

II Portuguese Stata User Group Meeting,

# Determinants of generics' market growth

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Bruno Duarte Martins

Pedro Pita Barros

Luís Catela Nunes

Nova School of Business and Economics

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# Motivation

- Objective included in the National Drug Policy;
- Almost inexistent market ten years ago;
- More than 50 policy measures in 2000-2010 to promote the market for generics;
- No miracle solution to boost it;
- No formal analysis of how effective these were has ever been made;
- Waste of resources and wrong policy making?
- Main conclusion: Most measures were not successful.

# Outline

1. Introduction;
2. Methodology;
3. Results;
4. Conclusions.

# Introduction

- Part of the project “10 Anos de Política do Medicamento em Portugal” – Available at [www.saude-em-rede.org](http://www.saude-em-rede.org)
- Advantages of using generics:
  - Government: Decreases public expenditure and improves the financial sustainability of the NHS;
  - Patients: Same treatment at a lower price.
- Successful policy: Increases sales and/or market shares;
- No cost-benefit analysis;
- Optimistic view - Potential positive bias towards successful policies.

# Introduction

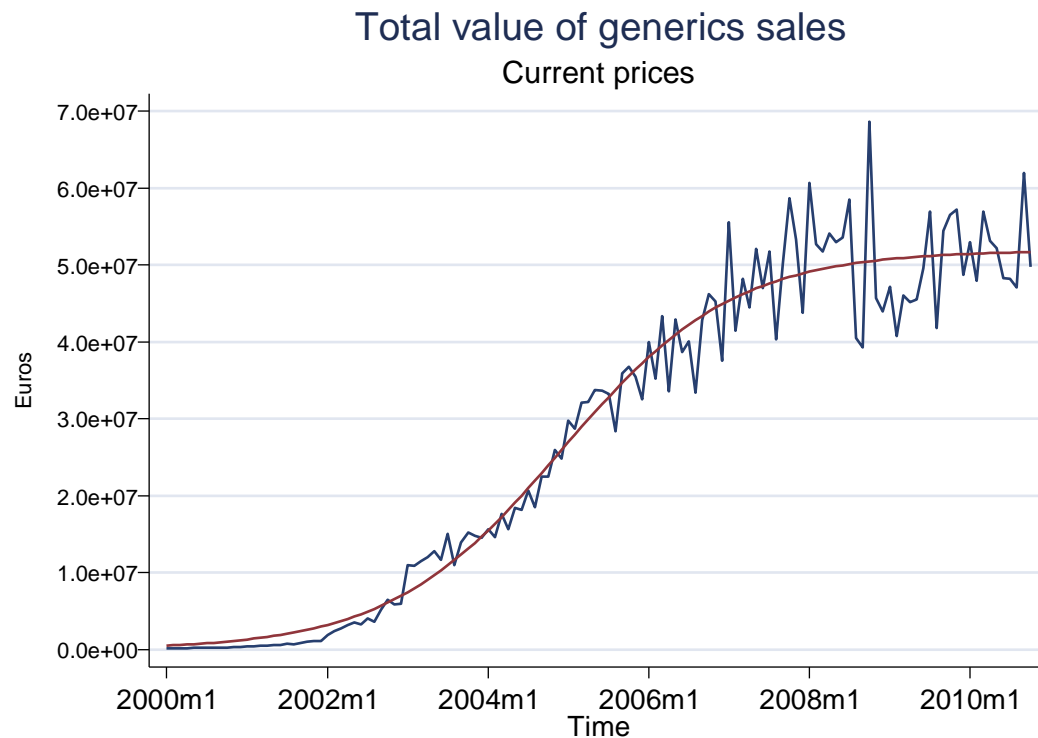
- Market variables:
  - Total value of generics sales, current prices;
  - Total value of generics sales, January 2001 prices;
  - Market share of generic sales to total value of pharmaceuticals, in value;
  - Generics sales, in number of packages;
  - Market share of generic packages to total pharmaceutical packages.
- Last two: Notion of quantity, though not perfect;
- Time span: January 2000 until October 2010.

