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# Individuals versus couples in their choices of differentiated goods: preliminary evidence from performing arts industry

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- Performing arts is one of not numerous number of markets where the goods are consumed not only individually but by the couples (or groups)
  - Preferences can be heterogeneous within the group
  - Joint consumption can enhance some dimensions in consumer preferences
- The research focus of this paper is to investigate the difference in spectators behavior when they go to the theater individually or in couples



# Outline

- Literature review
- Data collection and preparation
- Model
- Results
- Conclusion

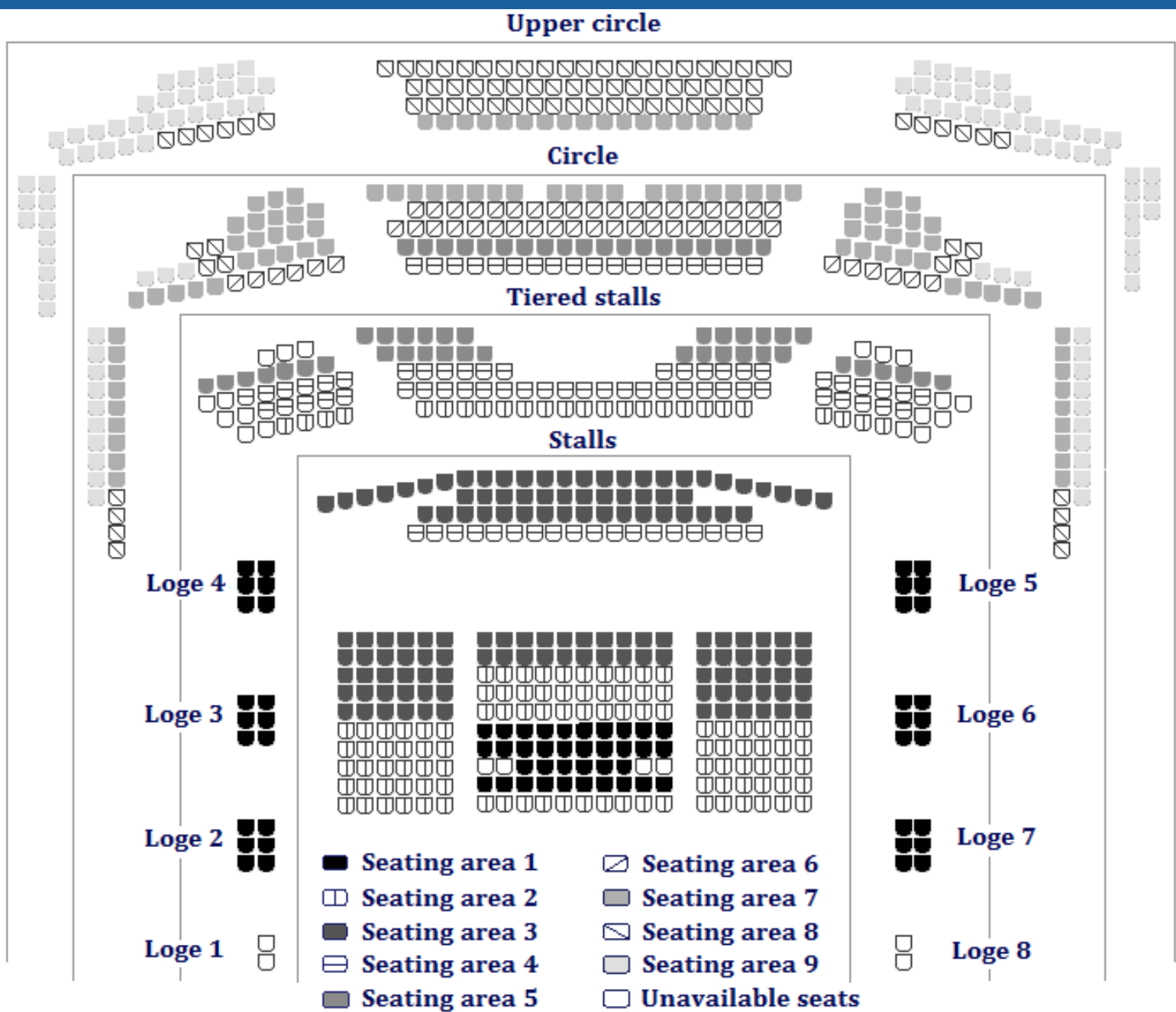
- Performing arts demand estimation
  - Leslie (2004) estimates the effect of price discrimination strategies for Broadway theaters on producers profits and customers welfare.
  - Laamanen (2013) investigates the determinants of theater demand (price and performance characteristics)
  - Tereyagoglu et al. (2012) develop competing proportional hazard framework that models the dynamic effects of an organization's show and time related pricing decisions on the customer's propensity to purchase a ticket
  - Buzanakova and Ozhegov (2016) explore the determinants of demand for the theater using censored quantile regression that accounts for the heterogeneity of effects on different levels of attendance rates and censoring.

