Global Trade Analysis Project

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Investigating Poultry Interventions in Ghana and Senegal

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Introduction

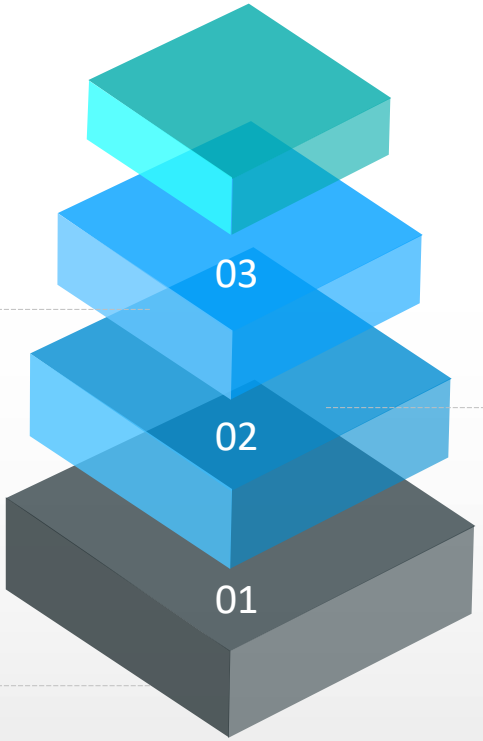
- Poultry meat is an important source of animal protein in many African countries.
- Urbanization, improved incomes, and rapid population growth have accelerated poultry meat consumption in African countries
- Import dependencies
- Improving the competitiveness of local poultry industries is viewed as a promising way to increase domestic poultry production.
- High feed costs
- Which policy option may improve competitiveness of local poultry production!?