# Methodology

- Estimation of a diffusion curve: **Logistic function**

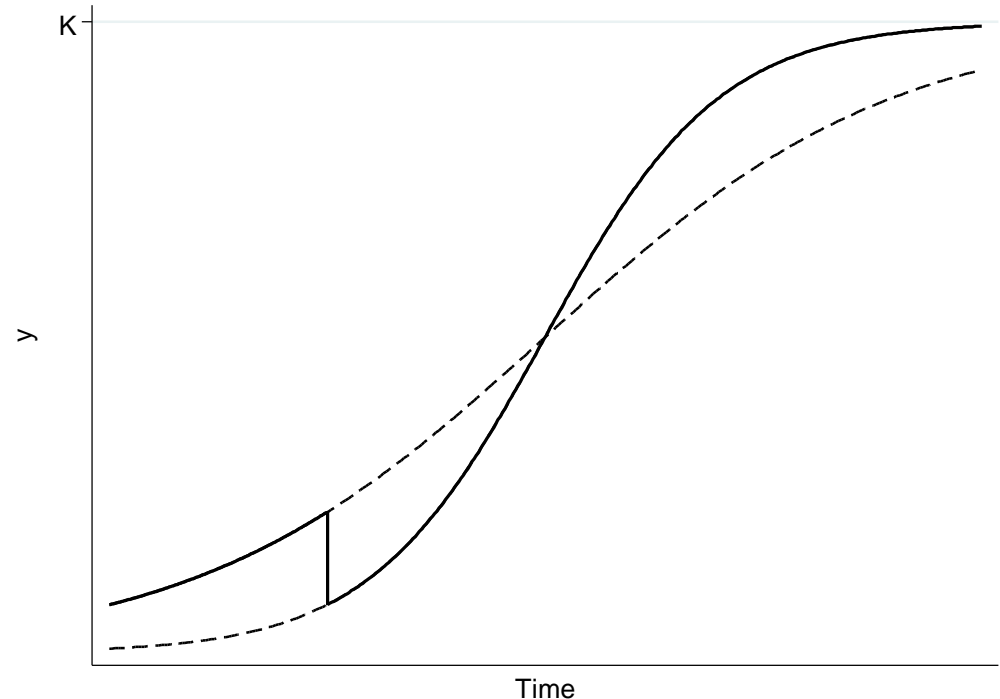
$$y = \frac{K}{1 + \exp\{-(b_1 + b_2 D_t)(t - a)\}}$$

- $D_t$  is a dummy representing the policy measure;
- Logarithms were also used due to heteroskedasticity.



