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Katja Seim  
*University of Pennsylvania*

Maria Ana Vitorino

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# Efficiency Gains from Removing Entry and Price Controls: Evidence from a Change in Regulation

## **Abstract**

This paper investigates empirically the role of Portuguese deregulation in shaping the structure of local markets for driving instruction and competition among driving schools. We develop a framework that integrates quality and price competition among horizontally and vertically differentiated driving schools. We estimate the model using detailed data on the market structure, firm attributes and prices, and consumer preferences for 593 schools in 117 local markets. We use the estimated parameters of our model to predict the effect that the 1998 easing of price and entry restrictions governing the sector had on firm profits and consumer welfare. We also explore the effect of new regulations currently being considered.

## **Keywords**

quality competition, professional services, regulation

## **Disciplines**

Business | Business Administration, Management, and Operations | Business Law, Public Responsibility, and Ethics | Economic Policy | Marketing | Organizational Behavior and Theory | Taxation

## **Comments**

This is an unpublished manuscript.

# Efficiency Gains from Removing Entry and Price Controls: Evidence from a Change in Regulation\*

PRELIMINARY & INCOMPLETE. PLEASE DO NOT CIRCULATE OR QUOTE.

Katja Seim<sup>†</sup>  
Wharton School  
University of Pennsylvania

Maria Ana Vitorino<sup>‡</sup>  
Wharton School  
University of Pennsylvania

April 2011

## Abstract

This paper investigates empirically the role of Portuguese deregulation in shaping the structure of local markets for driving instruction and competition among driving schools. We develop a framework that integrates quality and price competition among horizontally and vertically differentiated driving schools. We estimate the model using detailed data on the market structure, firm attributes and prices, and consumer preferences for 593 schools in 117 local markets. We use the estimated parameters of our model to predict the effect that the 1998 easing of price and entry restrictions governing the sector had on firm profits and consumer welfare. We also explore the effect of new regulations currently being considered.

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**JEL Classification:** L10, L43

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<sup>†</sup>Philadelphia, PA 19104-6372, U.S.A., kseim@wharton.upenn.edu.

<sup>‡</sup>Philadelphia, PA 19104-6340, U.S.A., vitorino@wharton.upenn.edu.

## Summary

The regulatory oversight of professional services industries, ranging from accountants, notaries, and lawyers to pharmacies, continues to be substantial in many countries. These regulations typically govern entry into the profession via minimum competency or licensing requirements or geographic entry restrictions and restrict firms' organizational structure and size. Some industries also experience conduct regulations, including price restraints and bans or limits on advertising. The goal of these restrictions typically lies in addressing market failures, such as information asymmetries, externalities, and insufficient entry. Concerns have been raised, however, that such regulation has the effect of limiting competition in the market for professional services. This has resulted in liberalization and an increasing application of antitrust laws to the sector.<sup>1</sup>

In this paper, we study the outcomes of one such liberalization effort, the deregulation of Portuguese driving schools. Similar to other European countries, Portugal mandates that students take a minimum number of theoretical and practical driving lessons at a licensed private driving school prior to taking a driving exam and ultimately obtaining a driver's license. Prior to 1998, the sector was subject to both entry and conduct regulations. The number of awarded licenses was tied to the population size of the markets the firms served and the firms' spatial locations within a market were subject to minimum distance requirements from competitors. Simultaneously, the government employed ceilings on the prices schools could charge for a course. While the government continues to use a licensing process to oversee entry and requires schools to post their price schedules locally, the strict entry restraints and price ceilings were fully lifted in 1998. This had the immediate effect of a significant expansion in the number of competitors in local markets, with an overall increase in the number of schools of 116% from 1998 to 2010.