- Household behavior discourse
  - Adamowicz, W., Hanemann, M., Swait, J., Johnson, R., Layton, D., Regenwetter, M., Reimer, T., Sorkin, R., 2005. Decision strategy and structure in households: A “groups” perspective. *Mark. Lett.*
  - Vermeulen, F., 2002. Collective household models: Principles and main results. *J. Econ. Surv.*

- Behavior of groups (households) in certain context
  - Eating (Roth et al. (2001) , Salvy et al. (2007), McFerran et al (2010) )
  - TV watching (Yang, S., Narayan, V., Assael, H., 2006)
  - Vocation (Bronner, F., de Hoog, R., 2008.)
  - Water quality (Beharry-Borg, N. et al., 2009)
- Ostensible behaviour
  - Ratner, R. K., & Kahn, B. E. (2002) reveal that people consumers exhibit preference for variety when someone looks after them
  - Others

# Research questions

- Do individuals versus couples distinguish in terms of
  - Structure of utility function
  - Price elasticities
  - Seats quality perception
    - and attitude to seats area occupancy
  - Ostensible behavior

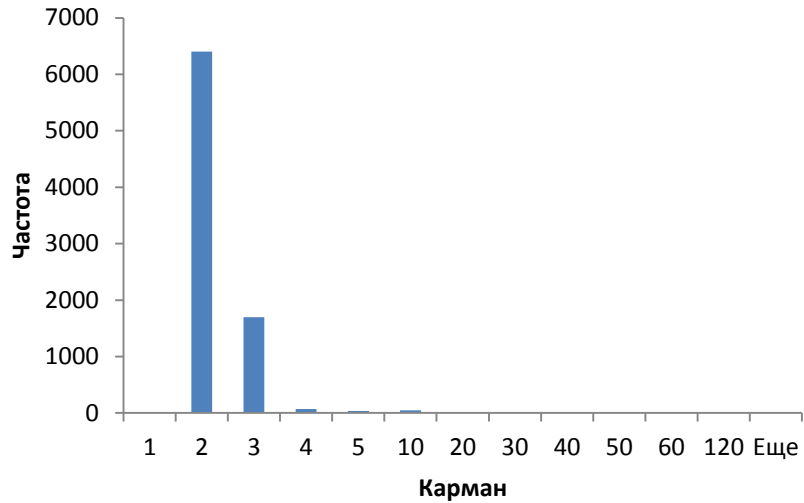




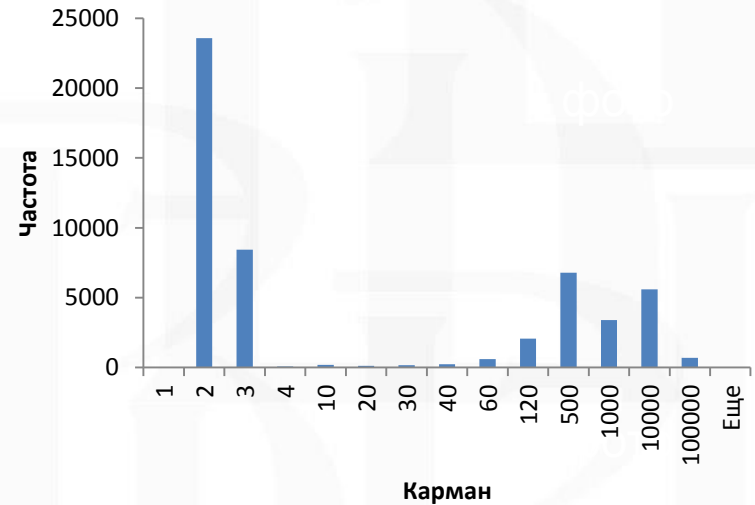
- Perm Opera and Ballet Theater
  - 4 seasons (2011-2015)
  - 107 performances
  - 705 shows
  - approximately 500 000 tickets

Stage	Performances	Shows	Tickets	
Original data	103	705	503 489	
Exclude all but bullet and opera	40	429	305 012	61%
Exclude 0 price tickets	40	423	262 497	52%
Exclude seating area scheme all but 1	37	310	184 642	37%
Exclud nontypical price schemes	37	307	184 440	37%
Exclude area for officers	37	307	179 403	36%
Exclude 2 chanel (distributors and distribution company)	37	306	78 633	16%
Exclude "strange" tickets	37	306	78 544	16%

