

# CONTRIBUTION OF NON-MARKET VALUATION TO THE PRESERVATION OF CULTURAL LANDSCAPES: THE ALTO DOURO VALLEY WORLD HERITAGE SITE

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## **Resumo/Abstract**

Alto-Douro Wine producing (ADW) region is a nominated UNESCO world heritage site since 2001. Among the characteristics that conferred the nomination was the fact that the landscape tells a two thousand year story of man altering the landscape through wine production. In the landscape are visible and coexist various techniques of vine growing from the most ancient, pre-*phylloxera* terraced vineyards or *socalcos* (until 1860) and post-*phylloxera* terraced vineyards (end of the 19th century until the 30s of the 20th century) to the more recent techniques since the 1970s, including vineyards in *patamares*, vineyards on *vertical planting* (the last decades of the 20th century) and *natural sloping* planted vineyards (FRAH, 2000). Influenced by the winemaking activities, other cultural elements testify the lifestyle of several generations that have passed by ADW: the villages, accessibility, and religious heritage. Sustainability of world heritage sites rest, according to Landorf (2009), on two fundamental pillars: planning and wide participation of all stakeholders. Additionally, sustainable preservation of cultural landscapes requires some form of financing that can accrue from production activities, tourism, or public funding, to name a few. The involvement of stakeholders through the elicitation of the monetary value attributed to the various attributes of the ADW landscape is the primary objective of the paper. On a methodological vein we intend to contribute to clarifying the role non-market valuation techniques should play on public decision making regarding cultural landscapes. We hypothesize that the intangible benefits of the designation of world cultural landscape are not negligible.

## **CV**

### **Lígia M. Costa Pinto**

#### **Academic degrees**

1. Undergraduate degree in Economics, Faculdade de Economia do Porto, Universidade do Porto, 1992.
2. Master in economics (course work), Faculdade de Economia do Porto, Universidade do Porto, 1994
3. PhD. Economics, University of South Carolina, USA, 1998
4. Habilitation (Agregação) in Economics, Universidade do Minho, 2008

## **Professional experience**

1. University of Minho: Teaching assistant, 1992-1994; Assistant, 1994-1998; Assistant professor, 1998-2002; Associate Professor, 2002-2008; Associate professor with habilitation, since 2008.
2. University of Porto: Invited professor in several consecutive years, until 2009, to teach the following courses: environmental economics and microeconomics in the PhD program in Economics; Environmental valuation to the Master program in Environmental Economics and Management.
3. East Timor National University: invited professor in June-July 2004 to teach Environmental and natural resource economics.
4. University of Central Florida: invited researcher, march-september 2005
5. University of California- Riverside: invited research, october 2011-october 2012.

## **Publications in international journals**

1. Botelho, A., Dinar, A., Pinto, L. M. C., & Rapoport, A. (2015). Promoting cooperation in resource dilemmas: Theoretical predictions and experimental evidence. *Journal of Behavioral and Experimental Economics*, 54, 40–49.
2. Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. F. (2014). Visitors' preferences for preserving the attributes of a world heritage site. *Journal of Cultural Heritage*, 15(1), 64–67.
3. Botelho, A., Dinar, A., Pinto, L. M. C., & Rapoport, A. (2014). Time and uncertainty in resource dilemmas: equilibrium solutions and experimental results. *Experimental Economics*, 17(4), 649–672.
4. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. A. (2014). Environmental and economic analysis of end of life management options for an HDPE product using a life cycle thinking approach. *Waste Management and Research*, 32(5), 414–422.
5. Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. (2013). Using choice experiments to value a world cultural heritage site: Reflections on the experimental design. *Journal of Applied Economics*, 16(2), 303–332.
6. Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. F. (2013). Preservation of a rural and cultural landscape. Insights from the multinomial and error components logit model. *New Medit*, 12(2), 65–72.
7. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. A. (2013). Environmental and economic assessment of a road safety product made with virgin and recycled HDPE: A comparative study. *Journal of Environmental Management*, 114, 209–215.
8. Simões, C. L., Pinto, L. M. C., Simões, R., & Bernardo, C. A. (2013). Integrating environmental and economic life cycle analysis in product development: A material selection case study. *International Journal of Life Cycle Assessment*, 18(9), 1734–1746.

9. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. (2012). Modelling the environmental performance of composite products: Benchmark with traditional materials. *Materials and Design*, 39, 121–130.
10. Botelho, A., Dinis, I., & Pinto, L. C. (2012). The impact of information and other factors on on-farm agrobiodiversity conservation: evidence from a duration analysis of Portuguese fruit growers. *Spanish Journal of Agricultural Research*, 10(1), 427-95
11. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. A. (2012). Modelling the economic and environmental performance of engineering products: A materials selection case study. *International Journal of Life Cycle Assessment*, 17(6), 678–688.
12. Botelho, A., Harrison, G. W., Pinto, L. M. C., & Rutström, E. E. (2009). Testing static game theory with dynamic experiments: A case study of public goods. *Games and Economic Behavior*, 67(1), 253–265.
13. Botelho, A., Pinto, L. M. C., & Rodrigues, I. (2005). How to comply with environmental regulations? the role of information. *Contemporary Economic Policy*, 23(4), 568–577.
14. Botelho, A., & Pinto, L. M. C. (2004). Students' expectations of the economic returns to college education: Results of a controlled experiment. *Economics of Education Review*, 23(6), 645–653.
15. Botelho, A., & Pinto, L. M. C. (2004). The diffusion of cellular phones in Portugal. *Telecommunications Policy*, 28(5-6), 427–437.
16. Pinto, L. M. C., & Harrison, G. W. (2003). Multilateral negotiations over climate change policy. *Journal of Policy Modeling*, 25(9), 911–930.
17. Botelho, A., & Pinto, L. C. (2002). Hypothetical, real, and predicted real willingness to pay in open-ended surveys: experimental results. *Applied Economics Letters*, 9(15), 993–996.

### **Book chapters**

Botelho, A., Fernandes, E., & Pinto, L. C. (2011). An Experimental Analysis of grandfathering vs dynamic auctioning in the EU ETS. In R. M. Isaac & D. A. Norton (Eds.), *Experiments on Energy, the Environment, and Sustainability* (Vol. 14, pp. 37–76). Emerald.

### **Conference presentations**

1. Botelho, A., Lourenço-Gomes, L., Pinto, L. C., Sousa, P., Sousa, S., & Valente, M. (2015). Using choice experiments to assess environmental impacts of dams in Portugal. *Global Conference on energy and sustainable development GCESD 2015*, Coventry, UK, 24-26 february.
2. Botelho, A., Lourenço-Gomes, L., Pinto, L. C., & Sousa, S. (2014). How to design reliable Discrete Choice surveys: The Use of Qualitative Research Methods. *Guimarães, Portugal: 2nd International Conference on Project Evaluation*. 26 june - 27 june.
3. Botelho, A., Pinto, L. M. C., Sousa, P., & Sousa, S. (2014). Using contingent valuation to measure welfare losses to local communities due to the impacts of

photovoltaic farms. Montpellier, France: Montpellier Energy Conference 2014, Regulation and Energy markets: beyond Failures. 20 november - 21 november.

4. Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. F. (2014). Preservação da paisagem cultural do Douro Vinhateiro: preferências de visitantes. Évora, Portugal: 20th APDR congress. 10 july - 11 july.

5. Lourenço-Gomes, L., Pinto, L. M. C., & Rebelo, J. F. (2014). Time Stability of Visitors' preferences for preserving the worldwide cultural landscape Alto Douro Wine Region. Budapest, Hungary: Xth Terroir International congress 2014. 07 july - 10 july.

6. Botelho, A., Pinto, L. M. C., & Sousa, P. (2013). Valuing wind farms' environmental impacts by geographical distance: a contingent valuation study in Portugal. Granada, Spain: XVI Encuentro Economía Aplicada. 06 june - 07 june.

7. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. (2013). Modelling the environmental and economic impact of a product life cycle: an end of life treatment case study. Braga, Portugal: 2nd International Conference on WASTES: Solutions, Treatments and Opportunities. 11 september - 13 september.

8. Simões, C. L., Pinto, L. M. C., & Bernardo, C. A. (2013). Predicting the future prices of raw materials: a contribution to sustainable product development. Budapest, Hungary: INTECH 2013. 10 september - 12 september.

9. Botelho, A., Lima, E., Pinto, L., Veiga, p. (2007). Alcohol Attributable Fractions and Costs in Portugal. 6th World Congress on Health Economics: Explorations in Health Economics, Copenhagen, Denmark, July 2007.

10. Costa, C., Pinto, L. (2007). The determinants of over-indebtedness: a case study in Portugal, 13º Congresso da Associação Portuguesa de Desenvolvimento Regional, Angra do Heroísmo, Açores, July 2007.

11. Botelho, A., Harrison, G., Pinto, L., Rutstrom, E. (2007). Testing Static Game Theory with Dynamic Experiments: A Case Study of Public Goods. SAET International Conference on Current Trends in Economics, Kos, Greece, June 2007.

