

# Privatized bankruptcy: a study of shipping financial distress

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# The changing landscape of bankruptcy law

- A world-wide trend towards Ch. 11 type legislation
  - expanding the powers of courts
    - from enforcing contract  $\Rightarrow$  substantial discretion
- Whats wrong with *freedom of contracting*?
  - coordination failures among creditors
    - Jackson's (1986) common pool
  - contracts: not adaptable, not sophisticated
  - fires-sale markets are illiquid: "assets in liquidation fetch prices below value in best use ...[Hence,] automatic auctions ... ,without the possibility of Chapter 11 protection, is not theoretically sound." (Shleifer and Vishny)

# Freedom of contracting in action: shipping

“*There is only one law in shipping: there is no law in shipping*”

- Sami Ofer (shipping magnate, Zim went bust, June 2014)

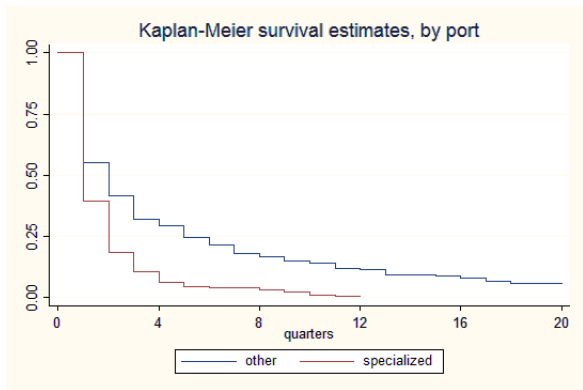


- Ex-territorial assets:
  - detachment from on-shore legislation
  - but how does the industry establish *rule of law*?

- Insolvency law reform: Vig (2013) for India, Rodano et. al (2015) for Italy, and Lilienfeld-Toal et al. (2012)
  - unintended consequences
- Scandinavian auctions: Stromberg (2000), and Eckbo and Thorburn (2008)
- Forum shopping: LoPucki and Kalin (2001), Kahan and Kamar (2002) and Bebchuk and Cohen (2003) and Romano (2005)
  - is competition possible, let alone desirable?
  - harmonization of national insolvency laws: EC Council Regulation 1346/2000 (2000)
  - Spontaneous order: Hayek, (1979), Bernstein, (1992) and Greif et. al, (1994).
- Fire sale discounts: Campbell et. al. (2011) and Coval and Stafford (2007)

# (I) Contracts/institutions adapt $\Rightarrow$ rule of law

- Ultimate remedy against default: arrest/repossession of vessel
- Many ports are hopelessly corrupt/inefficient



- Hypothesis:  $duration|_{spec.} = duration|_{other}$ 
  - rejected,  $\chi^2$ -stat: 42.92, significant at 1%

# Adaptation: crew seniority, double mortgage

- Since crew (physical control of vessel) is senior to mortgage
  - if owner is default, and in arrears to crew
  - a banks promise to pay crew is credible
- Since every vessel is owned by (single vessel) subsidiary
  - banks take a security interest in both vessel and equity
  - can repossess on the high seas
- Formal test: regress number of arrests on volume of traffic
  - $i$ : country index

$$N - arrets_i = c + \underset{(2.34)}{0.30} \times volume_i + \underset{(8.46)}{2.97} \times D - specialized_i + \varepsilon_i$$

# Ports: arrests and traffic

	N arrests	arrest (%)	traffic (%)
Gibraltar	33	7	0
Hong Kong	19	4	1.7
Netherlands	37	7.8	3.5
Singapore	37	7.8	3.3
South Africa	19	4	1.2
UK	42	8.9	2.8
Australia	9	1.9	5.1
China	5	1.1	15.8
Germany	6	1.3	2.3
Japan	2	0.4	6.6
South Korea	4	0.8	5.8
USA	23	4.9	11.9

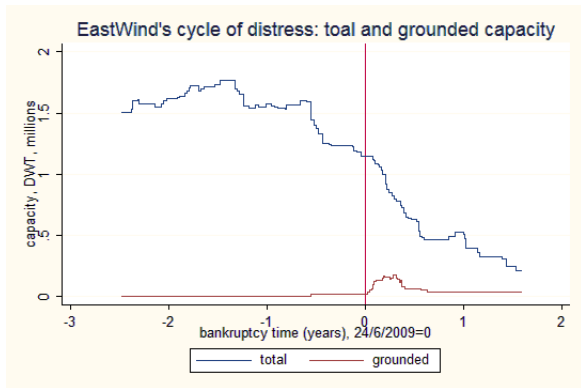
## (II) Coordination failures are rare and implosion related

