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ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΙΡΑΙΩΣ
χρόνια
1938 - 2018
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Assumptions
Determine possible trajectories of future outcomes
Customer behavior assumptions
Relevant for product design / product pricing / valuing future business / estimating appraisal values
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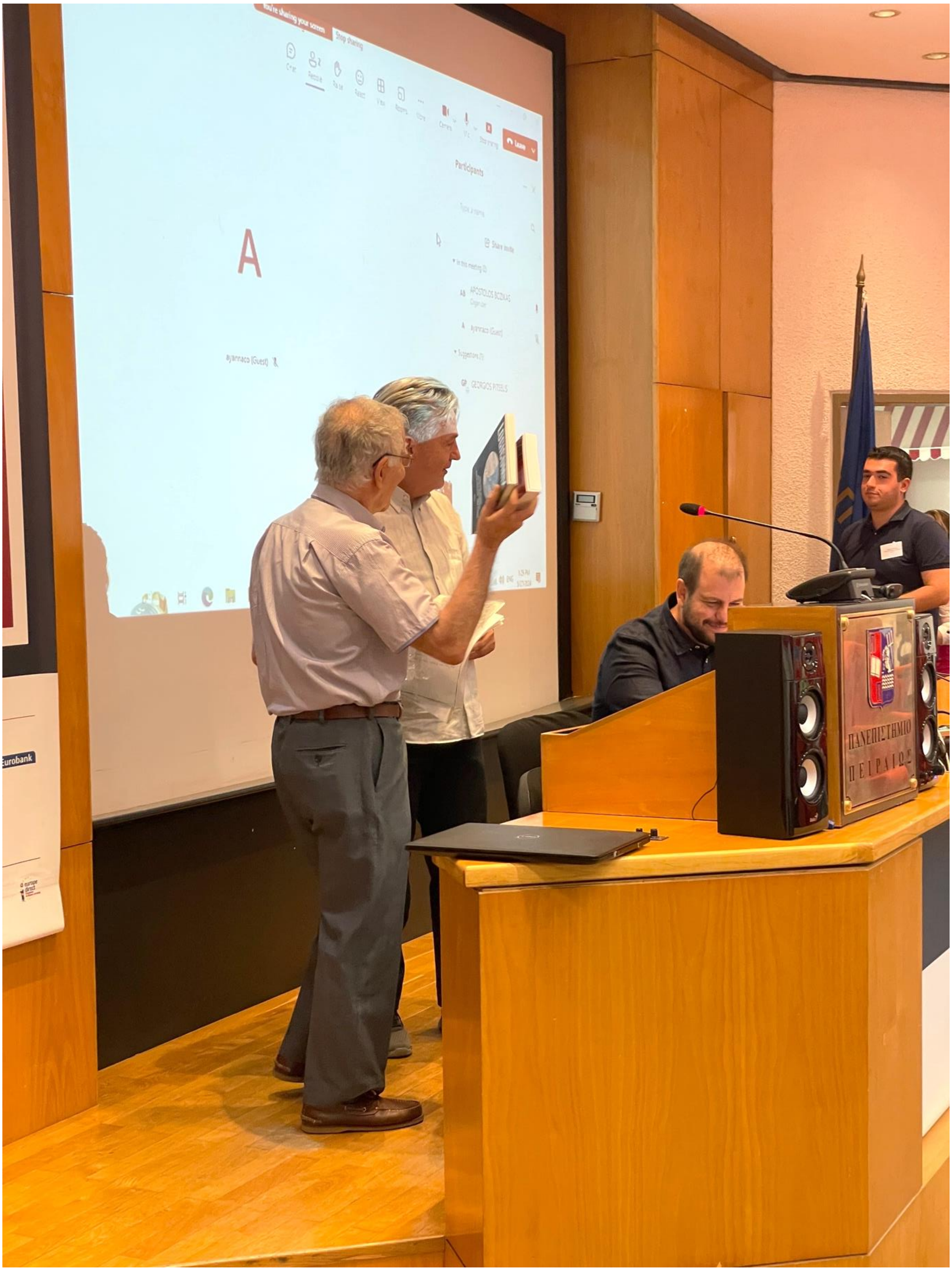
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Meeting in "General"
Take control
Pop out
Chat
People
Raise
React
Kullback-Leibler divergence penalties and robust control
Reduction to a stochastic differential game
Reduction to a stochastic differential game
Motivation: The effect of model uncertainty is mispecification of the mean of the factor process Z, by a stochastic process $b := \{b_s, s \in [0, T]\}$
Consider alternative models $P \in \mathbb{Q} = \{P \in \mathbb{P} : \frac{dP}{dP_0} = \mathcal{E}(b)\}$ so that using Girsanov's theorem the DM problem then reduces to a stochastic differential game of the form
subject to
with action (control) set of players A and B
Advances in Actuarial Sc. and Finance 2024
27 May 2022
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Setup
The investment opportunity set consists of a risk-free asset
return r_f and a stock index with risky excess return r_t at tim
The investor's portfolio return at time $t+1$ is $r_{p,t+1} = r_f +$
where w_t is the allocation weight on the stock index selecte
For simplicity, we assume that the investor's preferences ar
by a mean-variance utility function on the portfolio return
$U_p = \mu_p - \frac{\gamma}{2}\sigma_p^2,$
where μ_p and σ_p^2 are the mean and variance of the portfolio
and γ is the coefficient of risk aversion of the investor.
