Discussion of

"Voting on Public Goods: Citizens vs Shareholders"

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Issue

Why on earth would we want firms to care for the common good, instead of just maximising profits?

Shouldn't we leave this to democratically elected governments?

Frictionless world: yes!

With frictions: no! prosocial firms and shareholders can help reach better outcomes

Great paper!

Important question, elegant model, insightful results: read it!

This discussion

1. simplified model capturing some of the key mechanisms in the paper (paper much richer than my stylised summary)
2. comment on microfoundation

Simplified model

2 firms, each with mass-one continuum of shareholders (each shareholder owns 1 share in only one of the two firms)

Firms can supply public good

All shareholders have same preferences about public good

If gov can observe true supply of public good $\longrightarrow$ first best achieved with subsidy

If firms can greenwash (pretend some activities create public good while they in fact don't) $\longrightarrow$ inefficiency, but mitigated if firms somewhat internalise their impact on welfare

No greenwashing

Each firm $i \in \{1, 2\}$ earns profit

$$\pi_i = \pi + \sigma x_i - \frac{\phi}{2} x_i^2,$$

- x_i = public good (eg decarbonisation), marginal cost ϕx_i
- σ = subsidy (linear in decarbonisation)

Citizens' hold shares in 1 firm only $\longrightarrow$ utility if hold i

$$U_i = \gamma(x_1 + x_2) + \pi_i - \tau$$

Utilitarian welfare (transfers wash out)

$$U = \frac{U_i + U_2}{2} = \gamma(x_1 + x_2) + \pi - \frac{\phi}{4}\left(x_1^2 + x_2^2\right)$$

Optimal policies without greenwashing

If firm maximises profit:

$$\max_{x_i} \pi_i \rightarrow x_i = \frac{\sigma}{\phi}$$

If firm internalises effect of x_i on its own shareholders:

$$\max_{x_i} U_i \rightarrow x_i = \frac{\sigma + \gamma}{\phi} > \frac{\sigma}{\phi}$$

Socially optimal supply of public good by firm i

$$\max_{x_i} U \rightarrow x_i^* = 2\frac{\gamma}{\phi}$$

Implementing social optimum when no greenwashing

If x_i chosen by profit maximising firms, set σ to max welfare

$$x_i = \frac{\sigma}{\phi} = 2\frac{\gamma}{\phi} \implies \sigma^* = 2\gamma$$

// carbon tax = social cost: decarb subsidy = social benefits

If x_i chosen by firm maximising utility of own shareholders, set σ s.t

$$x_i = \frac{\sigma + \gamma}{\phi} = 2\frac{\gamma}{\phi} \implies \sigma^{**} = \gamma$$

- $\forall$ firms objective, optimal σ implements social optimum
- lower subsidy needed when firms internalise some welfare

With greenwashing

Firm $i \longrightarrow$ greenwash y_i, at cost

$$\frac{\phi y_i^2}{2\delta}$$

δ high $\longrightarrow$ greenwashing comes cheap

Gov obs $x_i + y_i \longrightarrow$ subsidy $\sigma(x_i + y_i)$

Firm i earns profit

$$\pi_i = \pi + \sigma(x_i + y_i) - \frac{\phi}{2}(x_i^2 + \frac{y_i^2}{\delta})$$

Utilitarian welfare: greenwashing = wasteful expenses

$$\frac{U_i + U_2}{2} = \gamma(x_1 + x_2) + \pi - \frac{\phi}{4}\left(x_1^2 + x_2^2 + \frac{y_1^2 + y_2^2}{\delta}\right)$$

Firm policies with greenwashing

Profit maximising firm

$$x_i = \frac{\sigma}{\phi}, y_i = \frac{\delta\sigma}{\phi}$$

Shareholders of i, internalising only x_i

$$x_i = \frac{\sigma + \gamma}{\phi}, y_i = \frac{\delta\sigma}{\phi}$$

In both cases

- same supply of public good (x) as without greenwashing
- greenwashing (y) even if firm internalizes some public good