Literature review

Poultry Policies in West Africa

Farm-level factors

Feed use inefficiency



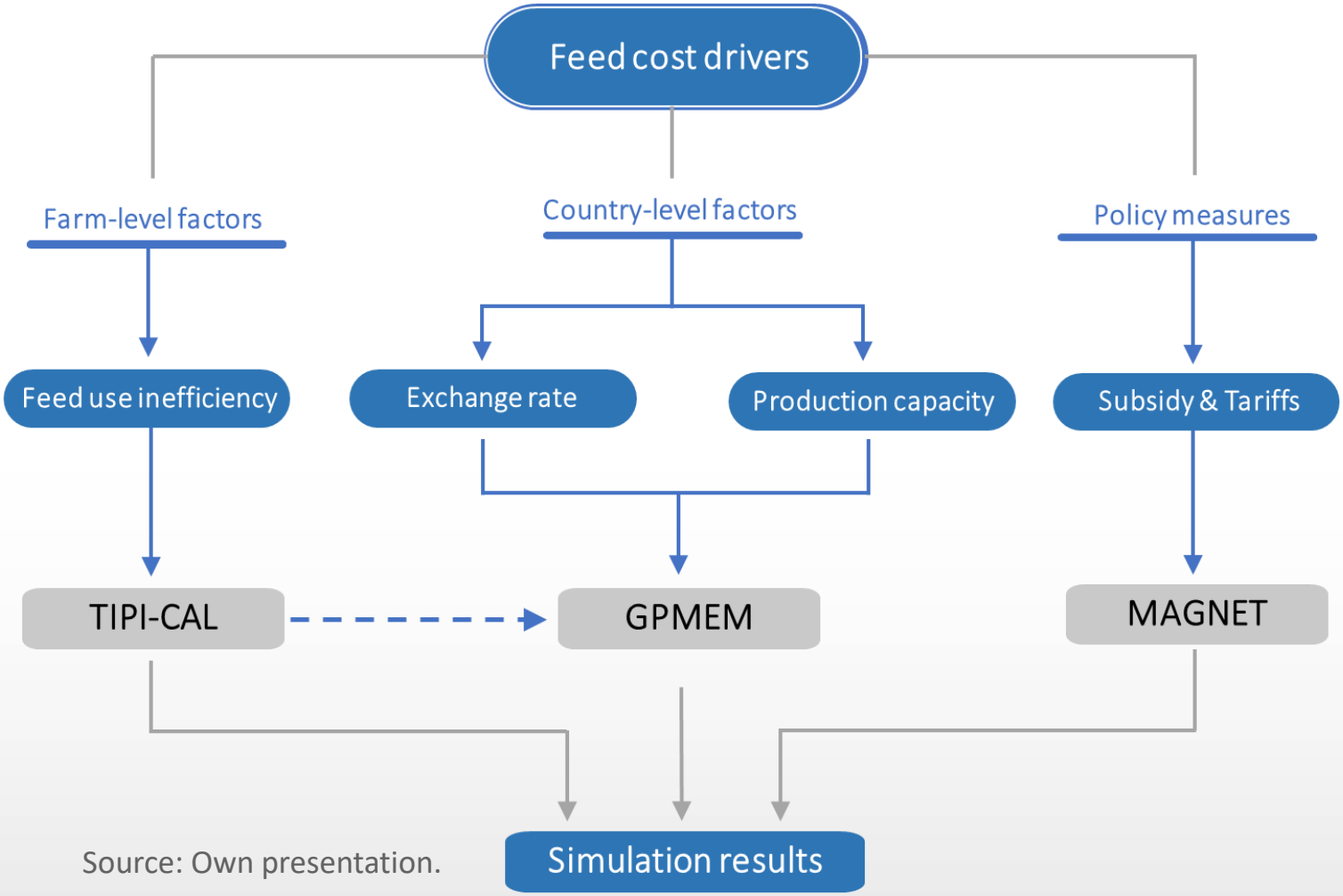
Policy measures at macro-level

Feed subsidy = the tariff revenue generated by imported poultry meat
Trade restrictions

National-level factors

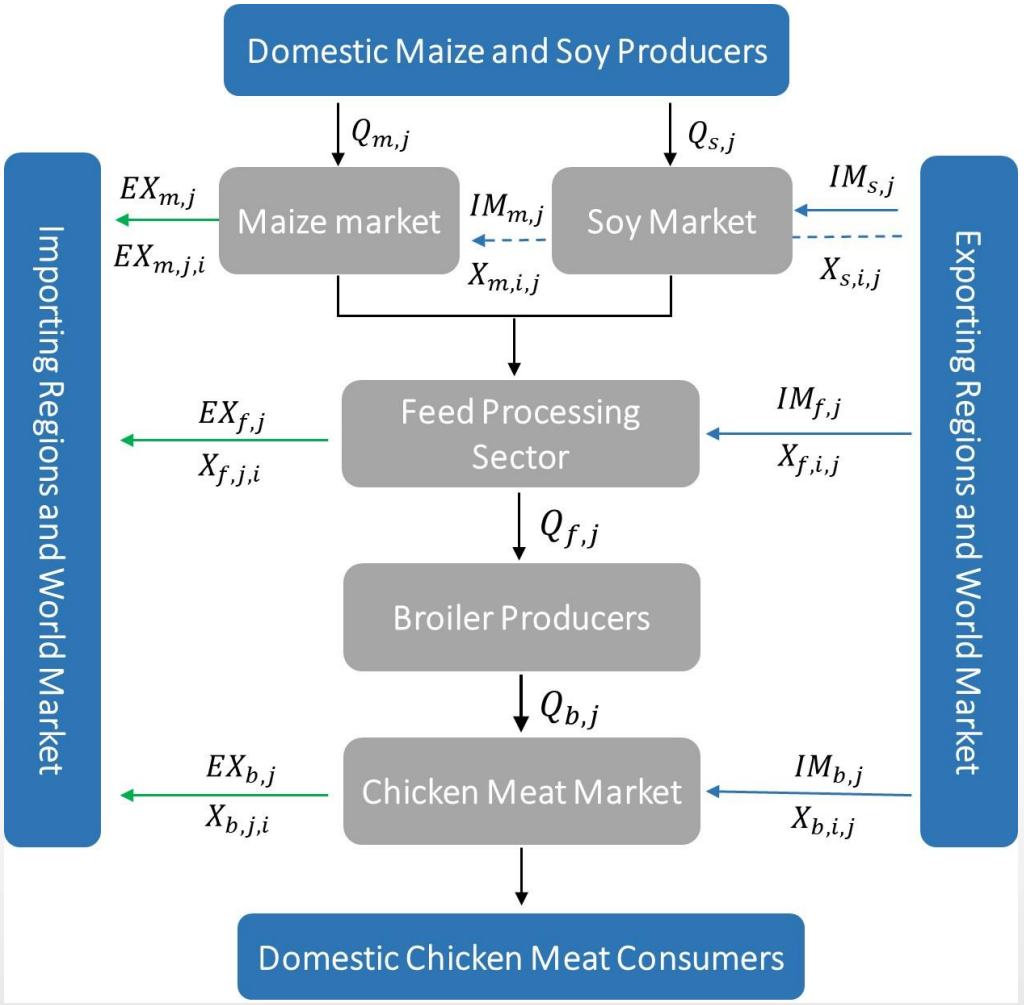
Production capacity, investment, exchange rate policies

