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Optimal Insurance and Reinsurance in Equilibrium: Insights from the Cournot Paradigm

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Whither deductibles? Q: Are deductible policies “*optimal contracts?*”

Authors claim that upper-limit policies (full coverage up to some limit) are “**optimal**” in some sense. Or at least they occur as an equilibrium.

Figure 9 shows that deductibles Pareto dominate UL contracts.

“Straw dog” to set up PE contracts as being somehow “**suspect**”

More relevant: can we justify upper-limit provisions?

Straight deductibles are Pareto efficient under full information with **rn** insurer

Deductibles with co-insurance are PE under full information with **ra** insurer

Authors use full information:

Not clear what authors mean by “**optimal contracts**”

Seem to mean simply the **equilibrium** within this Cournot game.

Q: Is the claim a positive or normative one?

Well known: any type of non-cooperative Nash equilibrium is **not PE**.

Seems to be a Positive Claim.

Q: Does this Cournot game exemplify many (any?) insurance markets.

1. Bid – Offer set up

Possibly applicable for commercial lines (?)

No competition for clients?

Customers are randomly assigned to insurers by “the market?”

2. Payoffs are of a Tullock “rent-seeking” genre with a shared prize

Each type receives a share equal to its relative bid / offer

Technical issues: (I consider the base model only)

Buyer bids a dollar premium π

Seller offers an indemnity function $I(x)$

Seller j receives premium share (approx ... authors average losses across buyers)

$$\frac{EI_j(\tilde{X})}{\sum E_i(\tilde{X})} ; \quad \text{Likewise buyers' shares proportional to relative } \pi\text{-bid.}$$

Note: The insurers' premium shares are independent of the functional form. It only depends on the expected indemnity.

Likewise, the costs essentially only depend on the expected indemnity.

Technical issues: (continued)

Note, unlike PE risk sharing literature, buyers and sellers here are pre-determined. (?)

Buyers π bid does not affect functional form of $I(x)$

Insurers are risk averse and get to choose functional form and $EI_j(\tilde{X})$

Follows from Raviv (1979) and Arrow (1963) and/or PE risk sharing, that a risk averse insurer will prefer an upper limit to any other contractual form.

... easy to prove using SSD arguments à la Gollier/Schlesinger (1996)

Since the insurer dictates the functional form, since the form does not affect buyer or seller shares, and since the insurer is risk averse:

→ Upper limit policy dominates any other contractual form.

Technical issues: (continued)

A second model allows for quantity bid functions by the buyers: $K_i(X)$

But, to best of my (limited) understanding of the model:

... only $EK(\tilde{X})$ matters in determining the buyers' shares.

The buyers share the indemnity offer $I_j(\mathbf{x})$

Hence, once again, the insurers can dictate the functional form $I_j(\mathbf{x})$ and they prefer an upper-limit indemnification function.

Allowing competition for insurance customers: If other insurers all offer UL policies, my best response would be to offer a deductible!?

Is there more?