Other utility functions, e.g., CRRA (or power) utility can be
using numerical methods.
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Surrender value
Insured with age x surrenders an insurance early, say after m years and receives
SV(m) = mVx − SΦ(m)
surrender value
net premium reserve
surrender fee
In reality: expense loaded premiums + possibly participation in profits
Justifications
Increasing the relative fluctuation of risk
Loss due to liquidation of investments
Negative risk selection
Underwriting expenses not yet paid
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$= \inf\{x \in \mathbb{R} : F_X(x) \geq \alpha\}$
$= \frac{1}{1-\alpha}\int_\alpha^1 \mathrm{VaR}_u(X)du.$
$) = E[X|X \geq \mathrm{VaR}_\alpha(X)]$
$(\mathrm{VaR}_\alpha(X)), \quad \hat{F}_X(x) = \int_x^\infty y dF_X(y).$
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Common Credibility Methods:
American Credibility
$\hat{p}^{Amer} = \sqrt{\frac{n}{N}}\bar{x} + (1 - \sqrt{\frac{n}{N}})\mu$
Exact Credibility
$\hat{p}^{Bayes} = \mathbb{E}[X|\Theta = \theta]$
Simple Bühlmann
$\hat{p}^{Bühl} = \frac{k}{n+k}\bar{x} + \frac{n}{n+k}\mu$
UNIVERSITY OF WATERLOO
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IFRS 17 Discount Rates for Insurance Contracts Liabilities
Apostolos Papachristos PhD FIA CERA
"Advances in Actuarial Science and Finance"
Department of Statistics and Insurance Science
University of Piraeus
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Liquidity Characteristics of Insurance Contracts
The liquidity of liabilities cashflows is linked to certain contracts features.
Life Insurance
Ability to lapse or surrender a policy
Surrender penalties
Tax incentives on surrenders (e.g. surrender values are tax-free)
Valuable options or guarantees
Policy term to maturity (longer term -> less liquid)
Medium duration (3 – 10 years)
General Insurance
Annual policy term with some exemptions (e.g. engineering multi-year policies)
A policy cancellation option normally exists in terms and conditions.
Lapse value -> unearned premium
Short duration (1 – 3 years)
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SITUATION IN YE
Over 65 attacks on merchant vessels al
Red Sea route.
A shipping route that plays a crucial
accounting for approximately 12% of al
Major shipping companies such as Ma
Hapag-Lloyd (Germany) decided to a
the Suez Canal altogether and are op
routes instead.
Impact on global supply chains but is
increase insurance risk premia for
forwarders and shipping companies.


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coffee berry


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1 The Fréchet mean framework
2 Convex risk measures under multiple sources
3 Applications of the Fréchet risk measures
4 Conclusions
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Fréchet risk measures: Definition & Properties
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It is clear that if $P_N \in$ Panjer$(a(\Theta), b(\Theta); 0)$ then
$p_n = \int_D \left(a(\theta) + \frac{b(\theta)}{n} \right) \cdot p_{n-1}(\theta)\, P_\Theta(d\theta)$ for any $n \in R_N$
For the various choices of $a(\Theta)$ and $b(\Theta)$ we can obtain recursive
computation of the probabilities p_n.
See, e.g.,
Willmot, G. E. (1993). On recursive evaluation of mixed Poisson
quantities. Scandinavian Actuarial Journal, 1993(2), 114–133.
Gómez-Déniz, E., Sarabia, J. M. & Calderín-Ojeda, E. (2008). Univariate
versions of the negative binomial-inverse Gaussian distributions with
Mathematics and Economics, 42(1), 39–49.