We develop an empirical model of firms' pricing and quality provision decisions. We begin with a discrete-choice model of student demand for the driving instruction services offered by differentiated driving schools. We allow consumer preferences to vary with horizontal school attributes such as the types of driving licenses offered by the school, its size, and the attributes of its fleet of instruction vehicles. Consumer demand also depends on school quality. In the case of driving schools, an important school attribute is the quality of the training that the student receives and the extent to which the school prepares the student for the driving exam. We initially assume that students are aware of the quality that each school provides. In an extension, we then allow for asymmetric information whereby the school

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<sup>1</sup>In the EU, the European Commission intensified its liberalization and harmonization efforts in the early 2000s; see e.g. Paterson, Fink & Ogus (2003)'s assessment of professional regulations across Member States and the subsequent EC Communication (Commission of the European Communities 2004). In the U.S., a 1975 Supreme Court decision resulted in the application of U.S. antitrust principles and law to professional services (Biggar & Wise 2000).

has better information about its quality than the students. Such information asymmetries are one motivation for regulatory intervention in professional services; when consumers are unable to assess the quality of services, competition may drive down the quality of services delivered to consumers. Our empirical model of firm behavior then considers a two-stage setup where firms initially make their quality decisions, taking into account the quality choices of their competitors. After making their initial quality choices, firms then choose prices.

We estimate our model using an extensive data set obtained from the Portuguese Department of Transportation, IMTT, covering all licensed driving schools and their students in 2010. The IMTT data contain information on school attributes (number of driving instructions, size of the school's vehicle fleet, age, etc.), the number of students registered with each school over the course of the year, and the performance of the schools' students in both the theoretical and the practical driving exams. The data further supply information on the regulatory environment facing each school in a local market, such as the presence and distance to a testing center as well as the distance to the closest IMTT center, which represent significant cost shifters for the firms. We complement the IMTT data with market-level information from Statistics Portugal on income, the age distribution of the population, and various transportation related variables, such as the share of commuters, the extent of public transportation, as proxies for variation in the value of a driver's license across municipalities. Last, we hand-collected price information for a typical course of driving instruction via a telephone survey from each of the schools. We focus on small, self-contained local markets, defined as municipalities. We exclude the large urban centers of Lisbon and Porto from the analysis resulting in a sample of 593 schools operating in 117 municipalities across mainland Portugal.

The data do not contain directly observable measures of firm quality. We exploit, however, the availability of detailed information on student performance in driving exams to derive a measure of firm quality. Controlling for observable student attributes such as age and gender, we estimate fixed effects models of a student's propensity to pass a driving exam. We include the estimated firm fixed effects as proxies for firm quality in a potential student's utility from choosing a particular driving school.

We demonstrate in a series of counterfactual experiments how the 1998 deregulation of the industry has changed firm conduct and outcomes. First, we consider how prices and firm quality would change were the number of firms to be restricted as in the pre-1998 period. We consider both a case where the number of firms is restricted to the oldest firms currently operating in the market and a case where we randomly select who is allowed to operate. We similarly consider how quality offerings would change were IMTT to reinstitute a binding price ceiling. We then turn to several prospective counterfactual analyses.

Portuguese regulations currently prohibit the existence of driving school chains, allowing only stand-alone entrepreneurs to operate. Using several representative municipalities, we consider the implications of possible mergers between competing schools and the resulting creation of multi-school chains on social welfare, recognizing the potential for quality and price adjustments, as well as the possible cost savings from economies of scope.

## References

- Biggar, D. R. & Wise, M. O. (2000). Competition in Professional Services, *OECD Best Practice Roundtables in Competition Policy* **27**, OECD, Paris. Available at <http://ssrn.com/abstract=318763>.
- Commission of the European Communities (2004). Report on Competition in Professional Services, European Commission Communication 83, Brussels. Available at [http://eur-lex.europa.eu/LexUriServ/site/en/com/2004/com2004\\_0083en01.pdf](http://eur-lex.europa.eu/LexUriServ/site/en/com/2004/com2004_0083en01.pdf)
- Paterson, I., Fink, M. & Ogus, A. (2003). Economic impact of regulation in the field of liberal professions in different Member States, Research Report, Institute for Advances Studies, Vienna. Available at [http://ec.europa.eu/competition/sectors/professional\\_services/studies/prof\\_services\\_ihs\\_part\\_1.pdf](http://ec.europa.eu/competition/sectors/professional_services/studies/prof_services_ihs_part_1.pdf)