

2016

UMR1302 SMART-LERECO

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Key figures for 2016

- 37 research and academic staff
- including 13 accredited PhD supervisors
- 18 assistants, technicians and administrative staff
- 11 PhD students
- 25 scientific articles in peer-reviewed journals
- 5 research and expertise reports
- 3 PhDs defended
- 11 working papers
- 16 scientific seminars

SMART-LERECO Joint Research Unit

Research Highlights

The **SMART-LERECO** Joint Research Unit (JRU or 'UMR' in French) was established on 1 January 2017, joining the scientific forces of the JRU SMART based in Rennes and the RU LERECO based in Nantes. The new JRU has some 60 people on board, including around 30 researchers and faculty members, from INRA's SAE2 Division (on the Rennes and Nantes sites) and Agrocampus-Ouest (on the Rennes and Angers sites).

Research Highlights looks back over the year's main achievements in terms of research findings, participation in setting up research projects and programmes, decision-making assistance and knowledge transfer activities in our partnerships with academic research and higher education bodies and/or with public and private agriculture players (French ministries, European institutions, international organisations, professional agricultural organisations, etc.).

Research support

Creation of SMART-LERECO

The Joint Research Unit SMART-LERECO was created in January 2017 from **the merger of former SMART (Rennes) and LERECO (Nantes) research units, and from lecturers in economics from the Agrocampus-Ouest site in Angers.** SMART-LERECO's mission is to form a world-class research and teaching group in economics applied to agriculture, agri-food and the environment, renowned for the quality of its academic achievements and expertise. SMART-LERECO has a team of approximately 60 people, some 30 of whom are scientific staff.

Find out more:

http://www.rennes.inra.fr/smart_eng

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They show that the substantial margins made by many retail chains are mainly due to a lack of competitors in their local environment rather than unfair pricing. The arrival of a new competitor is therefore always good news for consumers as it drives a marked drop in prices. The studies also find that the coexistence of local and national pricing strategies exacerbates the negative effect of concentration operations on price levels. These results point to a need to rethink French legislation on opening new supermarkets and the evaluation method hitherto used by the competition authorities to assess concentration operations in the retail sector.

Find out more:

Allain M.-L., Chambolle C., Turolla S., Villas-Boas S. (à paraître). Retail mergers and food prices: Evidence from France. *Journal of Industrial Economics*.

Turolla S. (2016). Spatial competition in the French supermarket industry. *Annals of Economics and Statistics* 121-122: 213-259.

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Research findings

Supermarkets and competition

The retail sector's competitive environment has a direct impact on consumer prices and households' purchasing power. The particularity of predominantly food stores is that competition is both local, between shops, and national, between purchasing groups. A number of studies have been conducted to evaluate **the repercussions of food retailer concentration on consumer welfare.**



Research findings

Subsidies and technical efficiency

Contrary to what is often claimed in the literature, **farm subsidies do not always have a negative effect on farmers' technical efficiency**, as shown by a meta-analysis and study of nine European countries. The study finds that CAP subsidies can have a zero, negative or positive effect on dairy farmers' technical efficiency depending on the country. In addition, for the first time in the literature, a study of French farmers considers the dynamic dimension and suggests that CAP subsidies improve technical efficiency from one year to the next.

Find out more:

- Latruffe L., Bravo-Ureta B., Carpentier A., Desjeux Y., Moreira V. (2017). Subsidies and technical efficiency in agriculture: Evidence from European dairy farms. *American Journal of Agricultural Economics* 99(3): 783-799.
- Latruffe L., Desjeux Y. (2016). Common Agricultural Policy support, technical efficiency and productivity change in French agriculture. *Review of Agricultural, Food and Environmental Studies* 97(1): 15-28.
- Minviel J. J., Latruffe L. (2017). Effect of public subsidies on farm technical efficiency: a meta-analysis of empirical results. *Applied Economics* 49(2): 213-226.

