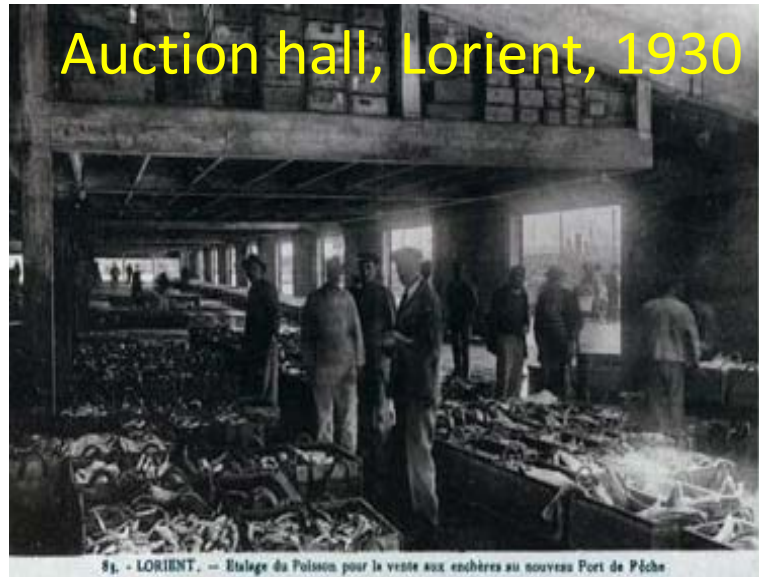




The declining price anomaly in sequential auctions with asymmetric bidders
The case of *Nephrops norvegicus* in Lorient

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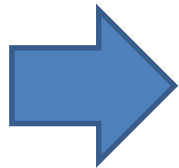


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Context and issue

- Auction theory (Vickrey 1961, Milgrom-Weber 1982)
- Declining price anomaly = « afternoon effect » (Ashenfelter 1989, Ashenfelter et Genesove 1992, McAfee et Vincent 1993, Ginsburgh 1998)
- Context of fish markets (Härdle et Kirman 1995, Graddy 1997, Kristofersson and Rickertsen 2007, Gallegati *et al.* 2011, Fluvia *et al.* 2012)
- Asymmetry of bidders involved in sequential transactions of identical lots (Pezanis-Christou 2000, Neugebauer et Pezanis-Christou 2007, Gallegati *et al.* 2011, Fluvia *et al.* 2012)



Can the price declining anomaly be observed in the fish market of Lorient and what is the role of different time frames (daily, weekly, monthly) and asymmetric groups of bidders on the daily dynamics of fish prices (case of *Nephrops norvegicus*)?



DATA : 67,151 transactions (observations 01-09-2010 to 29-09-2012)

Homogenous lots of Live Nephrops size 4 (small)