Wang, Z. (2011). One mixed negative binomial distribution with
Statistical Planning and Inference, 141(3), 1153–1160.
However, the are is not a unified formula for these recursions;
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Introduction
Theory of probability metrics came from the investigations
to limit theorems in probability theory. The limit law can
regarded as an approximation to the stochastic model
and, therefore, can be accepted as an approximate
How large an error we make by adopting the approximate
This question can be investigated by studying the distance
between the limit law and the stochastic model.
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Axiomatic construction
These are special properties that should be satisfied in order for the function to be called a probability metric.
Definition 1
A functional d mapping a couple of rv's (X, Y) to $\overline{\mathbb{R}}^+ = \mathbb{R}^+ \cup \{+\infty\}$ is said to be a probability metric if it possesses the following three properties: for all rv's X, Y and Z defined on the same probability space
$Pr(X = Y) = 1 \Rightarrow d(X, Y) = 0$;
$d(X, Y) = d(Y, X)$ for any X, Y;
$d(X, Y) \leq d(X, Z) + d(Z, Y)$ for any X, Y, Z.
(Denuit et al., 2005)
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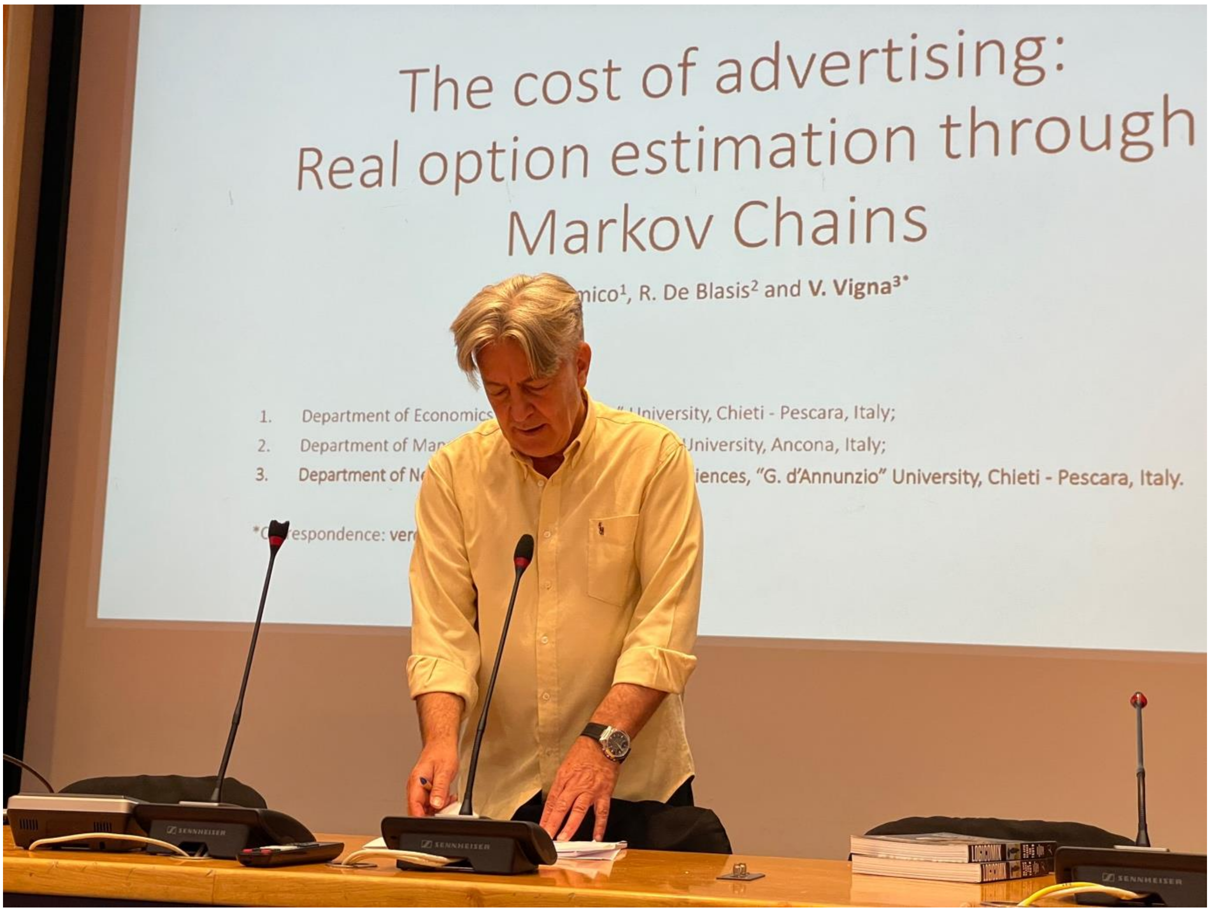
The cost of advertising:
Real option estimation through Markov Chains
R. De Blasis[2] and V. Vigna[3*]
University, Chieti - Pescara, Italy;
University, Ancona, Italy;
"G. d'Annunzio" University, Chieti - Pescara, Italy.


