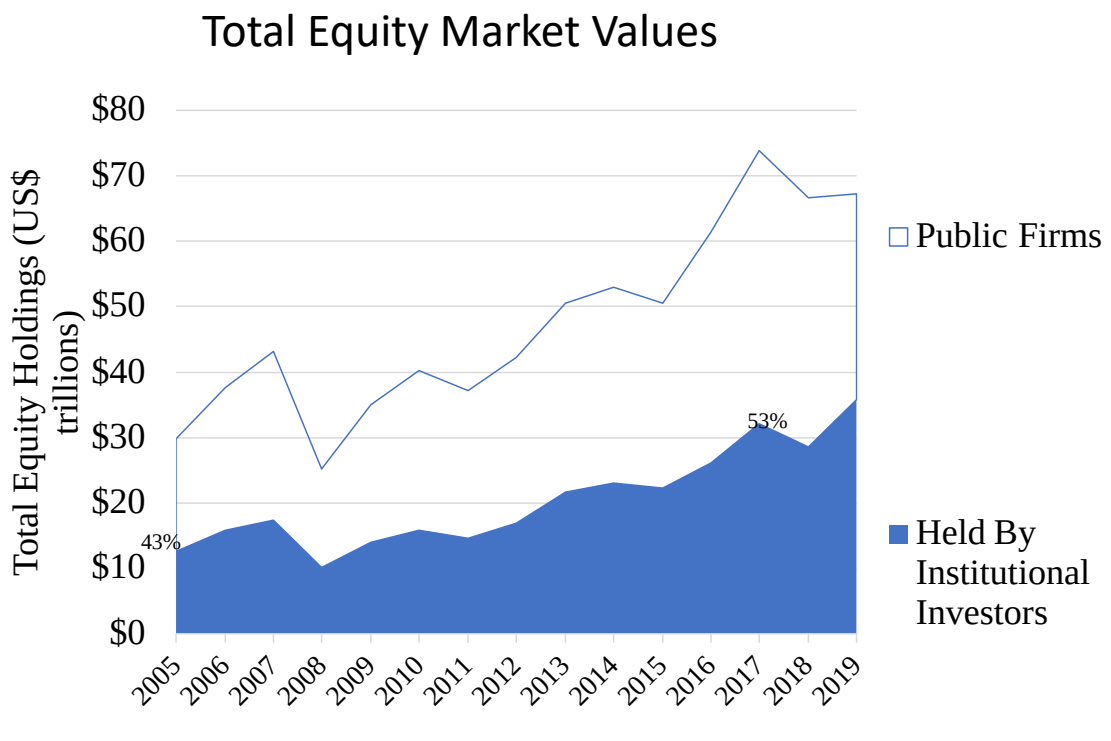

Institutional investors are decarbonizing

Data sources: EDGAR (Emissions Database for Global Atmospheric Research), Factset, and S&P Trucost

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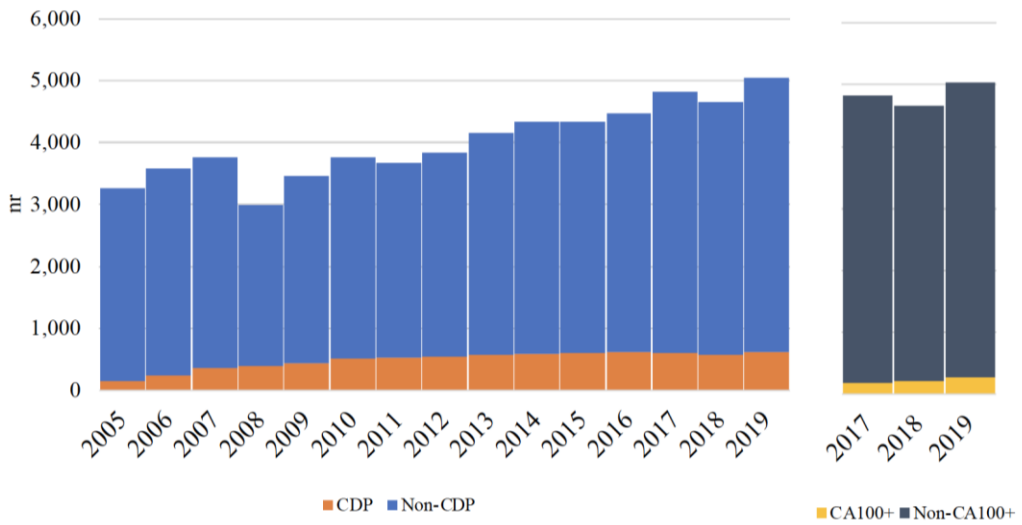
Climate-conscious institutional investors