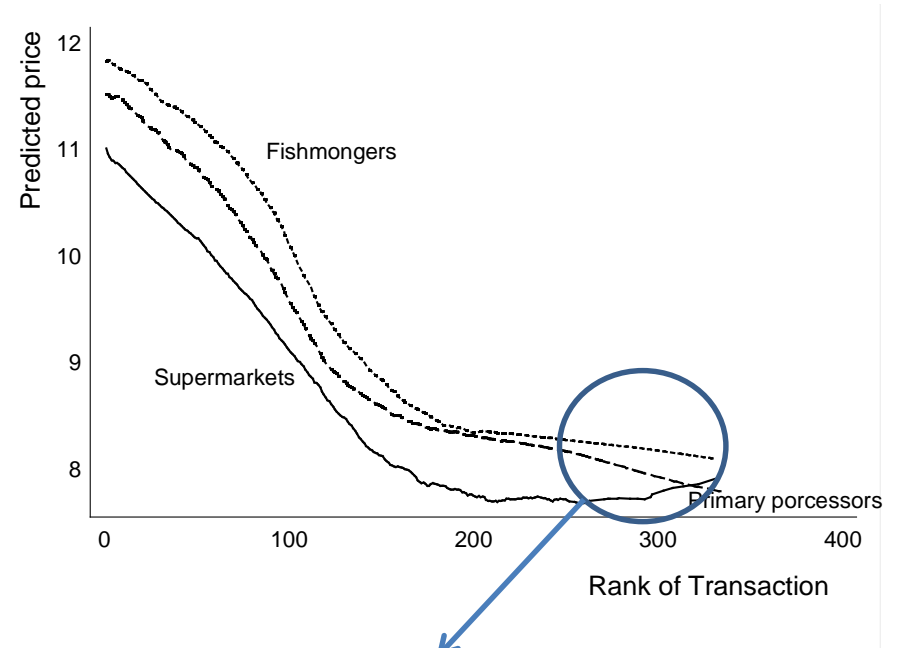
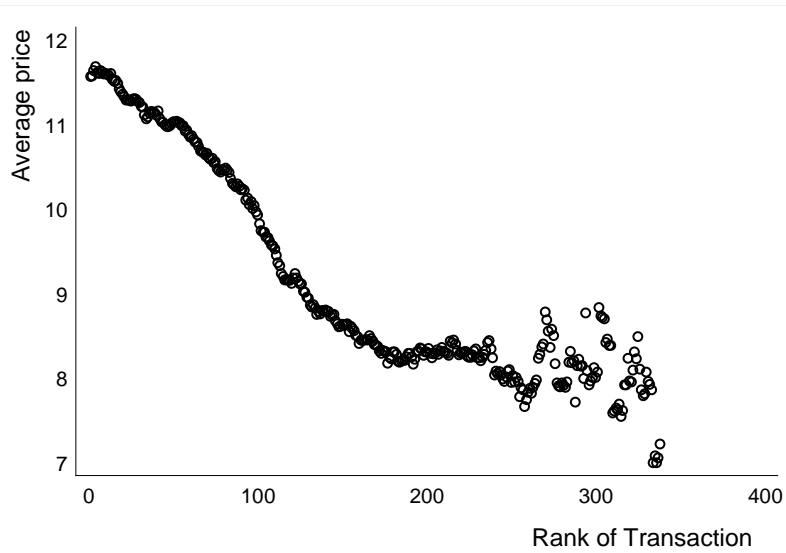
Sales between 4 and 6 am at descending auctions (1 lot sold every 15 seconds)

Variables: price in €/kg, lot weight, rank of transaction, vessel code, buyer code and type (multiple grocers, fishmongers, primary processors)