The cost of advertising:
Real option estimation through
Markov Chains
R. De Blasis² and V. Vigna³*
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Method of moments
In the classical moment problem, in which the positive density is sought from knowledge of its finite N + 1 power moment, an infinite number of functions can be found such that they satisfy the requirement that the moments assume their actual value:
Mead and Papanicolaou studied the maximum-entropy approach to the solution of this problem that coincides with the constrained maximization of the following function:
published in Saad and Ruai (2019), has been applied for the
approach.
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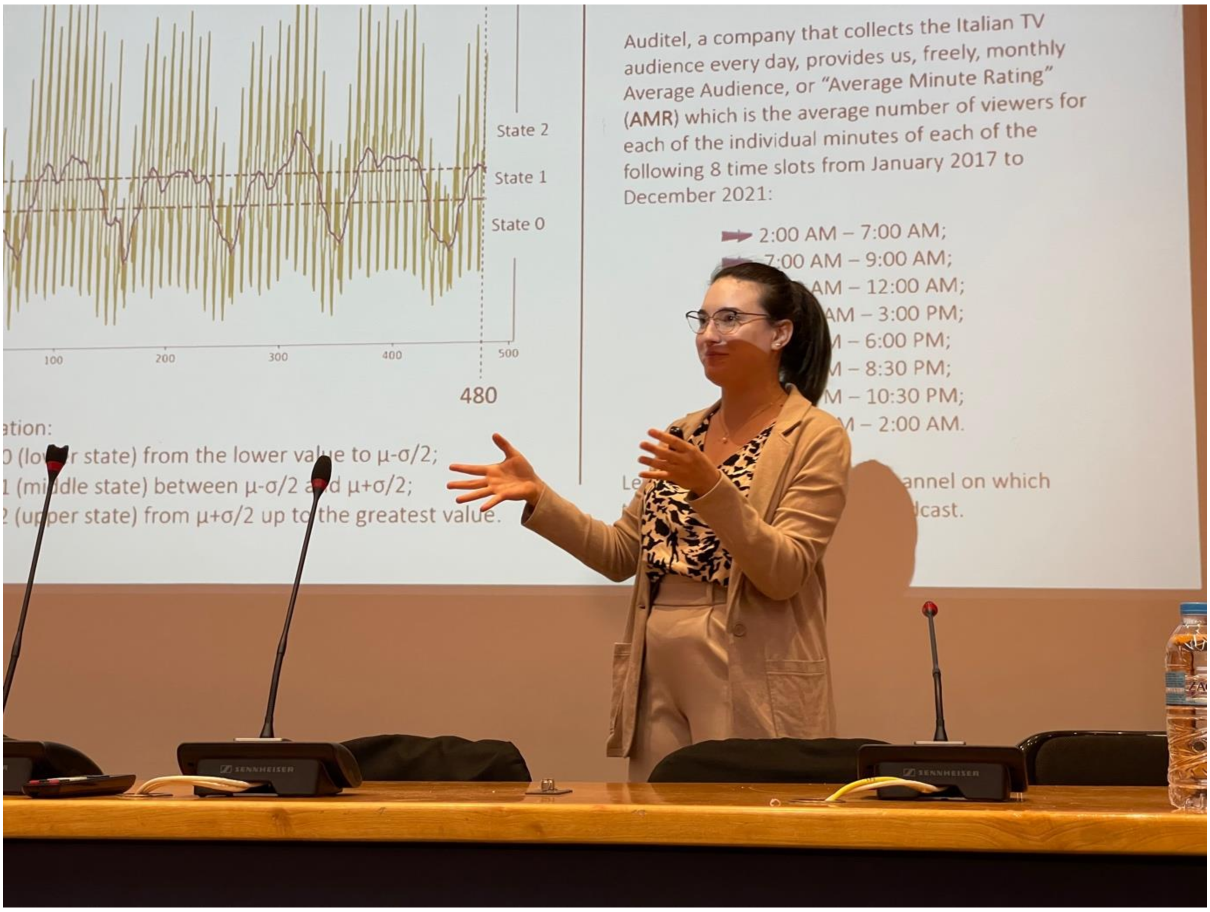
State 2
State 1
State 0
100
200
300
400
500
480