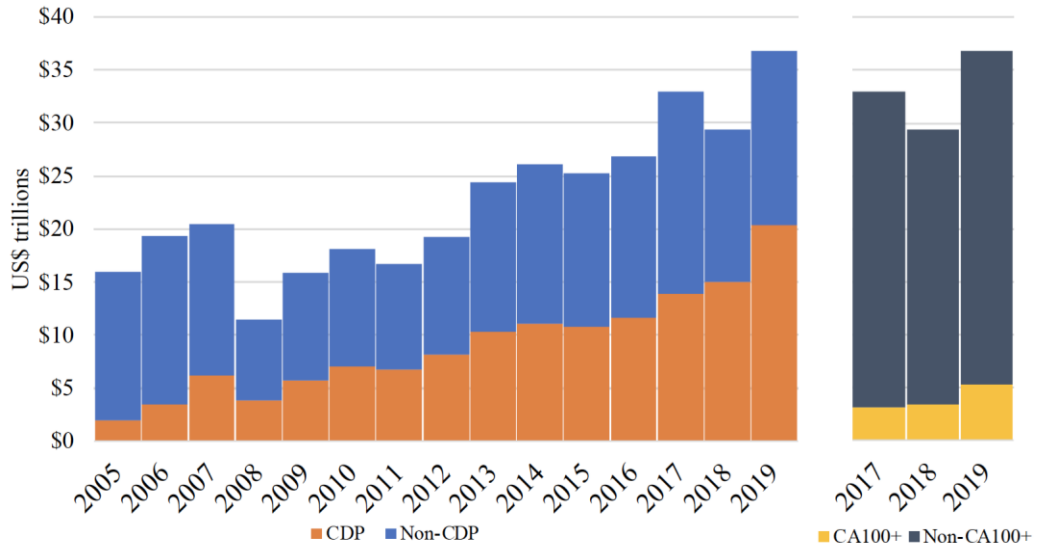
- 2005+: CDP initiative
  - founded in 2000 as the Carbon Disclosure Project
  - Disclosure-focused: firm questionnaire (GHG emissions and targets) sent to over 13,000 companies in 2021
  - List of investor signatories (623 with $20tn Equity AuM in 2019)
- 2017+: Climate Action 100+ (CA100+)
  - Post-2015 Paris Agreement
  - Engagement-focused to accelerate the net-zero emissions transition, work with the top 100 largest emitters (now top 167)
  - List of investor signatories (268 with $5tn Equity Aum in 2019)

Climate-conscious institutional investors (contd.)

Nr of Institutional Investors



US$ Institutional Investor Equity Holdings



Four portfolio-level carbon emissions measures

	Internal	*External*
Absolute	$Scope\ 1_{it} = \sum_{j=1}^{N_{jt}} \left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}} \right) * Scope\ 1\ GHG\ Emissions_{jt}$	$Scope\ 1\ Footprint_{it} = \sum_{j=1}^{N_{jt}} \left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Market\ Cap_{jt}} \right) * Scope\ 1\ GHG\ Emissions_{jt}$
Relative	$Scope\ 1/\ Revenue_{it} = \sum_{j=1}^{N_{jt}} \left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}} \right) * \frac{Scope\ 1\ GHG\ Emissions_{jt}}{Revenue_{jt}}$	*Scope 1 footprint/ Portfolio Size*$_{it} = \frac{\sum_{j=1}^{N_{jt}} \left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Market\ Cap_{jt}} \right) * Scope\ 1\ GHG\ Emissions_{jt}}{Portfolio\ Size_{it}}$