Gov policy with greenwashing if firms max profits

Choose subsidy to max utilitarian welfare:

$$\max_{\sigma} \frac{U_i + U_2}{2} = \gamma(x_1 + x_2) + \pi - \frac{\phi}{4}\left(x_1^2 + x_2^2 + \frac{y_1^2 + y_2^2}{\delta}\right)$$

s.t. response of firms that max profits: $x_i = \frac{\sigma}{\phi}, y_i = \frac{\delta\sigma}{\phi}$

Optimal policy: less public good than if no greenwashing

$$\sigma = \frac{2\gamma}{1+\delta} < \sigma^* \rightarrow x_i = \frac{1}{1+\delta}\frac{2\gamma}{\phi} < x_i^*$$

$\uparrow$ greenwash $\rightarrow \downarrow$ subsidy efficiency $\rightarrow \downarrow$ subsidy $\rightarrow \downarrow$ public good

Gov policy with greenwashing if firms partly internalise

Choose subsidy to max utilitarian welfare:

$$\max_{\sigma} \frac{U_i + U_2}{2} = \gamma(x_1 + x_2) + \pi - \frac{\phi}{4}\left(x_1^2 + x_2^2 + \frac{y_1^2 + y_2^2}{\delta}\right)$$

s.t. response of firms that partly internalise: $x_i = \frac{\sigma+\gamma}{\phi}, y_i = \frac{\delta\sigma}{\phi}$

Optimal policy: again less public good than if no greenwashing

$$\sigma = \frac{\gamma}{1+\frac{\delta^2}{2}} < \sigma^{**} \rightarrow x_i = \frac{\gamma}{\phi}\frac{2+\frac{\delta^2}{2}}{1+\frac{\delta^2}{2}} < x_i^*$$

More public good when firms partly internalise

Firms internalise effect of public good on their shareholders

$\longrightarrow$ need less subsidy to incentivise given amount public good

$\longrightarrow$ effect of greenwashing (make subsidy inefficient) is less strong

Supply of public good

when firms partly internalise $>$ when firms just max profits

$$\frac{\gamma}{\phi}\frac{2+\frac{\delta^2}{2}}{1+\frac{\delta^2}{2}} > \frac{1}{1+\delta}\frac{2\gamma}{\phi}$$

Microfoundation

> *"regulators' inability to discriminate between x and y could be due to an information friction, as regulators may lack the firm-specific knowledge that shareholders ... may possess."*

Assumption that regulator does not observe x and y separately, but only their sum is fine :)

It would also be reasonable to assume regulator observes profit, which is a function of x and y

2 unknowns, 2 equations $\longrightarrow$ inference about x and y

Even if profit is function of x and y + noise, still contains info, that should be used by gov

Economic intuition

Suppose decarbonisation is expensive (ϕ large), while greenwashing is cheap (δ high)

Firm claims to have done a lot of decarbonisation (x), but in fact greenwashed (y)

Gov observes $x + y$, which in itself is not enough to tell how much greenwashing there was

But gov also observes profit (before subsidies), which is strongly decreasing in x, weakly decreasing in y

If profit is high, gov should ask: how come you have such high profits if you did a lot of costly decarbonisation? $\longrightarrow$ tax profits

Mechanism design

x and y = costly actions, observed by shareholders, not by gov

mechanism = mapping:

observations $(x + y$, profit$) \longrightarrow$ transfers (tax, subsidy)

optimal mechanism:

max welfare, s.t. incentive compatibility (of x and y)

conjecture: high γ, low $\delta \longrightarrow$ relax IC $\longrightarrow$ larger x

- maybe qualitative results similar as in present paper ?
- maybe additional insights on optimal gov policy?

Conclusion

Great paper! Deals with important and timely issues! Must read!

Because I really like the paper, I would be happy to see the authors dig deeper into the matter :)