Method



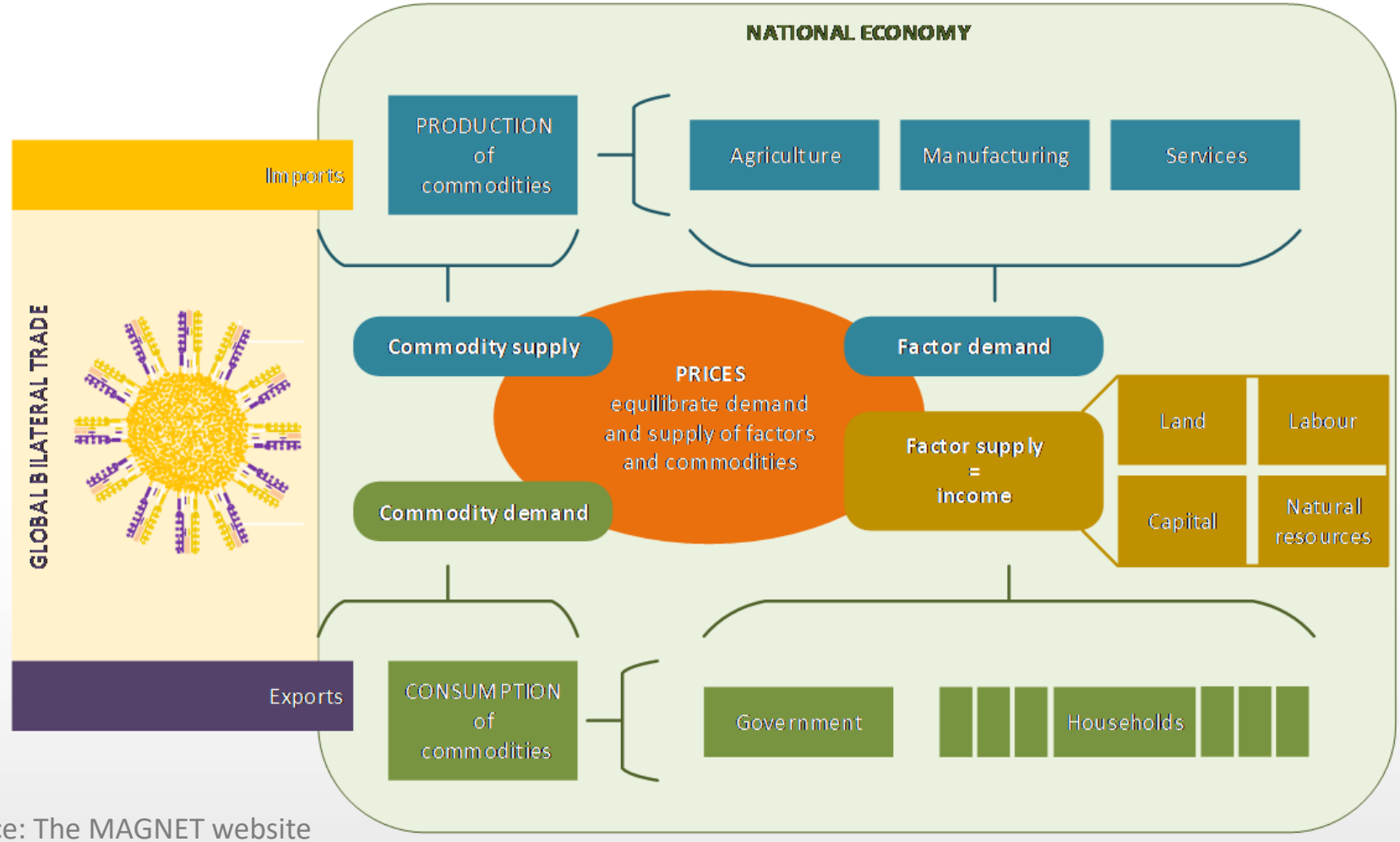
Source: Own presentation.