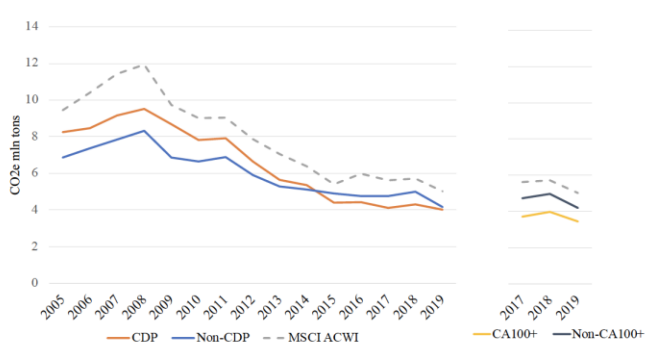
Portfolio decarbonization by climate-conscious institutional investors

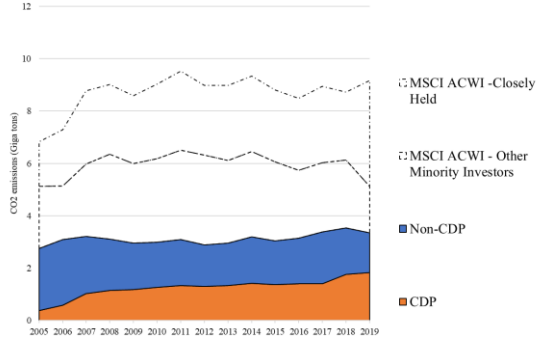
Internal

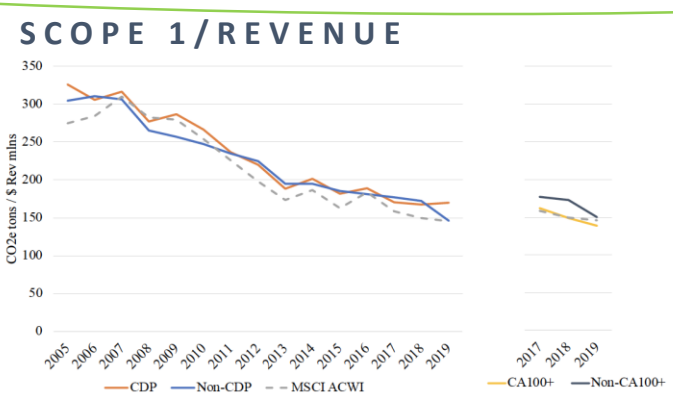
External

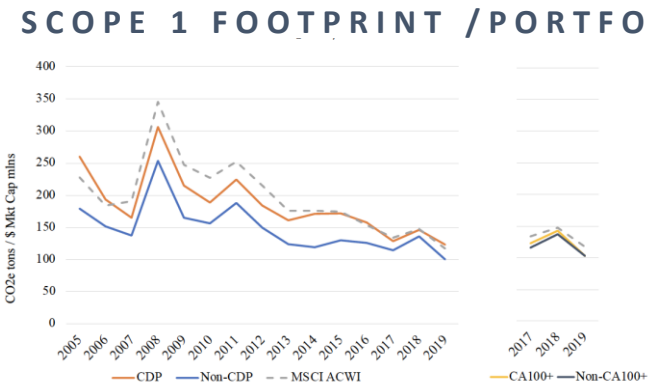
Absolute

Relative









Portfolio decarbonization by climate-conscious institutional investors (contd.)