12. Botelho, A., Harrison, G., Pinto, L., Rutstrom, E. (2007). Testing Static Game Theory with Dynamic Experiments: A Case Study of Public Goods. Third International Meeting on Experimental and Behavioral Economics, Málaga, Spain, March 2007.

13. Botelho, A., Harrison, G., Pinto, L., Rutstrom, E. (2007). Social Norms and Social Choice. Third International Meeting on Experimental and Behavioral Economics, Málaga, Spain, March 2007.

14. Botelho, A; Fernandes, E., Pinto, L. (2006). Do emission permits markets' original advantages still hold?. Third World Congress of Environmental and Resource Economists, Kyoto, Japan, July 2006.

15. Botelho, A., Dinis, I., Pinto, L. (2006). The determinants of the adoption and diffusion of traditional agricultural varieties: a case study in Portugal. 2006 World Conference on Natural Resource Modeling, Bergen, Norway, June 2006.

16. Botelho, A., Harrison, G., Pinto, L., Rutstrom, E., Veiga, P. (2006). Discounting in developing countries: a pilot experiment in Timor-Leste. International Workshop on Field Experiments in Economics, University of Canterbury, New Zealand, February 2006.

17. Botelho, A, Pinto, L., Rodrigues, I. (2003). How to Comply with Environmental Regulations? The Role of Information. 2003 Hawaii International Conference on Business, Hawaii, June 2003.
18. Botelho, A., Pinto, L., Portela, M., Silva, A. (2003). The determinants of success in university entrance. Hawaii International Conference on Business, Hawaii, June 2003.
19. Pinto, L., Salgado, A. (2003). Raising awareness of environmental risks: a case study. Environment 2010: Situation and Perspectives for the European Union, 2003, Porto
20. Botelho, A, Pinto, L., Rodrigues, I. (2002). How to Comply with Environmental Regulations? The Role of Information. Western Economic Association International, 77th Annual Conference, Seattle, July 2002.
21. Botelho, A., Pinto, L. (2001). Has Portugal gone wireless? Looking back, Looking ahead. 5th Congress on the Economics of Telecommunications and Information Technologies, Madrid, June 2001.
22. Pinto, L., Harrison, G. (2000). Multilateral Negotiations over Climate Change Policies”, International Symposium on Economic Modelling, Pamplona, June 2000.

### **Coordination and participation in funded research projects**

1. "Projeto Estratégico - UI 3181 - 2011". Projeto PEst-OE/EGE/UI3181/2011, january 2011 - december 2013., team member
2. "Valoração económica dos impactos ambientais de energias renováveis". Projeto PTDC/EGEECO/12402/2010. May 2012 - august 2015. Principal investigator
3. "Projeto Estratégico - UI 3181 - 2014". Projeto PEst-OE/EGE/UI3181/2014, january 2014 - march 2015. Team member.

### **Doctoral thesis supervisions**

1. Carla Alexandra Faria Loureiro Simões. 2014. Integrating environmental and economic tools into product development, Tese de doutoramento em Ciência e Engenharia de Polímeros e Compósitos. (co-supervision) completed
2. Maria Eduarda da Silva Teixeira Fernandes. 2010. O mercado dos direitos de emissão: um estudo experimental. Doutoramento em Ciências Económicas, Universidade do Minho (co-supervision). Completed
3. Lina Sofia de Matos Lourenço Gomes. 2010. Valoração Económica de Bens Culturais: Alto Douro Vinhateiro Património da Humanidade (ADV). Doutoramento em Ciências Económicas, Universidade do Minho (co-supervision). Completed
4. Maria Isabel Ribeiro Dinis (2007). Determinantes da adopção de variedades tradicionais de macieiras. Doutoramento em Economia, Faculdade de Economia da Universidade do Porto, 14 de Dezembro de 2007. Completed
5. Sara Rute Monteiro da Silva e Sousa. Economic Valuation of Environmental Impacts Generated by Production Through Renewable Energies in Portugal. Doutoramento em Economia, Universidade do Minho, ongoing [Co-supervision].

6. Rodrigo Augusto da Silva Pimentel. Identificação e Valoração Económica de Externalidades na Geração de Eletricidade. Programa Doutoral em Engenharia Industrial e Sistemas (PDEIS). (co-supervision). On-going.

### **Master thesis supervisions**

1. Eva Marina Dos Santos Fortes. Integração da dimensão económica e ambiental na análise do setor de produção de eletricidade através de fontes renováveis em Cabo Verde. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, ongoing. [Co-supervision].