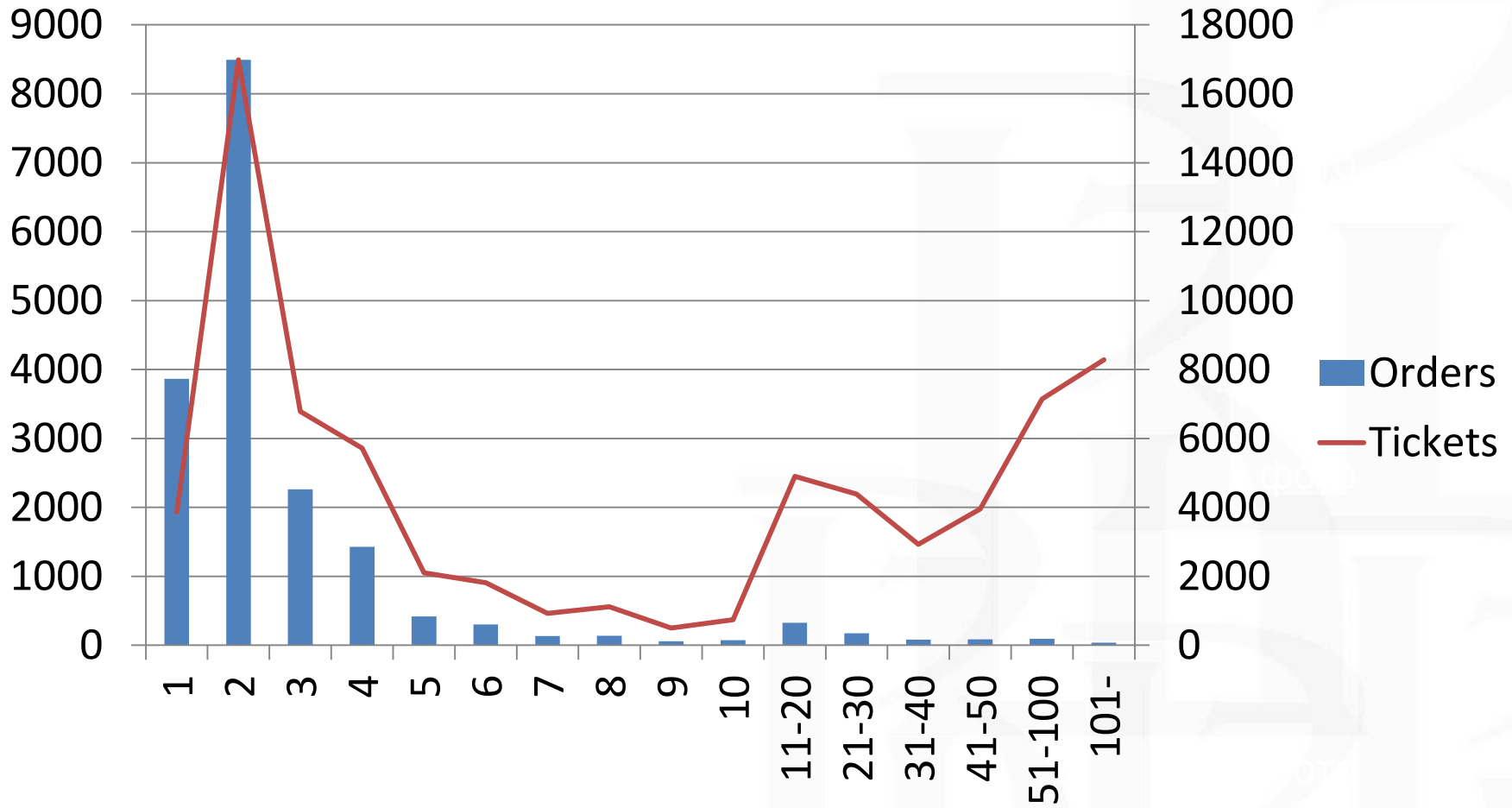
## Non-zero orders



## Zero-orders



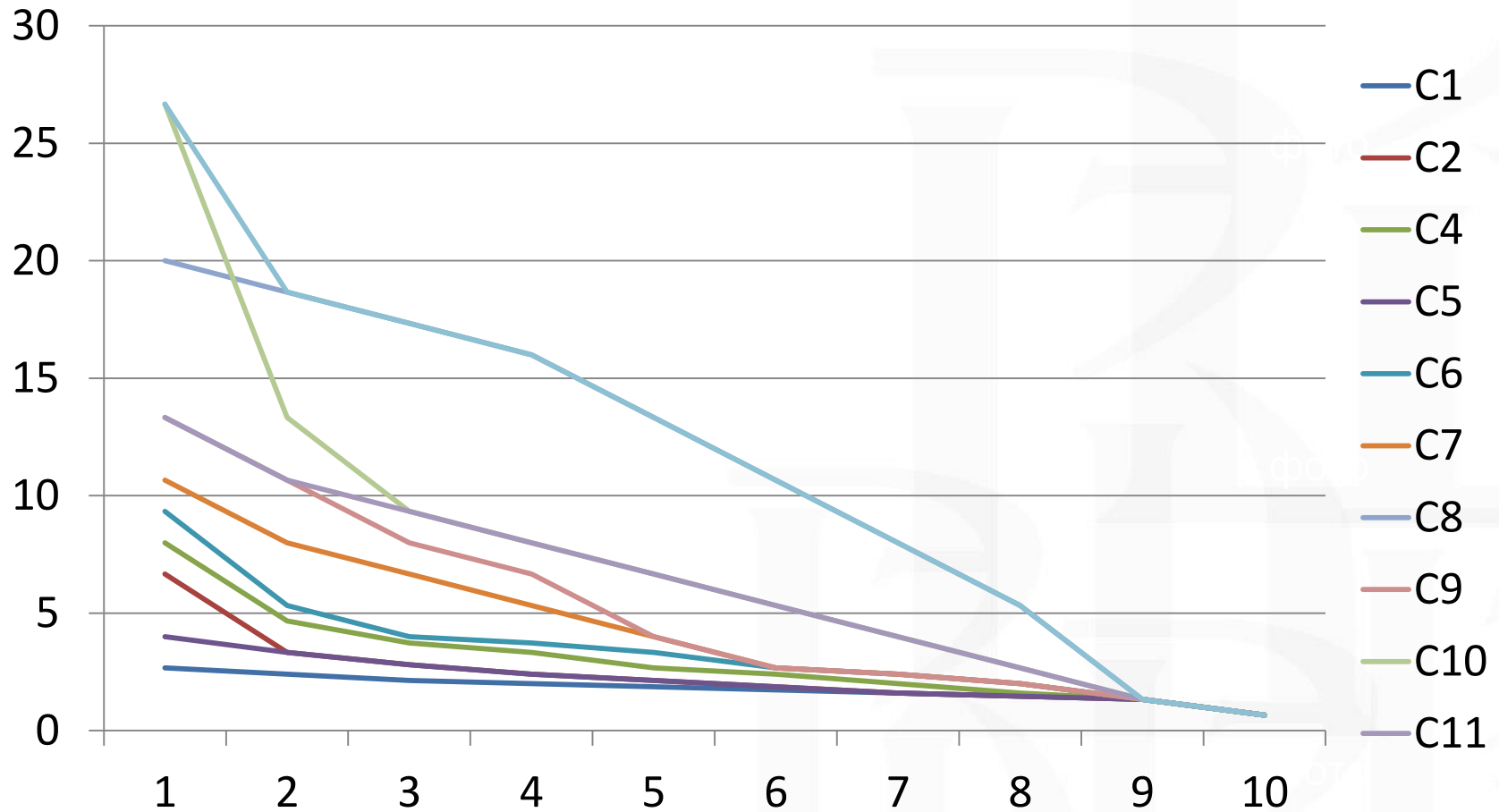
# Data - orders





# Data – price schemes

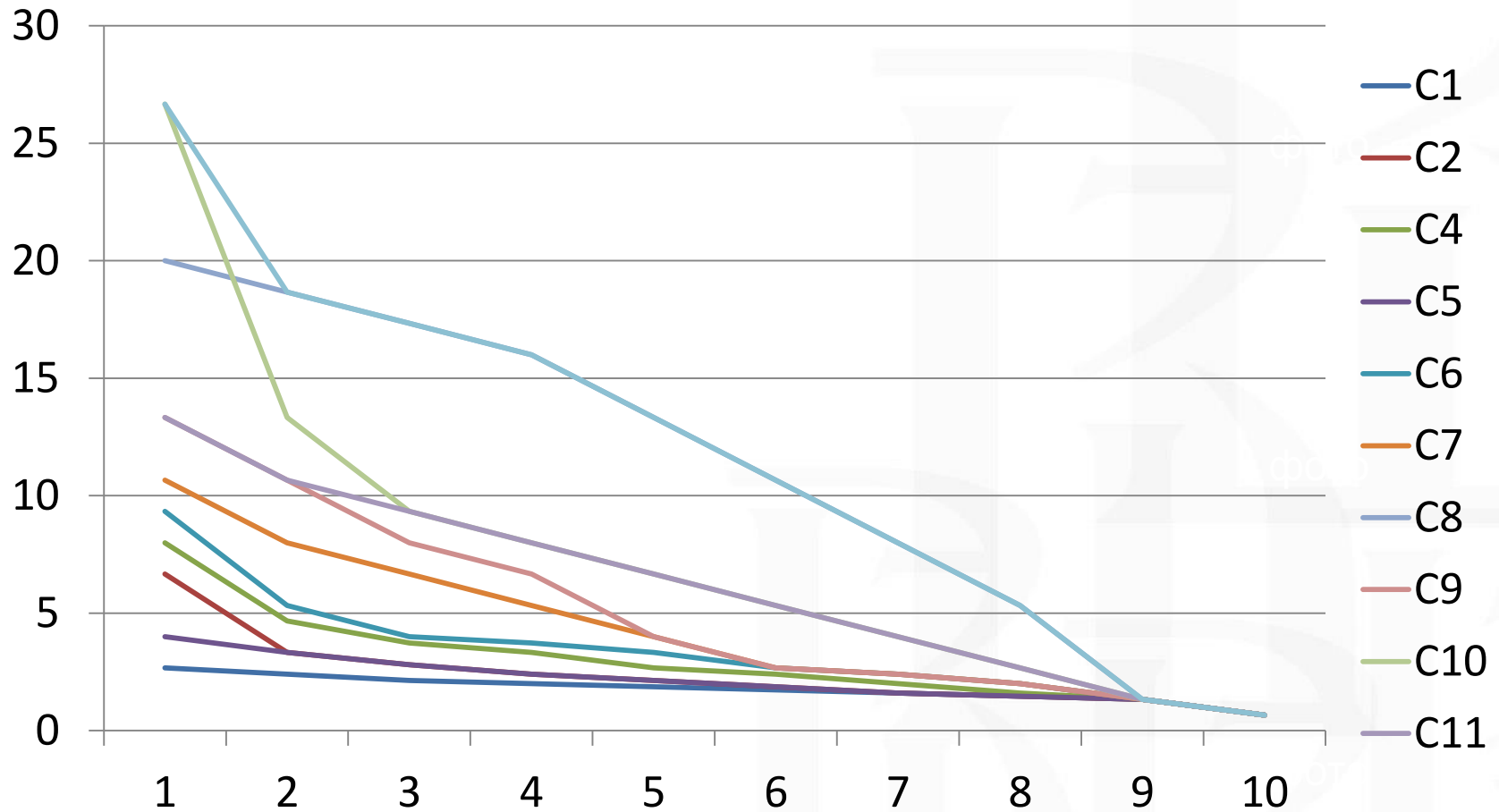
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# Data – price schemes

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- Discrete choice model (MNL) based on reconstructed choice set
  - Alternative – seating area  
(9 alternatives in each choice set)
  - Comparison individual versus couple orders  
(population subsamples)
  - Utility is influenced by price, seating area quality, occupancy, type of performance, time of purchase



$$U^n_{ijk} = V^n_{ijk} + \varepsilon^n_{ijk}$$
$$V^n_{ijk} = \alpha^n \ln P_{jk} + \beta^n_k O_{ijk} + \gamma^n_k D_k + SX_j \delta^n + CX_i \tau^n$$

$n = \{1, 2\}$  - 1 or 2 tickets purchase occasion

$i$  - order

$j$  - show

$k$  - seating area

$P_{jk}$  - price for seating area  $k$  of show  $j$

$O_{ijk}$  - occupancy of seating area  $k$  of show  $j$  when  $i$  order is made

$D_k$  - dummy for seating area  $k$

$SX_j$  - show  $j$  characteristics

$CX_i$  - purchase occasion (order)  $i$  characteristics



## Results – 1. Structure of utility function

- Employ (Swait and Louviere, 93) to distinct the difference in estimates for two subsamples for the difference in scale parameter and the difference in coefficients
  - $\lambda_a=246 \gg \text{Chi}2(91)$
  - There is no difference in scale parameter that keeps the same structure of utility between  $1t_i$  and  $2t_i$