Q2.a: Do climate-conscious investors hold ***portfolios with lower emissions***?

$$log(Portfolio\ emissions\ metric)_{it} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

- Table 3 (Levels): Partially for Scope 1; 7.1% lower emissions (*Scope 1*) and 4.2% lower emissions intensity (*Scope1/Revenue*)
  - but ***only after*** we include investment style controls, and/or investor FE

Q2.b: Do climate-conscious investors ***decarbonize*** faster?

$$\Delta\ log\ (Portfolio\ emissions\ metric)_{it} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

- Table 4 (Changes): Partially for Scope 1 Changes; Decarbonize emissions intensity (*Scope1/Revenue*) and *Scope 1 Footprint* by about 1.4 to 3 percentage points more

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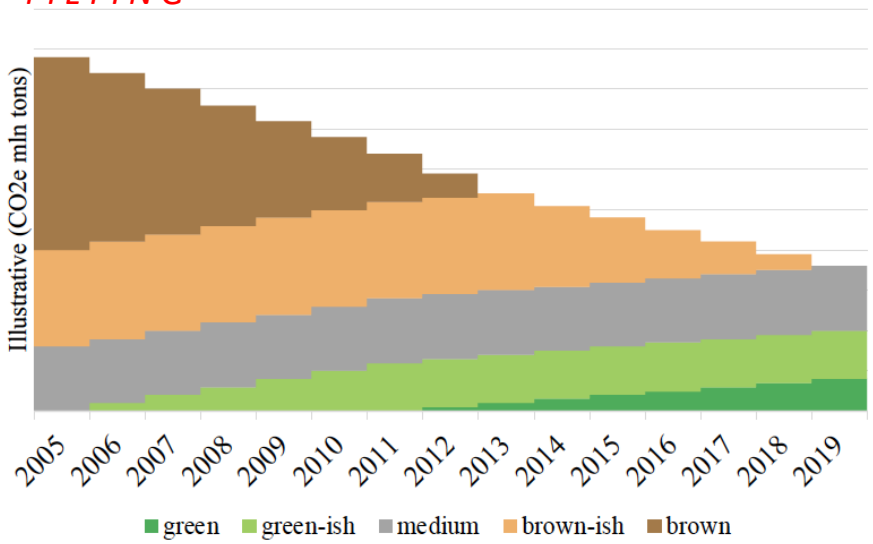
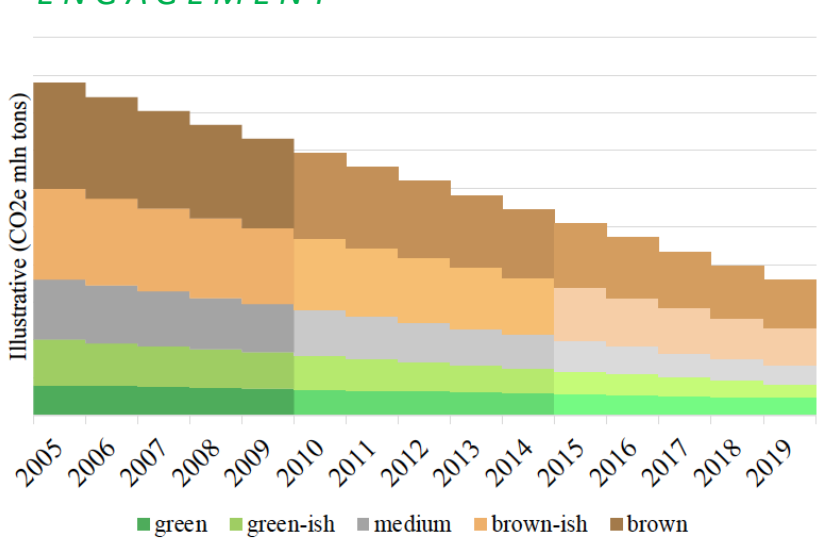
Portfolio decarbonization can be achieved by *Tilting* or *Engagement*

- **Tilting:** reduce stakes in the top GHG emitters and rebalancing towards lower GHG emitters
- **Engagement:** engage with portfolio companies to reduce GHG emissions