2. Carla Cristina Ferreira. Análise da estrutura do mercado de resíduos de equipamentos elétricos e eletrónicos – REEE em Portugal. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, ongoing

3. Luísa Emanuela Martins Libano. Análise económica da introdução do sistema de melhoria contínua Kaisen no bloco operatório do centro hospitalar do Porto. Mestrado em Economia e Política da Saúde, Universidade do Minho, 05 february 2013. Completed.

4. Eduardo Jorge Da Cruz Dantas. Análise Comparativa entre a Pegada Hídrica do Norte de Portugal e a Pegada Hídrica Nacional. Mestrado em Economia e Política do Ambiente, Universidade do Minho, 05 february 2013. [Co-supervision]. Completed.

5. Patrícia Cristina Cruz De Sousa. Identificação e valoração dos impactes ambientais associados à energia eólica: Relevância no contexto do mercado de produção de eletricidade. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, 14 march 2013. Completed.

6. Marta Isabel Silva Alves. Análise Económica do Impacto da Regulação Ambiental no Setor da Suinicultura em Portugal. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, 21 november 2013. Completed.

7. Ze Su. Hedonic price method: an application to valuing environmental amenities in Algarve, Portugal. Mestrado em Economia e Política do Ambiente, Universidade do Minho, 03 january 2012. Completed.

8. Hoa Thi Oanh Su. To preserve or not to preserve natural area? A valuation study applied to Phuc Quoc Island, Vietnam. Mestrado em Economia e Política do Ambiente, Universidade do Minho, 05 june 2012. [Co-supervision]. Completed.

9. Bia Ble Hitu Carvalho De Jesus. Análise da política de gestão de resíduos sólidos em Timor Leste. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, 25 october 2012. Completed

10. Bruno Miguel Pontes De Melo. Eliciação da DaP sem enviesamento hipotético: Projecto de restauro florestal\_Pão Panda (WWF). Mestrado em Economia e Política do Ambiente, Universidade do Minho, 31 october 2012. Completed.

11. Carla Sofia Cardoso Pinto. Indicadores económicos do impacto da Universidade do Minho: Um contributo para a elaboração do relatório de sustentabilidade. Mestrado em Economia Industrial e da Empresa, Universidade do Minho, 16 november 2012. Completed.

12. Carla Filipa De Sá Meireles. Os determinantes da escolha de medicamentos genéricos. Mestrado em Economia e Política da Saúde, Universidade do Minho, 21 february 2011. Completed

13. Sónia Da Conceição Vieira Antunes. Valoração condicional de bens de património cultural: o caso da Citânia e do Museu da Cultura Castreja de Briteiros S. Salvador. Mestrado em Economia Social, Universidade do Minho, 07 march 2011. [Co-supervision]. Completed

14. Rosa Nombo Paca. Protecção do ambiente em Angola por via dos impostos: o sector dos produtos petrolíferos. Mestrado em Economia e Política do Ambiente, Universidade do Minho, 16 may 2011. [Co-supervision]. Completed.

### **Teaching experience**

1. PhD Courses: Advanced microeconomics II; Environmental economics; Microeconomics.

2. Master Courses: Intermediate Microeconomics; Economics of Regulation; Environmental and energy economics;

3. Undergraduate courses: introductory statistics; economics of regulation; industrial economics; econometrics; environmental economics; natural resource economics

### **Organization of Scientific meetings:**

Member of the local organizing committee of the Second world conference on environmental history, 08 -12 July, 2014.

Member of the scientific committee of the Gecamb – conference on environmental management and accounting (several editions)

Member of the scientific committee of the ICOPEV – international conference on project evaluation (several editions)

### **Administrative positions**

Head of the economics department, University of Minho. January 2015-

President of Conselho de Escola, School of economics and business, UMinho. march 2010 - september 2011.

Member of the scientific committee of the School of economics and business, UMinho, january 2010 - september 2011.

Member of the pedagogical council, School of economics and business, UMinho, january 2010 - may de 2012.

Member of the directing board of the Master in Health Economics and Policy, School of economics and business, UMinho, august 2010 - october 2011.

Member of the directing board of the Master in Telecommunication Economics and Policy, School of economics and business, UMinho, February 2009 - may 2013.

Member of the coordinating commission of the department of economics, School of economics and business, UMinho, since may 2012.

### **Consulting experience**

1. Municipality of Trofa, Portugal: study on the determinants of consumers' over-indebtedness. 2004-2005.
2. Algarve river basin district administration (Região Hidrográfica do Algarve): Cost – benefit analysis of alternative solutions for coastal erosion. 2009-2010.
3. Health regulatory authority: study on the situation of private and public health units regarding the management of health wastes. 2010.