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Decision-making assistance

Poultry meat sector competitiveness

An analysis of **the trend in the competitiveness of the French poultry meat** sector was conducted based on international trade statistics from 2000 to 2015. Despite growth in domestic consumption, the sector has suffered a significant loss in competitiveness compared with northern EU countries over the last 15 years. French imports of poultry meat consequently account for over 30% of domestic consumption today. Moreover, although France's balance of trade with third (non-EU) countries remains positive, nothing guarantees it will stay that way in the future. Yet hope glimmers on the horizon: in addition to a strong global demand trend, the French market boasts high value-added in certain niches, and sector restructuring should help it regain at least part of the domestic market.

Find out more:

- Chatellier V., Magdelaine P., Tregaro Y. (2015). La compétitivité de la filière volaille de chair française: entre doutes et espoirs. *INRA Productions Animales* 28(5): 411-428.

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Research support

International seminar on structural change

On October 27 and 28, 2016, Rennes hosted the 149th European Association of Agricultural Economists Seminar on Structural Change in Agri-food Chains. Interactions within the value chain take various forms, and **understanding how these interactions work (or not) is key to improving the competitiveness of European agriculture**. A total of 80 researchers working on farm, agri-food and retail sectors attended the seminar to stimulate discussions and promote teamwork and future research. The 57 presentations made over the two days took stock of current research, focusing especially on its theoretical, methodological and empirical aspects.

Find out more:

- <https://colloque.inra.fr/eaee149>
<http://ageconsearch.umn.edu/search?ln=en&cc=717>

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Research findings

Food security in developing countries

The 2006-2008 episode of rising agricultural product prices placed the question of global food security firmly back on the international agenda. The situation turned many developing countries from their status as net exporters since the early 1990s into net importers of agricultural products. Research in this area focuses on **evaluating how developing countries use policy instruments to make their food security less vulnerable to international trade trends**. A study of a sample of 39 developing countries from 2005 to 2010 shows that most of them used the nominal rate of assistance (NRA), defined as the percentage increase in producers' returns due to national policies, to offset the effects of agricultural price surges. Exchange rate variations, however, do not appear to significantly influence consumer access to food when prices are volatile.

Find out more:

- Laroche-Dupraz C., Huchet-Bourdon M. (2016), Agricultural support and vulnerability of food security to trade in developing countries, *Food Security* 8: 1191-1206.

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Research findings

Farm structural change

Agriculture in France has seen a huge amount of structural change in the last 60 years or more. Drawing on data from the French central agency for farmers' healthcare and social security (CCMSA), a model was developed for **original demographic projections of the population of French farms by 2025** by mainland French 'départements', legal status and types of farming. If current trends continue, the number of French farms could fall further by 2025, but at the slower rate of -20% in ten years as opposed to the -25% observed over the 2000-2010 decade.

Find out more:

Piet L., Saint-Cyr L. D. F. (2016). Projection de la population des exploitations agricoles françaises. *Working Paper SMART-LERECO n°16-11*.

Saint-Cyr L. D. F. (2016). Accounting for unobserved farm heterogeneity in modelling structural change: Evidence from France. *Agrocampus Ouest Ph-D thesis in economic and management sciences*.

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Research findings

Russian embargoes and livestock farming crisis

The European Union and several other developed countries have had diplomatic and economic sanctions in place against Russia since March 2014 following the Ukrainian conflict and the annexation of Crimea. Russia has hit back at these sanctions with a political embargo, ongoing since August 2014, on many of their food exports. New estimates of the market cost of these Russian embargoes to European economies show that Russia's sanitary embargo is having more of a negative impact than its political embargo. However, findings are highly dependent on the labour market functioning assumptions applied. The introduction of downward nominal wage rigidity raises the estimate of the cost to the French economy nearly twentyfold. All in all, the simulations show that the European Commission's analyses underestimate the losses caused by the Russian embargoes.

Find out more:

Gohin A. (2017). Quel coût des embargos russes sur les produits alimentaires ? *Revue d'Économie Politique* 1: 71-92.

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Research support

Land use and food security in 2050

Following the Agrimonde forward-looking study, INRA and CIRAD have launched **Agrimonde-Terra, a new forward-looking exercise on land use and food security in 2050**. Five different scenarios of world agricultural and food-producing system trends have been developed. Each scenario is described narratively and evaluated quantitatively by the GlobAgri-AgT biomass balance model. The results find the "Metropolitisation" scenario to be unsustainable through to 2050 and the "Healthy" scenario to be the only one able to guarantee global food security without provoking a significant increase in agricultural land. The other three scenarios have less clear-cut implications. These findings were presented to the final conference held in Paris on 24 June 2016.