TILTING



ENGAGEMENT



Decomposing portfolio emission changes

TOTAL CHANGE

$$\Delta Total \log Scope\ 1_{it} = \log\left(\sum_{j=1}^{N_{jt+1}}\left(\frac{\$\ Shares\ Held_{ijt+1}}{\$\ Portfolio\ Size_{it+1}}\right) * Scope\ 1\ GHG\ Emissions_{jt+1}\right) - \log\left(\sum_{j=1}^{N_{jt}}\left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}}\right) * Scope\ 1\ GHG\ Emissions_{jt}\right)$$

TILTING

$$\Delta weights - only \log Scope\ 1_{it} = \log\left(\sum_{j=1}^{N_{jt+1}}\left(\frac{\$\ Shares\ Held_{ijt+1}}{\$\ Portfolio\ Size_{it+1}}\right) * Scope\ 1\ GHG\ Emissions_{jt}\right) - \log\left(\sum_{j=1}^{N_{jt}}\left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}}\right) * Scope\ 1\ GHG\ Emissions_{jt}\right)$$

ENGAGEMENT

$$\Delta emissions - only \log Scope\ 1_{it} = \log\left(\sum_{j=1}^{N_{jt}}\left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}}\right) * Scope\ 1\ GHG\ Emissions_{jt+1}\right) - \log\left(\sum_{j=1}^{N_{jt}}\left(\frac{\$\ Shares\ Held_{ijt}}{\$\ Portfolio\ Size_{it}}\right) * Scope\ 1\ GHG\ Emissions_{jt}\right)$$

Tilting versus engagement

Q3.a: *Tilt* vs. *Engage* - How do climate conscious investors decarbonize?

$$\Delta\, weights - only \;\; Portfolio\ emissions\ metric_{it+1} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

$$\Delta\, emissions - only \; Portfolio\ emissions\ metric_{it+1} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

- Table 5: CDP investors are *tilting* (Δ *weights*) across all measures but *Scope 1 footprint/portfolio size*, suggesting that they predominantly use *tilting*
  - Little evidence of engagement by CDP investors

- Table 6: European investors *tilting* (Δ *weights*) stronger across all measures
  - we add a CDP * Europe dummy

Engagement

Q3.b: Any evidence of ***engagement*** by climate-conscious investors?

$$\Delta\ Portfolio\ emissions\ metric, Top\ 100\ _{it} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

$$\Delta 3yr\ Portfolio\ emissions\ metric\ _{it} = a + b * CDP_{it} + c * Controls_{it} + FEffects + \varepsilon_{it}$$

$$\Delta\ Portfolio\ emissions\ metric_{it+1} = a + b * only\ CDP_{it} + c * \textbf{only Climate Action 100} + d * \textbf{CDP} * \textbf{Climate Action 100} + e * Controls_{it} + FEffects + \varepsilon_{it}$$

- Table 7: Do investors engage with the **Top 100 emitting firms**?
  - Evidence of engagement with respect to Top 100 emitting firms (all measures but Emissions intensity)
- Table 8: If engagement takes longer, is there evidence over the longer term (**3 years**)?
  - Evidence of engagement over longer term (across the external measures: absolute and relative footprint)
- Table 9: Is there engagement after Paris 2016 (by **Climate Action 100+ investors**)?
  - Evidence of engagement for institutions part of CA100+ initiative (across the external measures)

Conclusion

- Institutional investors actively decarbonized their equity portfolios between 2005 and 2019

- Tilting is the predominant strategy used by CDP signatory institutions (especially European investors)

- Some evidence that engagement is also used:
  - restricting to holdings of top 100 emitting firms
  - examining longer term changes in portfolio emissions
  - examining members of the Climate Action 100+ initiative (i.e., post Paris)

- However, (1) Predominant use of tilting and (2) much of total carbon emissions occurring outside of the control of institutional investors raises doubts about the effectiveness of institutional investors in reducing the negative impact of firm-level carbon emissions on global warming

Thank you for your attention.