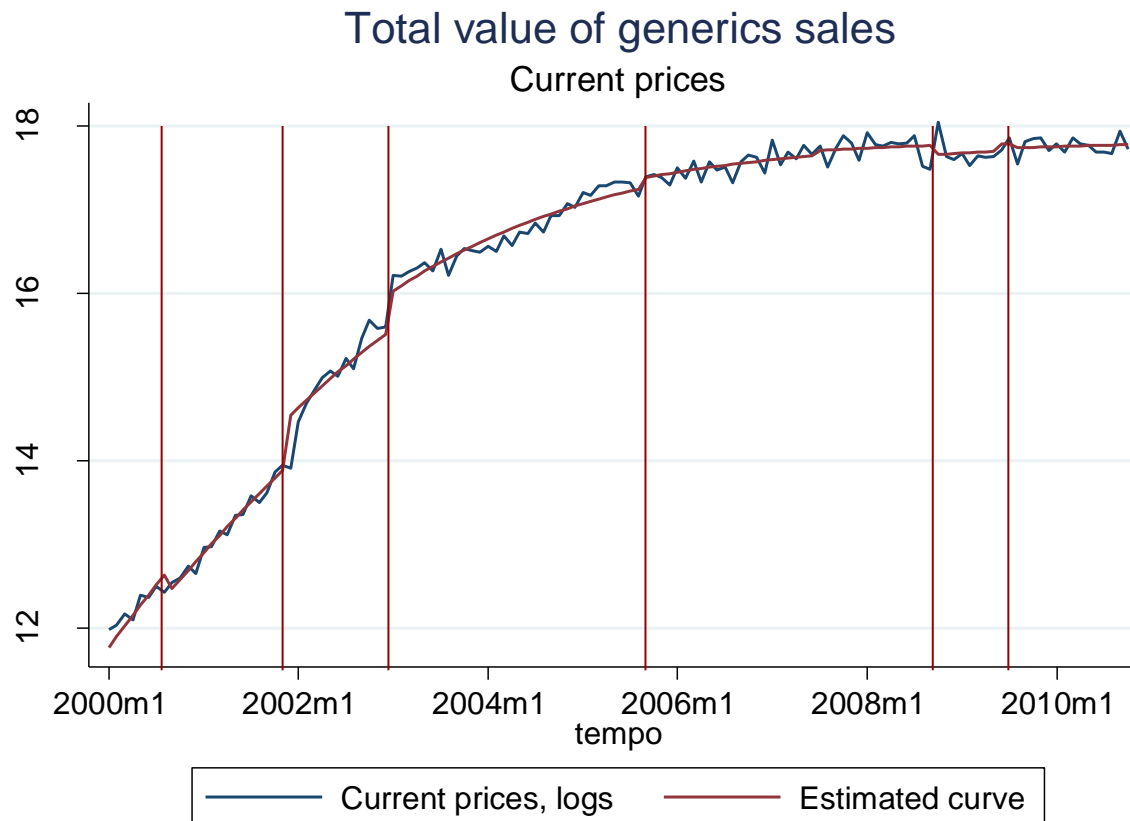
# Methodology

- Transition to the *new* curve is not smooth;
- Must distinguish immediate impact (jump) from diffused impact ( $b_2$ );
- Relation between time and sign of immediate impact;
- Policy impact interpretation must consider the adoption time.



	$t < a$	$t > a$
$b_2 > 0$	Negative jump	Positive jump
$b_2 < 0$	Positive jump	Negative jump