Spatial Equilibrium Model of Poultry Value Chain



Note: m = maize, s = soy, f = feed, b = chicken meat, i = regions

MAGNET model



Source: The MAGNET website

Typical Farm Approach

Step 4

Data analysis

Step 3

Typification of farm data

Step 2

Farm visit

Step 1

Identification of the most prevalent conventional broiler production systems

Comparative analysis: Synthetic Control Method

- To analyze the effects of the complete ban in Senegal, we first need to estimate the trend of poultry production and imports in the absence of receiving the complete import ban.

- $\rho_{k,t} = Y_{1,t}^{I} - Y_{1,t}^{N}$

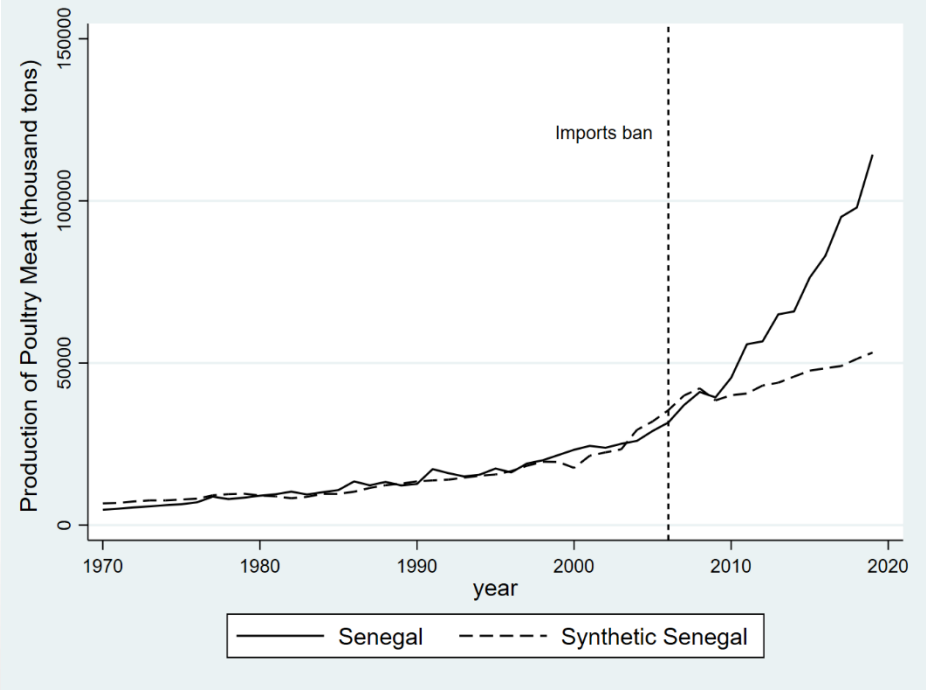
$X_{k,t}^{I}$: the outcome variable observed for the countries that did not experience a complete import ban in the post-intervention period.

$X_{k,t}^{N}$: the outcome for the treated unit (i.e. Senegal) after it had adopted the complete ban

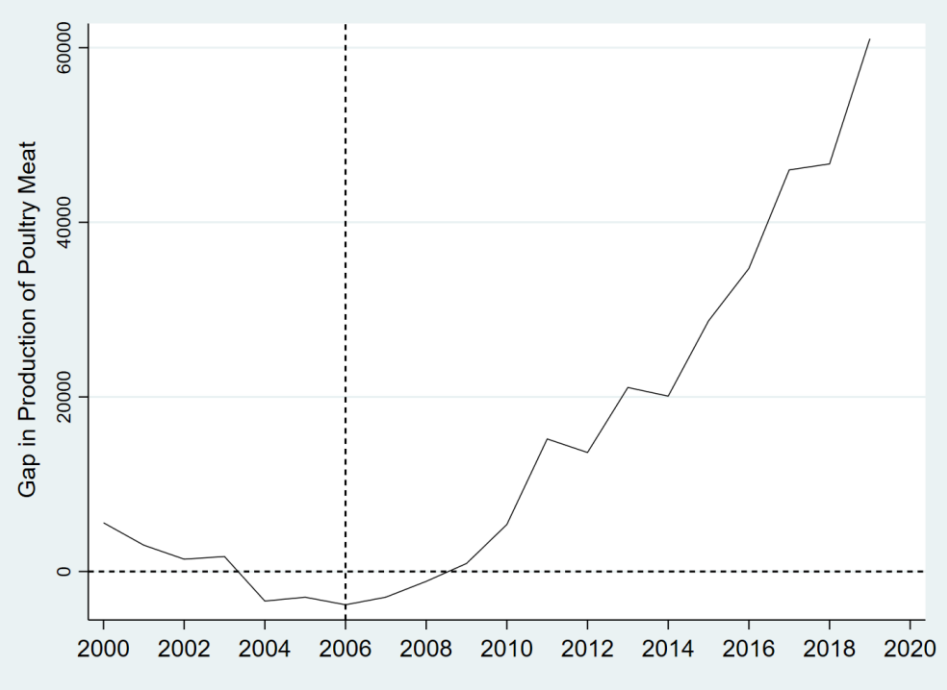
- $\rho_{1,t} = Y_{1,t}^{I} - Y_{1,t}^{N} = Y_{1,t} - Y_{1,t}^{N}$