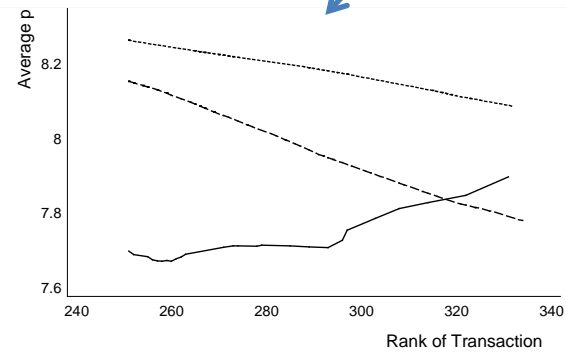


Data and stylized facts

1) Daily price

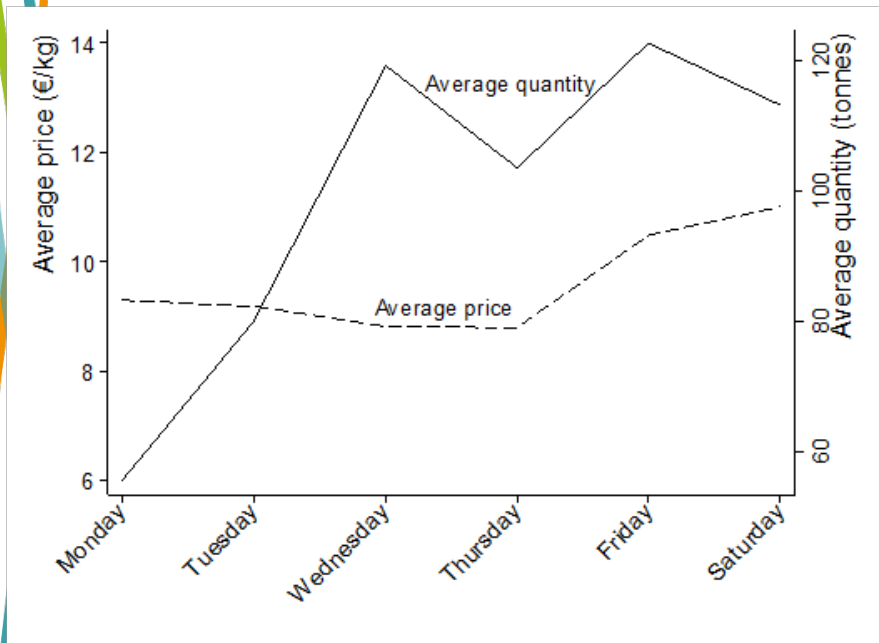


75% of sales days account for less than 108 transactions

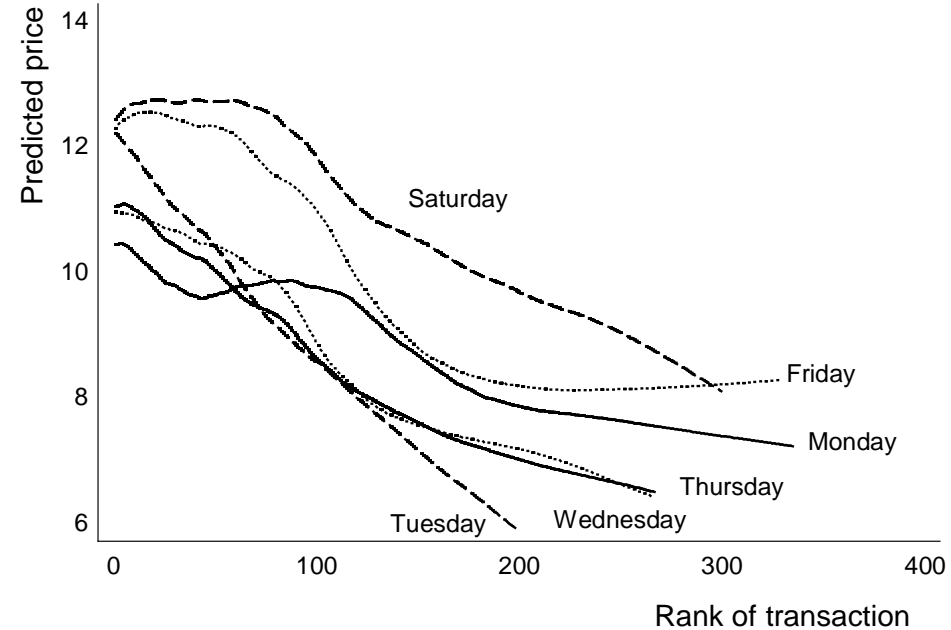


2) Daily price pattern per week day

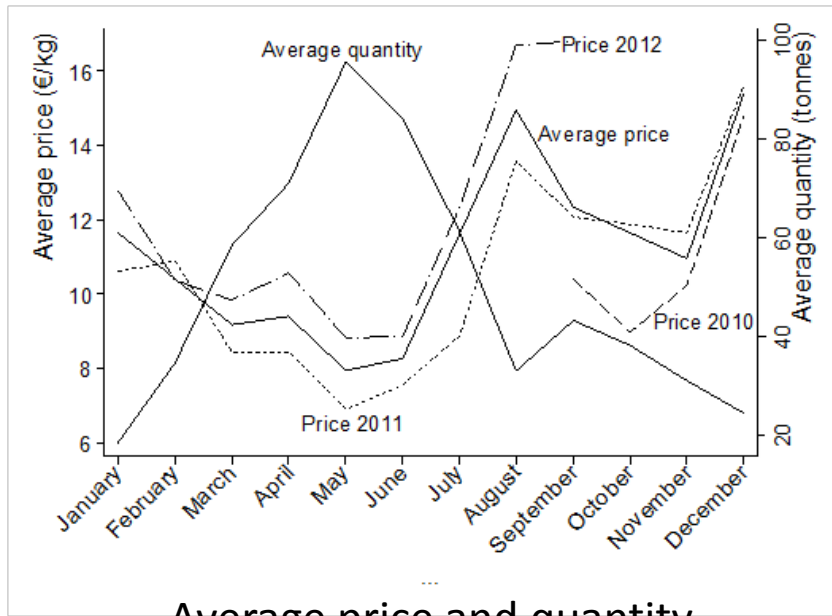
Daily average price and quantity per weekday



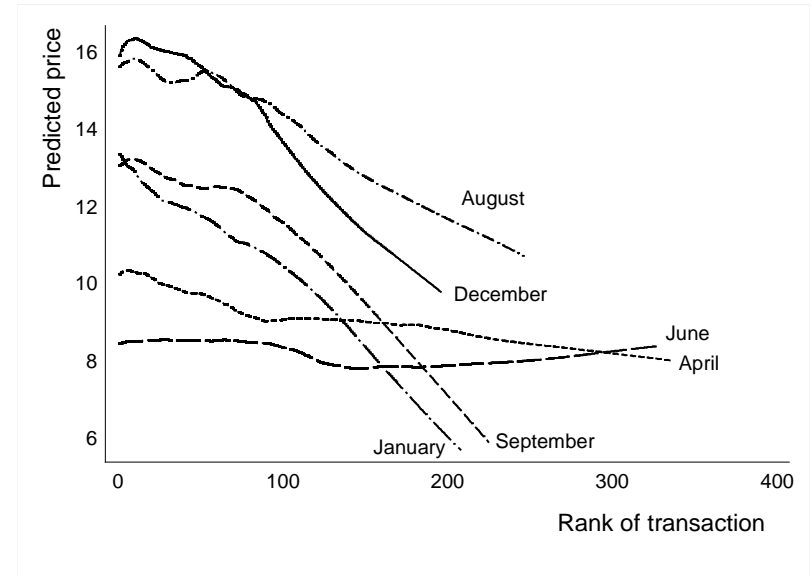
Steeper decline in a mid-week day, later decline on the week-end



3) Daily price pattern per month



Average price and quantity per month



Steeper decline in August and December, periods of demand peak

Models and results

Estimation for no buyer group effect and testing for buyer group effects with several unbalanced panel models (N=547, $\bar{T} = 122$):

$$P_{it} = \gamma P_{it-1} + \beta W_{it} + u_i + \varepsilon_{it}$$

P_{it} is the vector of price (in logarithms) that vary between days i and transaction's rank t ,
 W_{it} is a vector of lot size,
 γ and β s are the parameters to estimate,
 u_i is the day-specific effect and ε_{it} is a residual error term

The rank variable was divided into ten ordered categories of transactions, each representing a decile of the distribution

Time series properties: unit root tests (Pesaran, 2007); cointegration tests (Westerlund, 2007), cross-section dependency test (Pesaran, 2004)