# Results – Total value of generics sales



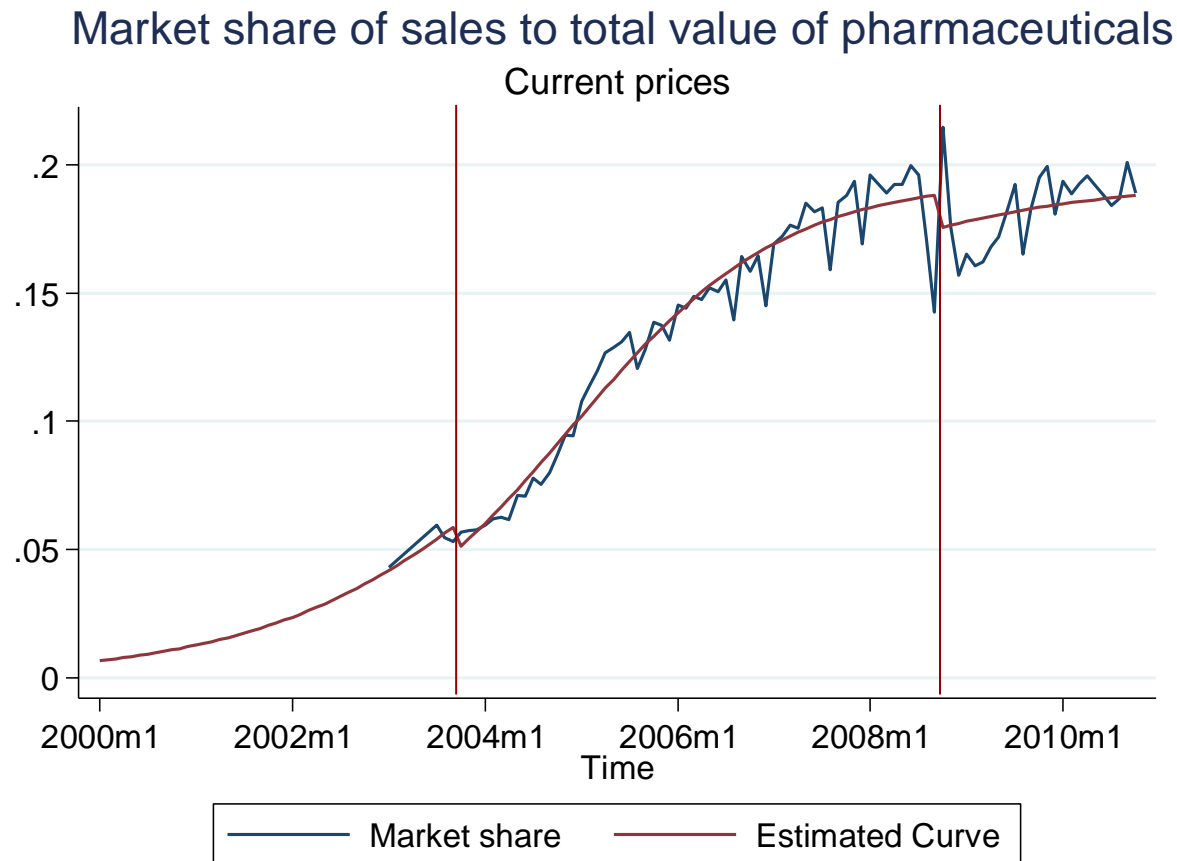
- Market reaching its highest value: 55€ Million – Near-zero growth rate.



# Results – Total value of generics sales

- What had an effect?
  - Governmental price increases (positive impact) - Dec 2001 and Jan 2003;
  - 30% cut in generic prices (negative impact) - Oct 2008;
  - The liberalization of over-the-counter drugs covered by NHS reimbursement system (negative impact) - June 2007.
- What did not work?
  - NHS price coverage regime (except in one year) and price-definition rules;
  - Price reductions of 6% in all pharmaceuticals - Sep 2005 and Jan 2007;
  - Number of homogeneous groups.
- CPI deflated: Similar results (OTC liberalization does not work).