Auditel, a company that collects the Italian TV audience every day, provides us, freely, monthly Average Audience, or "Average Minute Rating" (AMR) which is the average number of viewers for each of the individual minutes of each of the following 8 time slots from January 2017 to December 2021:
2:00 AM – 7:00 AM;
7:00 AM – 9:00 AM;
SENNHEISER


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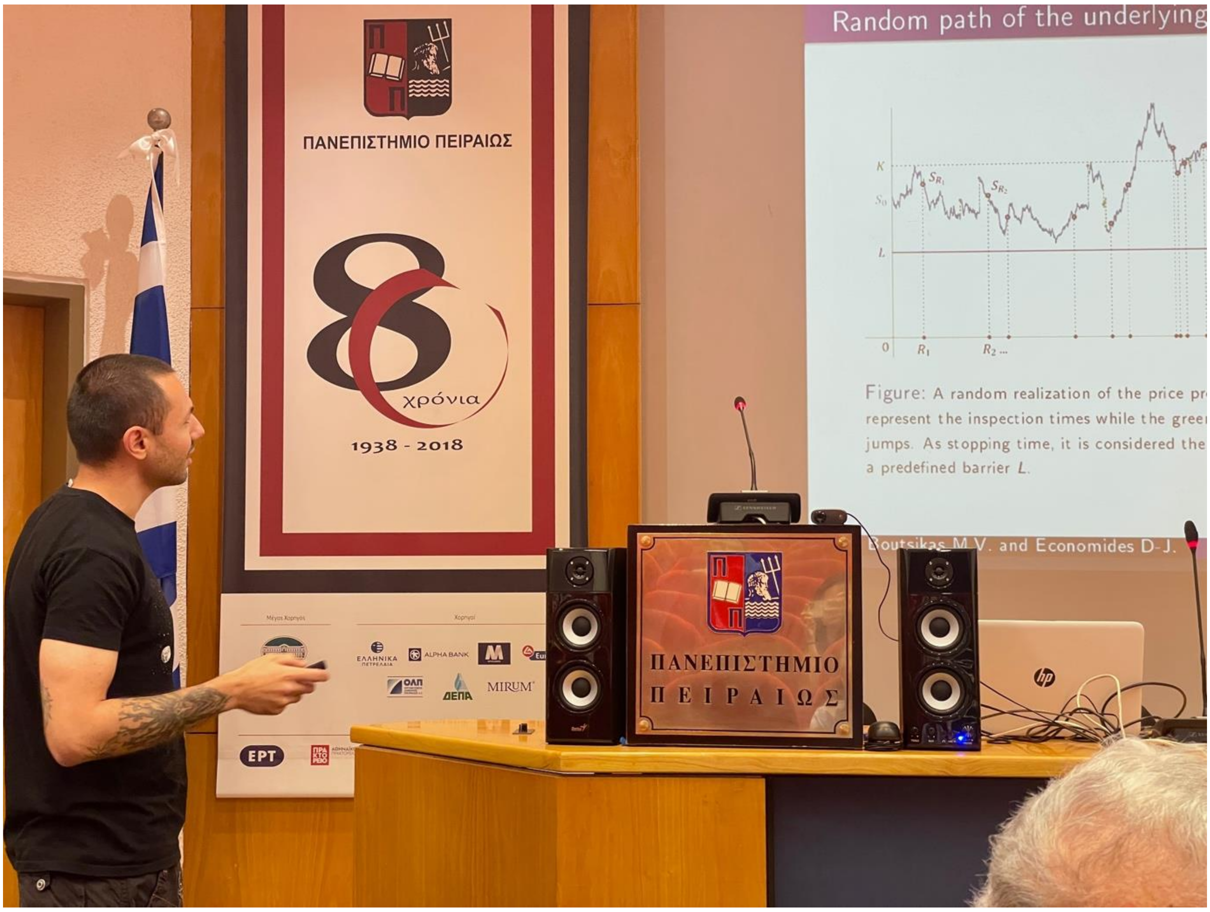
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Random path of the underlying
Figure: A random realization of the price
represent the inspection times while the
jumps. As stopping time, it is considered the
a predefined barrier L.
Boutsikas M.V. and Economides D-J.
ΕΛΛΗΝΙΚΑ ΠΕΤΡΕΛΑΙΑ
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ΔΕΠΑ
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