Economic, social, and environmental effects of reducing dairy GHG emissions under different marked-based policy options

Livestock Policy Simulation Model

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Pressing issue

• Reducing absolute emissions will become an imperative.

• Increasing productivity leads also to higher total emissions

• Reducing absolute emissions requires constraining production output.

GASL, FAO & GDP, 2018
Policy Argument

- Assuming that productivity change alone, will induce the transformations required in the dairy sector is a risky gamble.

- Due to market mechanisms, a productivity improvement can affect producers and consumers behaviour leading to an increase in total GHG emissions.

- Addressing this economic problem requires adopting market-based policy instruments.

Source: Acosta & Eskander, 2021
Livestock Policy Simulation Model (LPSM)

Source: Cicowiez & Acosta, 2020
Policy Simulations

What would be the wider economic, social, and environmental returns of an investment in the Uruguayan dairy sector?

- The first scenario (S1) analyzes the effect of using an investment that increases TFP.
- The second scenario (S2) assesses the use of an investment combined with an emissions’ quota.
- The third scenario (S3) investigates the combination of an investment together with an emission’s tax.
The short and long-term dynamics differ substantially

- In the short-term, S1 has the highest effect on GDP.
- In the middle-term, S2 yields the highest GDP returns.
- In the long term S1 leads to the lowest GDP gains.
Effects of a 10% increase in dairy TFP (2022-2030)

The effect differs depending on the combination of the policy instruments employed:

By 2030:

- GDP is 0.12% higher under S2
- Poverty decrease faster under S1
- Employment if higher under S1
- Consumption is lower under S2
- Private investment largest gains under S2.
- Exports and imports increase faster under S1.
- GHG emissions will be 1.5% higher under S1

S1: Investment alone
S2: Investment + Emissions Quota
S3: Investment + Emissions Tax
Take-home messages

• There is no one-size-fits all instrument that optimizes the economic, social, and environmental outcomes of increasing dairy productivity.

• A policy mix, which includes a set of complementary policy instruments, can be more effective than a single policy instrument.

• The analysis illustrates the capacity of LPSM to integrate economic, social, and environmental dimensions, while accounting for spillovers and trade-offs.
LPL

Bridging the gap between policy analysis and policy making

Thank you
Alejandro Acosta, is a Livestock Economist Policy Officer at NSAL. He is currently leading in NSAL the Livestock Policy Lab (LPL). His area of technical expertise is time series econometric analysis. He holds a PhD in Agricultural Economics.

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Panel Objectives

1. Inform the audience about the Livestock Policy Lab (LPL) and the analytical work being conducted.

2. Contribute to the policy debate about efficiency increase and absolute emissions increase.

3. Illustrate the potential of the Livestock Policy Simulation Model (LPSM) to conduct ex-ante policy analysis.

4. Support policy dialogue with new evidence about the effects of combining marked-based policy instruments to reduce dairy emissions.
Panel questions

• Why are market based- instruments needed to accelerate emission reductions, wouldn’t technological change be sufficient?

• How is the LPSM supporting Uruguay’s policy planning processes?

• What is the LPL business model?

• Q&A open session