# Results – Market share of sales, in value

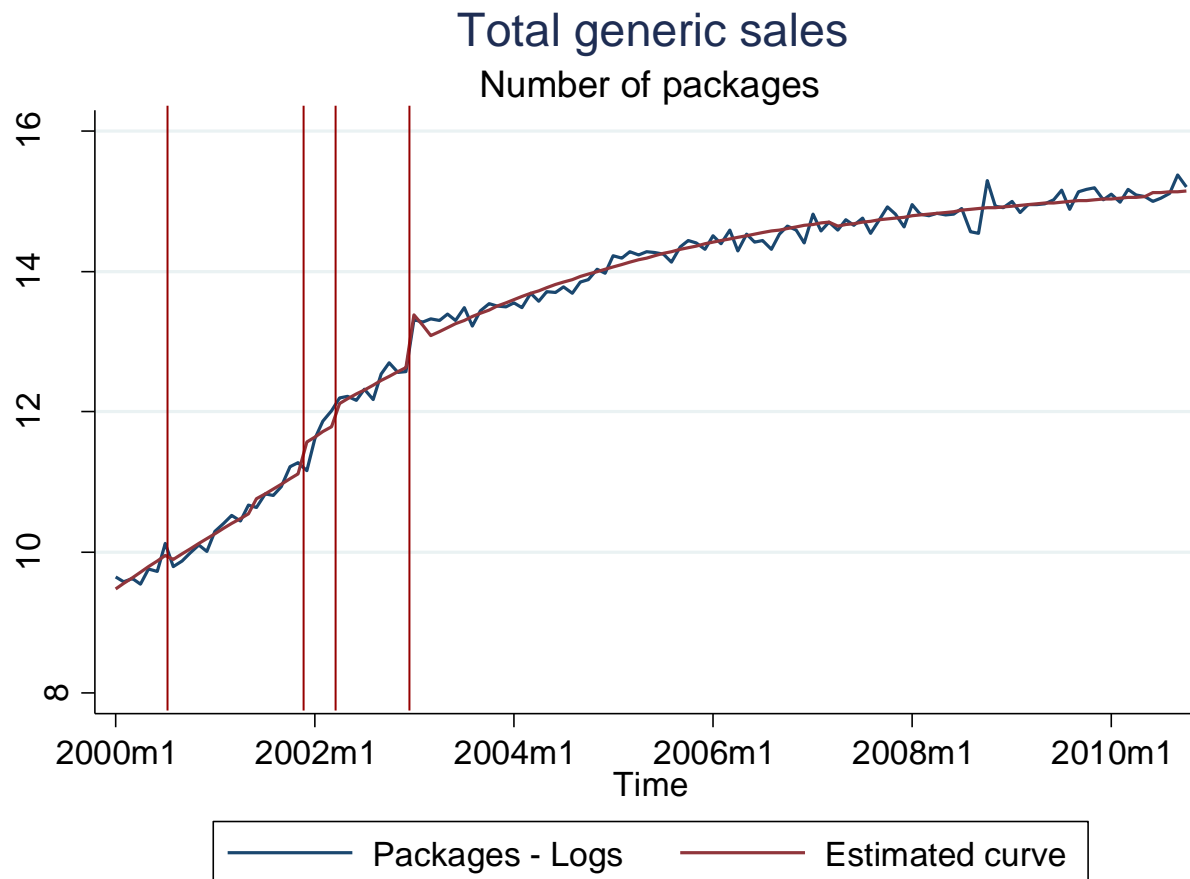


- Market reaching its highest value: 19.5% - Near-zero growth rate.

# Results – Market share of sales, in value

- What had an effect?
  - 30% cut in generic prices (negative impact) - Oct 2008;
  - Application of the reference pricing system to coverage on NHS subsystems (positive impact) - Sep 2003.
- What did not work?
  - NHS price coverage regime;
  - Governmental price increases;
  - Price reductions of 6% in all pharmaceuticals;
  - Number of homogeneous groups;
  - The liberalization of over-the-counter drugs;