### Proxy: arrest

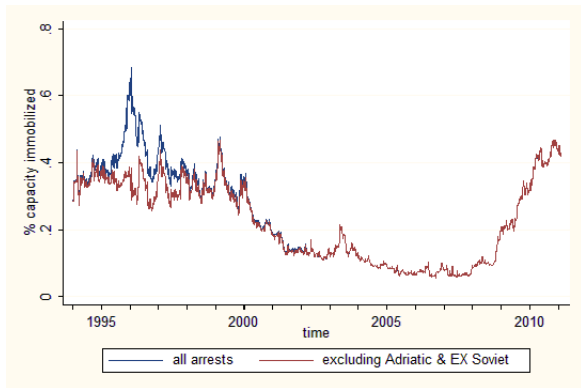
- In a (second best) Coasian world, companies that run out of capital
  - would lose their assets to better capitalized ones
  - but transfer of ownership should not disrupt operation
    - and cash generation
- Anecdotal evidence: most de-leveraging is obtained under threat of repossession
  - with very little actual repossession
  - much space for attempted recovery



# Eastwind: immobilization relative to capacity



# Immobilization/capacity, all arrests, entire fleet



# Generalizing the analysis

- We produce a panel (annual frequency)
  - $i$ : company index,  $t$ : time index
  - regression

$$\frac{imob_{i,t}}{capacity_{i,t-1}} = \alpha + \beta \underbrace{\frac{capacity_{i,t} - capacity_{i,t-1}}{capacity_{i,t-1}}}_{\Delta cap_{i,t}} + \varepsilon_{i,t}$$

- Additional variables
  - $Dbust$ : a dummy variable for the bust year
  - $Dbust(+1)$ : a forward  $Dbust$

# Panel A

$\Delta cap$	sample	[-0.1,0)	[-0.2,-0.1)	[-0.3,-0.2)	[-0.4,-0.3)	[-0.5,-0.4)	<-0.5
$\Delta cap$	0	-0.049	-0.063	-0.088	0.091	-0.074	-0.638
	(-0.01)	(-2.06)	(-1.87)	(-1.98)	(1.07)	(-1.08)	(-16.85)
intercept	0.007	0	-0.005	-0.017	0.04	-0.023	-0.381
	(19.77)	(-0.11)	(-1.05)	(-1.51)	(1.35)	(-0.72)	(-13.61)
N	76,471	2,163	1,740	1,361	1,088	972	2,145
$R^2$	0	0.002	0.002	0.003	0.001	0.001	0.117

# Panel B

$\Delta\text{cap}$	sample	[-0.1,0)	[-0.2,-0.1)	[-0.3,-0.2)	[-0.4,-0.3)	[-0.5,-0.4)	<-0.5
$\Delta\text{cap}$	0	-0.03	-0.016	-0.091	0.09	-0.079	-0.009
	(-0.01)	(-1.39)	(-0.56)	(-2.12)	(1.07)	(-1.19)	(-0.21)
$\text{Dbust}(+1) \times \Delta\text{cap}$		-5.085	-2.366	-0.595	-0.111	-0.409	-0.266
		(-22.67)	(-27.95)	(-9.48)	(-1.49)	(-6.77)	(-3.85)
$\text{Dbust} \times \Delta\text{cap}$							-0.501
							(-22.44)
intercept	0.007	0	0	-0.019	0.039	-0.026	0.004
	19.77	0.25	0.1	-1.72	1.34	-0.86	0.15
$R^2$	0	0.194	0.312	0.065	0.003	0.046	0.287
<i>Long term effect</i>		0.77	0.91	0.69	0.55	0.77	0.85

### (III) Fire-sale discount - standard method

- Run an hedonic-price regression

$$P_i = \alpha + \beta X_i + \varepsilon_i$$

- where
  - $i$ : transaction index
  - $P$ : transaction price (in log)
  - $X$ : an index of characteristics
    - age, size, type, time fixed effects
  - $\varepsilon$ : error term