# Results – 2. Price & Occupancy

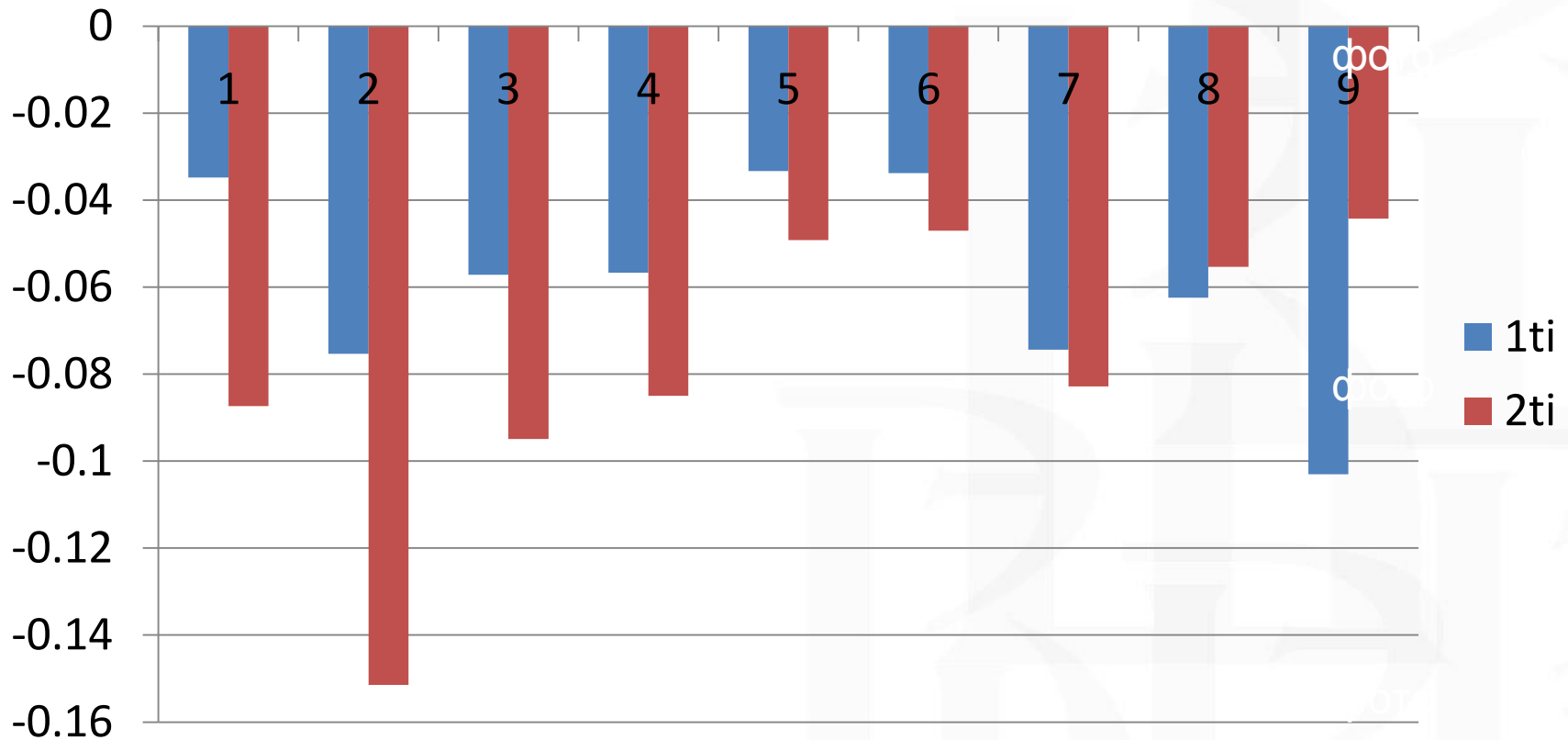
Price and occupancy	# of tickets in order					
	1 ti			2 ti		
	coef.	st.err.	WTP	coef.	st.err.	WTP
ln_basicprice	-0.612**	0.167	-1.000	-0.811**	0.111	-1.000
aoc80	-0.307**	0.087	-0.501	-0.28**	0.058	-0.345
aoc80_extra	-3.028**	0.757	-4.950	-5.341**	0.546	-6.589