Results: Complete ban and farm performance

Actual poultry meat production of Senegal vs. synthetic Senegal

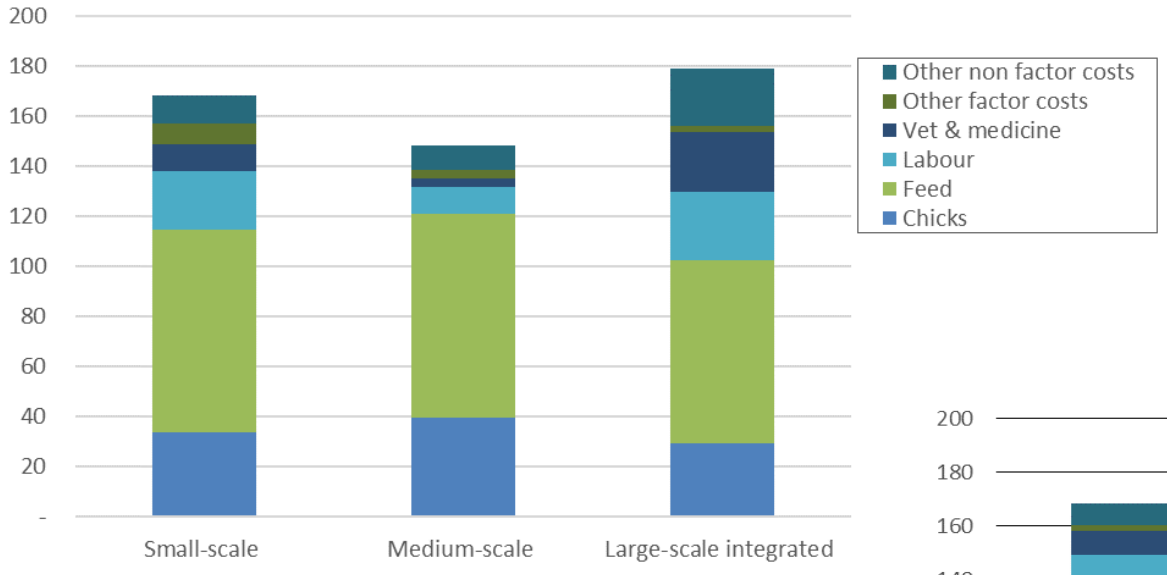


Gap in poultry meat production, Senegal



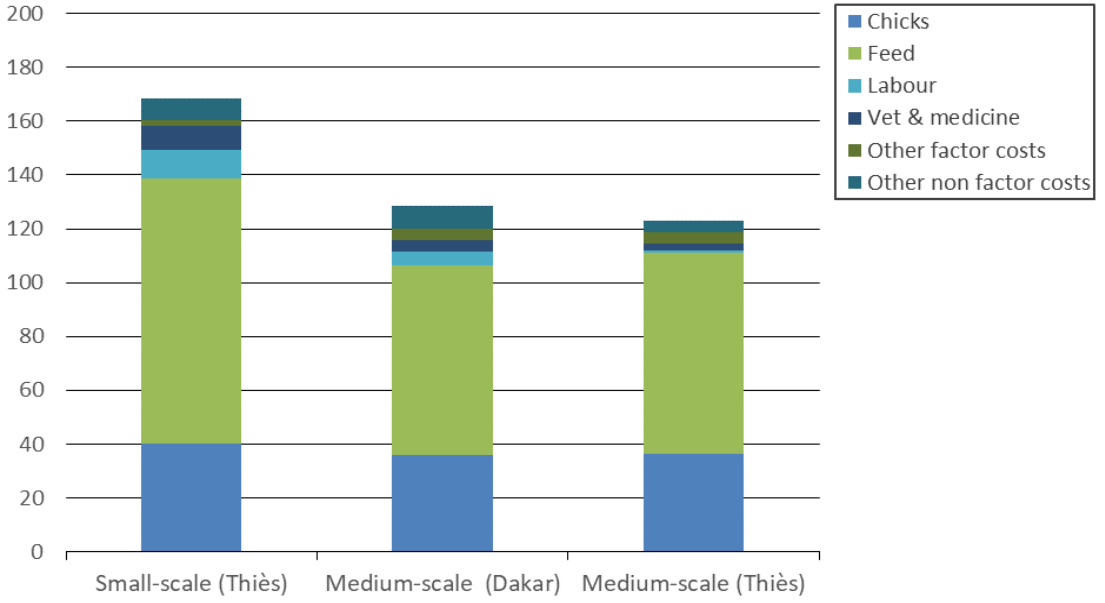
Source: Own calculation using STATA 17.

Costs of Broiler Production in Ghana and Senegal



Production costs of the typical broiler farms in Ghana in 2020 (€ /100 kg live weight)