Find out more:

<https://www.paris.inra.fr/depe/Projets/Agrimonde-Terra>
INRA-CIRAD (2016). Agrimonde-Terra foresight: Land use and food security in 2050. *Short report of the foresight*.

Mora O avec des contributions de de Lattre-Gasquet M., Donnars C., Réchauchère O., Le Mouël C., Dumas P., Moreau C., Brunelle T., Arzman M., Marty P. (2016). Scenarios of land use and food security in 2050. *Agrimonde-Terra Working Paper*.

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Research findings

Agri-environmental policies

A cross-cutting thesis straddling law, economics and geography has questioned **the capacity of agri-environment measures to meet the challenges of multi-functionality in agriculture**. The thesis analyses the discrepancies between objectives, means, area of application and area of concern throughout the measures' 25 years of use, and concludes that the policies are sub-optimal. The measures are confined to offsetting the additional cost generated by a change in practices within a transition support approach, but they fail to internalise the targeted externalities with payments that take into account social demand, namely the value placed on them by the community.

Find out more:

Pech M. (2016). Vingt-cinq ans de politiques agroenvironnementales : vers une territorialisation de la politique agricole ? *Ph-D thesis in geography*, University of Maine.

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Knowledge transfer

'Productivity' package for R software

SMART-LERECO has developed the 'productivity' R package to address the lack of tools available in R for the calculation of productivity and profitability indicators based on non-parametric Data Envelopment Analysis (DEA). The 'productivity' package provides the user community with codes to calculate both the classic Malmquist indices and the more recently developed Färe-Primont and Lowe indices. The package can also be used to calculate the index components (technical efficiency and technological change) under different returns-to-scale assumptions. Distributed under the GPLv3 licence, the package contributes to **disseminating methodological advances in the measurement of productivity**.

Find out more:

<https://CRAN.R-project.org/package=productivity>

Dakpo K. H., Desjeux Y., Latruffe L. (2016). 'Productivity': Indices of productivity and profitability using Data Envelopment Analysis (DEA). *R package version 0.1.0*.

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Research findings

Reduction in the use of pesticides

The Ecophyto plan launched in 2008 to gradually reduce the use of pesticides in France was ramped up in 2015. Yet the consumption of pesticides continues to grow. An original modelling of farmers' production choices analyses **the effects of public policies on farmers' adoptions of innovative practices in order to reduce the use of pesticides** on soft wheat. The simulations show that, in a situation of high cereal prices, low-input production processes will not be adopted without an economic incentive. A relatively low tax on pesticides would give farmers enough of an incentive to change their cropping practices, potentially reducing the use of pesticides by 25%. A 50% reduction appears harder to achieve and would call for the introduction of additional policy tools.

Find out more:

Fémenia F., Letort E. (2016). How to significantly reduce pesticide use: An empirical evaluation of the impacts of pesticide taxation associated with a change in cropping practice. *Ecological Economics* 125: 27-37.

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Research findings

Technical efficiency and environmental outputs

It has become vitally important to take the environmental goods produced and contributions to the reduction of certain negative externalities into account in farm performance. Many methods exist to do so, but they generally have their limitations. The new approach developed models two technologies, one representing "positive" outputs and the other "negative" outputs, and their interactions. Applied to a sample of sheep meat farms in the Massif Central region of France, this approach shows that the main source of technical inefficiency comes from the "negative" production of greenhouse gas emissions rather than the "positive" production of meat.

Find out more:

Dakpo K. H., Jeanneaux P., Latruffe L. (2017). Greenhouse gas emissions and efficiency in French sheep meat farming: A non-parametric framework of pollution-adjusted technologies. *European Review of Agricultural Economics* 44(1): 33-65.

Dakpo K. H., Jeanneaux P., Latruffe L. (2016). Modelling pollution-generating technologies in performance benchmarking: Recent developments, limits and future prospects in the nonparametric framework. *European Journal of Operational Research* 250(2): 347-359.

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