\*  $p < 0.05$ , \*\*  $p < 0.01$



# Results – 2. Price & Occupancy

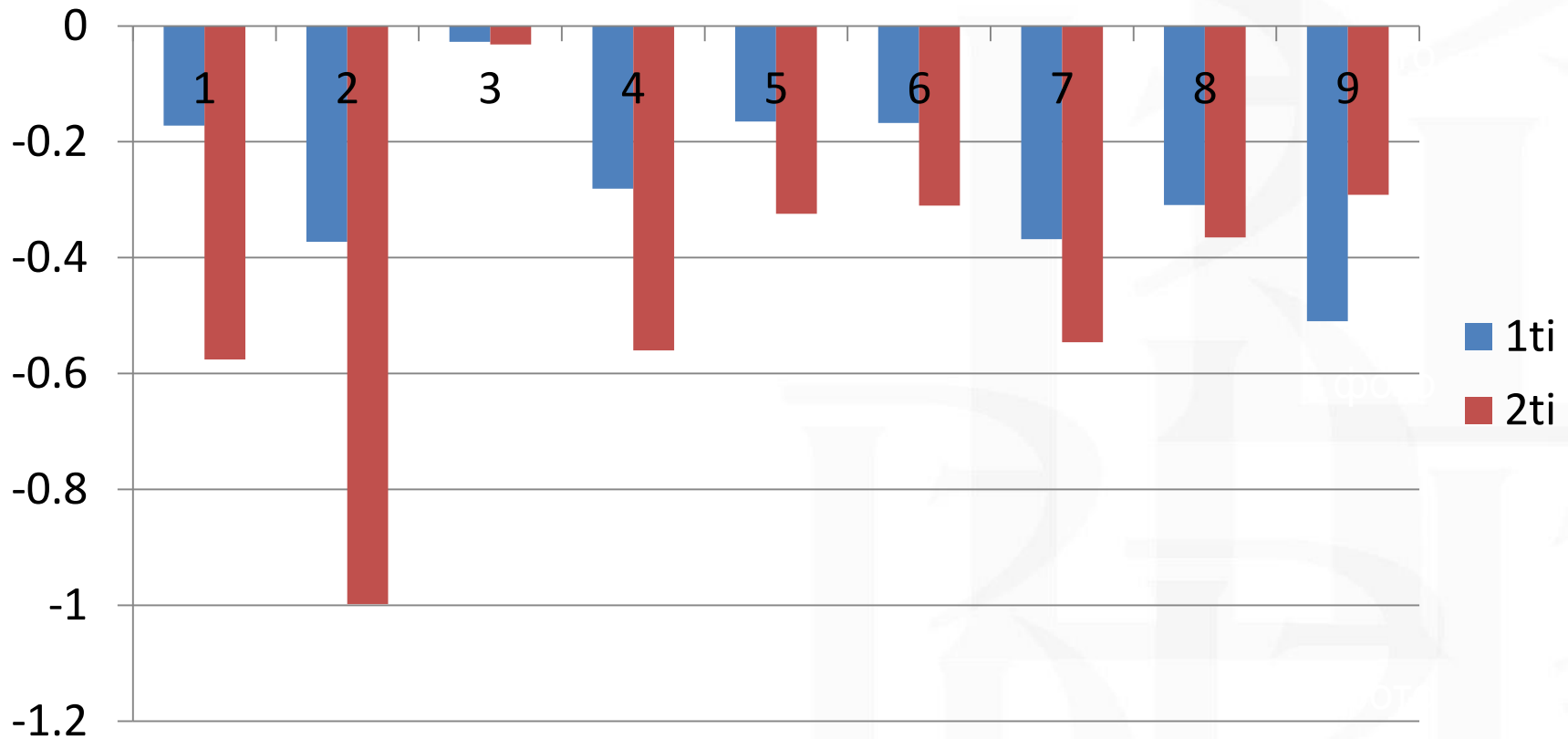
## ln(price) - marginal effects





# Results – 2. Price & Occupancy

## occupancy(>80%) - marginal effects





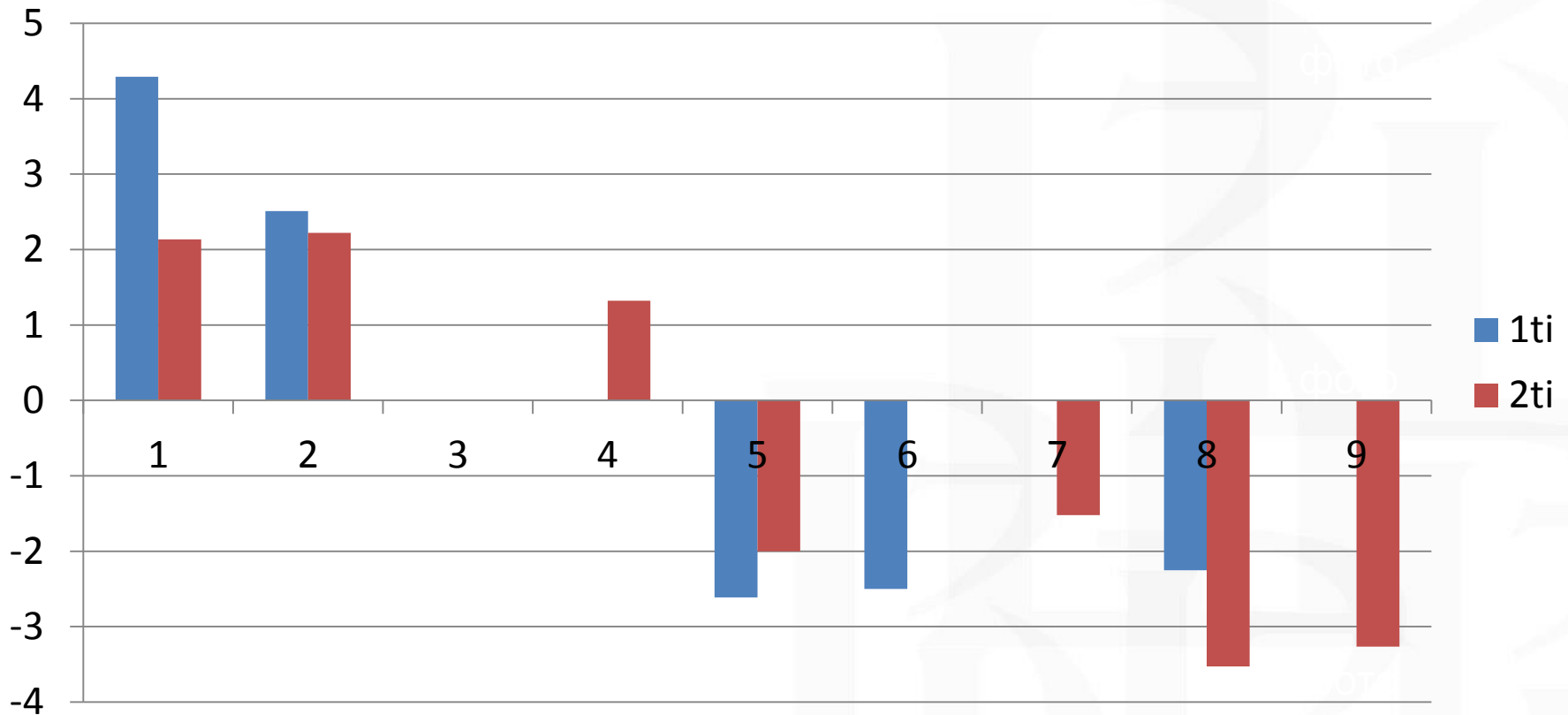
# Results – 3. Show characteristics (WTP)