The model was tested in different forms: **OLS, FE, MG, LSDVC**

For example, in the MG model, the estimated coefficients are averaged across days:

$$\beta = \frac{1}{N} \sum_{i=1}^N \hat{\beta}_i$$

	OLS	FE	MG	LSDVC
Lag of the price				0.8322*** (0.0060)
Lot size	-0.1620*** (0.0106)	-0.0206*** (0.00241)	-0.0219*** (0.0025)	-0.0069*** (0.0004)
Transaction ranks (deciles)				
Less than 12	Ref.	Ref.	Ref.	Ref.
12 lo less than 24	0.0139*** (0.0032)	0.0029 (0.0030)	0.0023 (0.0030)	-0.0022 (0.0012)
24 lo less than 36	0.0059 (0.0044)	0.0002 (0.0035)	0.0014 (0.0036)	-0.0016 (0.0013)
36 lo less than 50	-0.0022 (0.0058)	-0.0003 (0.0038)	-0.0013 (0.0036)	-0.0018 (0.0014)
50 lo less than 64	-0.0120* (0.0068)	-0.0015 (0.0043)	-0.0006 (0.0038)	-0.0023* (0.0012)
64 lo less than 79	-0.0328*** (0.0077)	-0.0087* (0.0047)	-0.0070* (0.0040)	-0.0034** (0.0013)
79 lo less than 96	-0.0547*** (0.0087)	-0.0093* (0.0049)	-0.0084** (0.0039)	-0.0030** (0.0011)
96 lo less than 119	-0.1090*** (0.0104)	-0.0144** (0.0055)	-0.0083** (0.0036)	-0.0043*** (0.0009)
119 lo less than 156	-0.1750*** (0.0138)	-0.0236*** (0.0067)	-0.0112*** (0.0032)	-0.0064*** (0.0014)
More than 156	-0.2390*** (0.0208)	-0.0393*** (0.0119)	-0.0090*** (0.0028)	-0.0088*** (0.0012)

Models and results

Results by buyer group (OLS):

	Symmetric buyers				Asymmetric buyers			
	All buyers		Fishmongers		Primary Processors		Supermarkets	
	<u>Coeff</u>	SE	<u>Coeff</u>	SE	<u>Coeff</u>	SE	<u>Coeff</u>	SE
Lot size	-0.088***	(0.007)	-0.084***	(0.006)	-0.082***	(0.009)	-0.123***	(0.010)
Transaction ranks								
Less than 12	Ref.		Ref.		Ref.		Ref.	
12 lo less than 24	0.008***	(0.003)	0.006	(0.005)	0.010	(0.007)	0.016**	(0.007)
24 lo less than 36	0.001	(0.004)	0.004	(0.006)	-0.004	(0.007)	0.001	(0.008)
36 lo less than 50	-0.006	(0.005)	-0.006	(0.006)	-0.011	(0.008)	0.001	(0.009)
50 lo less than 64	-0.013**	(0.006)	-0.008	(0.007)	-0.021**	(0.009)	-0.015	(0.009)
64 lo less than 79	-0.032***	(0.007)	-0.035***	(0.008)	-0.034***	(0.010)	-0.014	(0.010)
79 lo less than 96	-0.044***	(0.007)	-0.041***	(0.008)	-0.050***	(0.010)	-0.039***	(0.011)
96 lo less than 119	-0.068***	(0.008)	-0.072***	(0.009)	-0.060***	(0.011)	-0.065***	(0.012)
119 lo less than 156	-0.097***	(0.010)	-0.101***	(0.011)	-0.088***	(0.012)	-0.094***	(0.012)
More than 156	-0.142***	(0.015)	-0.151***	(0.016)	-0.126***	(0.017)	-0.144***	(0.019)

+ Weekday, Month and Year dummies

.../...

Buyer group	
Fishmongers	Ref.
Supermarkets	-0.030*** (0.003)
Primary processors	-0.007*** (0.003)

Conclusion

- The presence of a declining price anomaly is confirmed on a French market for *Nephrops norvegicus* with sequential Dutch auctions of identical goods
- A steeper decline is more likely to occur during mid-week days, low-catch seasons and even years facing demand peaks
- Our results tend to validate the risk-averse attitude of buyers: risk-averse bidders would tend to bid more aggressively during the first transactions and, once served, may leave the market earlier
- Second paradox with different buyer groups having distinct private values and risk attitudes: multiple grocers show a later declining pattern than fishmongers or processors, although paying a lower price on average (by picking up the most favorable market time periods).

Thank you for your attention!



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