- Then run

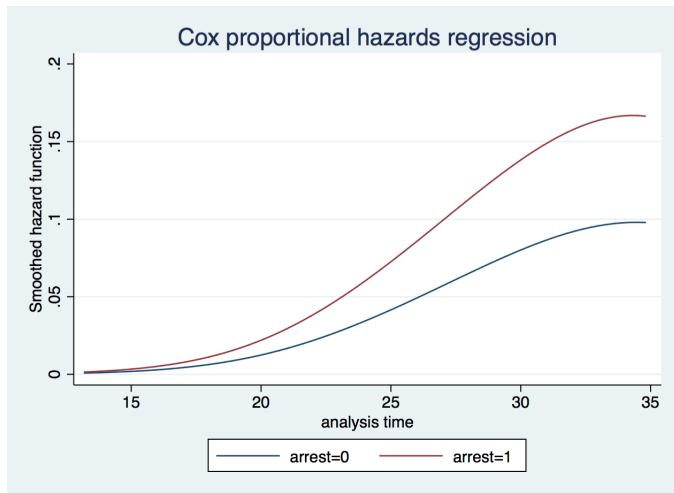
$$\varepsilon_i = \bar{\alpha} + \bar{\beta} D_{fire}$$

- Pulvino (1998): the discount is up to 30% (in recession). We agree.

# Anecdotal evidence: arrested vessels are in miserable condition

- From Lloyd's narratives
  - “auxiliary engines and boiler trouble”
  - “ingress of water into engine-room; hull in bad condition; cargo holds water contaminated”
  - “cracks in hull”
  - “survey revealed unseaworthiness”
  - “bottom damage requiring considerable steel renewal”
  - “sold to Bangladeshi breakers”
- Myers (1977) under-investment problem applied to maintenance

# Vessels' hazard rates, by arrest



- Hypothesis:  $hazard|_{arrest} = hazard|_{no-arrest}$ 
  - rejected: z-stat 6.28, significant at 1%,



# Converting hazard rates to price discounts: intuition

- Interpretation: the vertical distance between the graphs
  - a vessel, say, 17 years old, under arrest
  - is 3% more likely to “die”
  - relative to a non arrested vessel
- Interpretation: the horizontal difference between the graphs
  - to find the break-up probability of the above vessel
  - add 3 “effective” years to its “nominal” age
- If a vessel depreciates at, say, 5%*PA*, then 15% of the “raw” fire-sale discount is explained by low maintenance

# More formally: use hazard rates as an instrumental variable

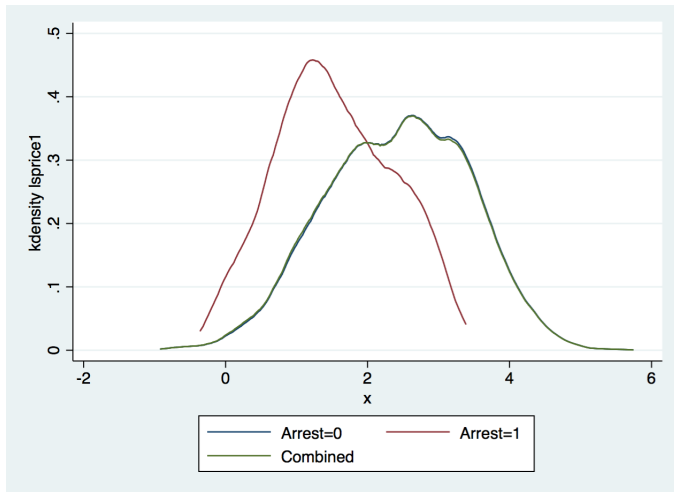
- Identification: let
  - $X$  characteristics, excluding age
  - $D$ : dummy variable for arrest
  - $AGE$ : registered age
  - $\delta$ : extra effective age per arrest
- Then it is easy to show that the following system is identified

$$p_i = \alpha_p + \beta_p X_i + \gamma_p (AGE_i + \delta D_i) + \lambda D_i + \varepsilon_{p,i}$$

$$h_i = \alpha_h + \beta_h X_i + \gamma_h (AGE_i + \delta D_i) + \varepsilon_{h,i}$$

	without quality correction	with quality correction
Arrested	-0.259*** (-7.4)	-0.134*** (-3.8)
observations	9,673	9,673
$R^2$	0.011	0.003

# Further possible effects: corruption and valuation



- Shipping is not a frictionless industry; we find evidence:
  - under investment in maintenance
  - dysfunctional owners
    - many dubious characters
- Yet, these are not the kind of frictions that are used to justify Ch. 11
- Europe is obsessed with harmonization of insolvency law
  - EC Regulation 1346/2000
  - is it really necessary?