Show characteristics	# of tickets in order	Seating area								
		1	2	3	4	5	6	7	8	9
_cons	1 ti	4.291**	2.508**	-	-0.634	-2.613*	-2.5*	0.095	-2.255*	-0.345
	2 ti	2.136**	2.22**	-	1.32**	-2.002**	0.117	-1.523**	-3.526**	-3.266**
type_ballet	1 ti	0.223	0.1	-	0.073	0.779	0.374	0.384	-0.049	-0.134
	2 ti	-0.205	-0.068	-	-0.351*	0.152	0.117	0.117	0.119	-0.148
nominees_mask	1 ti	-0.05	0.024	-	-0.116	-0.065	0.037	0.062	0.102	0.017
	2 ti	0.082*	0.069*	-	0.025	0.057	0.117	0.117	0.005	0.043
SeasonAvgPrice	1 ti	-0.006**	-0.003*	-	0	0	0	-0.002	0	-0.001
	2 ti	-0.001	-0.001*	-	-0.001	0.001	0.117	0.117	0.002**	0.001
PriceDiffInSeason	1 ti	-0.072	0.013	-	0.394	1.046*	0.926	0.916**	0.945*	-0.009
	2 ti	-0.681**	-0.508**	-	-0.197	0.368	0.117	0.117	0.516**	-0.332

\*  $p < 0.05$ , \*\*  $p < 0.01$

# Results – 3. Seating area quality

## Seating area quality (WTP)





# Results – 4. Customers characteristics (WTP)

Customers characteristics	# of tickets in order	Seating area								
		1	2	3	4	5	6	7	8	9
tbi1_1_2hours	1 ti	-2.396**	-1.192**	-	-0.988*	0.436	-0.198	-0.933*	0.05	0.716
	2 ti	-1.436**	-1.437**	-	-1.266**	-1.017*	0.117	-1.288**	0.225	0.61
tbi2_0days	1 ti	-0.692	0.292	-	-0.998	0.717	0.923	-0.868	0.012	0.479
	2 ti	-1.173**	-0.973**	-	-1.527**	-0.414	0.117	-1.416**	-0.249	0.287
tbi3_1_7days	1 ti	-1.536**	-1.354**	-	-1.235**	-0.442	0.239	-1.057**	-0.877*	0.512
	2 ti	-0.944**	-1.019**	-	-1.841**	-0.775**	0.117	-1.122**	-0.451*	0.501*
tbi4_8_30days	1 ti	-0.227	-0.147	-	-0.492	-0.281	0.124	0.158	-0.185	0.474
	2 ti	-0.295	-0.286*	-	-0.771**	-0.259	0.117	-0.232	-0.08	0.431*
tbi5_30+days	1 ti	-	-	-	-	-	-	-	-	-
	2 ti	-	-	-	-	-	-	-	-	-
ch_internet	1 ti	-0.396	-0.621	-	-0.71	-1.664**	-0.471	-0.63	-0.538	-0.936*
	2 ti	-0.392	-0.476**	-	-0.539**	-0.927**	0.117	-0.278	-0.841**	-0.462*

\*  $p < 0.05$ , \*\*  $p < 0.01$



# Conclusion

- Individuals versus couples do not differ in terms of utility scale parameter
- Couples are more price sensitive for high-quality (high price) seating areas
- Couples dislike full areas more than individuals
- Perceived quality of seating areas differs
- Couples demonstrate ostensible behaviour (still questionable)



## Limitations (further research)

- Include the same nearest performances in the choice set (could affect price elasticities)
- Include groups of three into analysis
- Allow for spectators heterogeneity inside the group (latent class model)
- Include outside option
  - Think about corporate orders (discrimination)
  - Use instagram data for fissionability



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Questions and comments are welcome

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