# Results – Generic sales, in # of packages

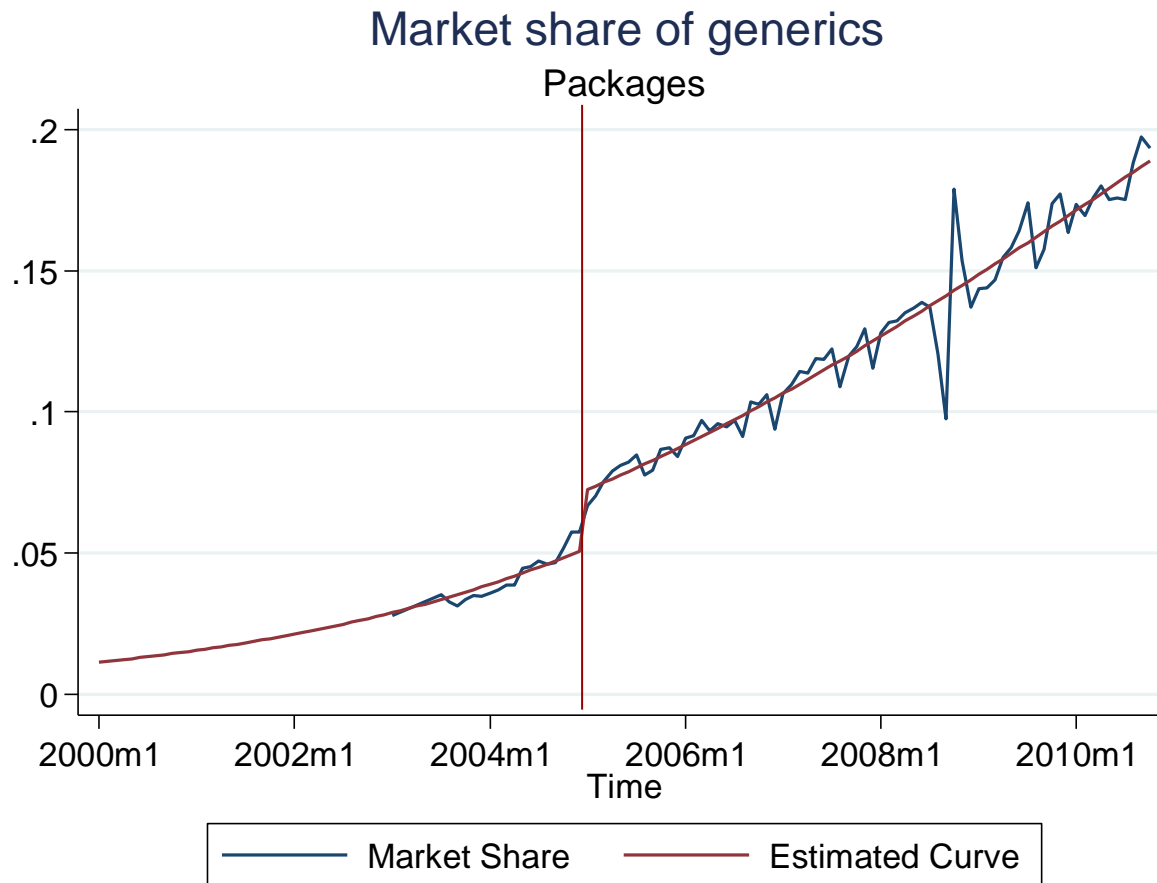


- Market still growing, though more slowly;
- Maximum value: 4.5 Million packages.

# Results – Generic sales, in # of packages

- What had an effect?
  - Mandatory prescription through International Nonproprietary Name (INN) (positive impact) - Sep 2000;
  - Governmental price increases (positive impact) – Dec 01 and Jan 03;
  - Obligation of physicians and pharmacy workers to notify patients of the existence of generics (positive impact) – Jan 2003;
  - Reference pricing system (negative impact) – March 2003;
- What did not work?
  - NHS price coverage regime;
  - Price reductions - Sep 2005, Jan 2007 and Oct 2008;
  - The liberalization of over-the-counter drugs – Sep 2005 and June 2007.

# Results – Market share of packages



- Market still growing;
- Maximum value: 36% (highly uncertain).

# Results – Market share of packages

- What had an effect?
  - Only three measures taken at the same time (Jan 2005): not possible to know exactly which one actually had an impact:
  - (i) Redefinition of pharmaceutical groups according to a new classification (does not change coverage regime);
  - (ii) New rules for the dimension of packages of pharmaceuticals under NHS coverage – **Most likely cause**;
  - (iii) Reference pricing system for NHS coverage on ADMG and SAD.
- What did not work?
  - Basically everything;
  - But not that surprising!

# Conclusions

- For the time frame between January 2000 and October 2010;
- The market has followed its own dynamic;
- More than half of the policies adopted had no impact;
- Some had effect in the opposite direction;
- Impact more easily found in value rather than in quantity;
- Demand price elasticity lower than the unity;
- Lack of competition among generic producers.



Thank you!