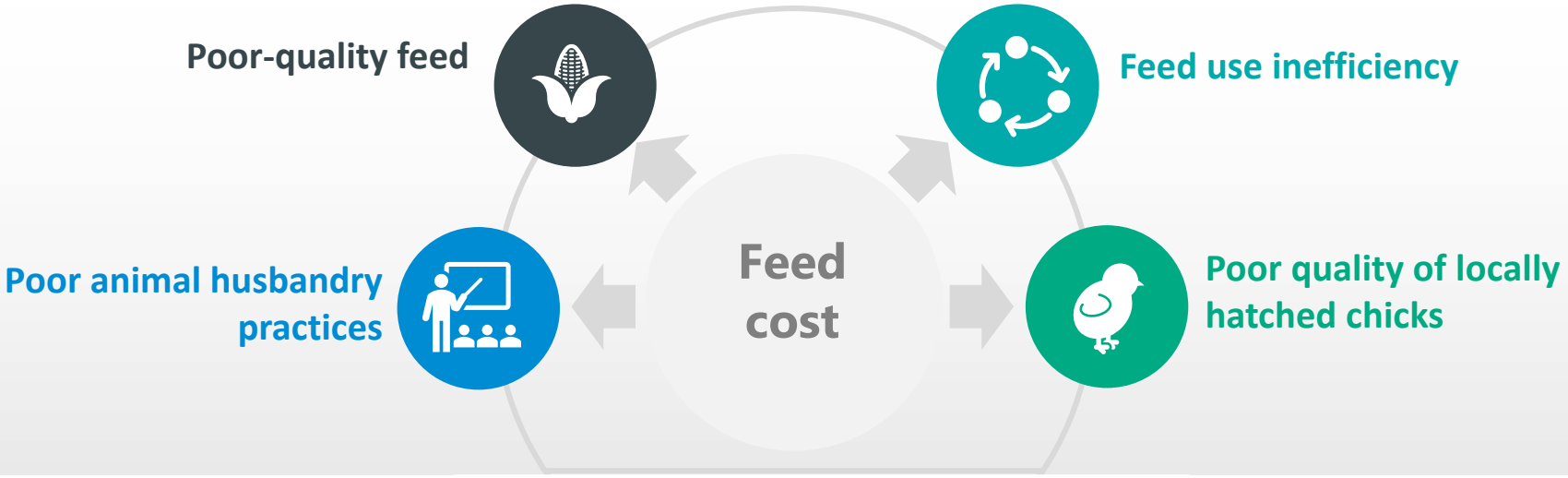
Production costs of the typical broiler farms in Senegal (EUR /100 kg live weight).



Farm level drivers: Feed use inefficiency

Feeding period, Feed consumption, and Feed conversion ratio (FCR)

	GH_3k	GH_12k	GH_27k	SN_9k	SN_36k	SN_38k
Feeding period (days)	63.00	45.50	42.00	38.00	40.00	35.00
Final live weight (g)	3.00	2.00	2.20	2.00	2.00	2.00
Feed conversion ratio (FCR)	2.43	2.08	2.33	2.06	1.78	1.61



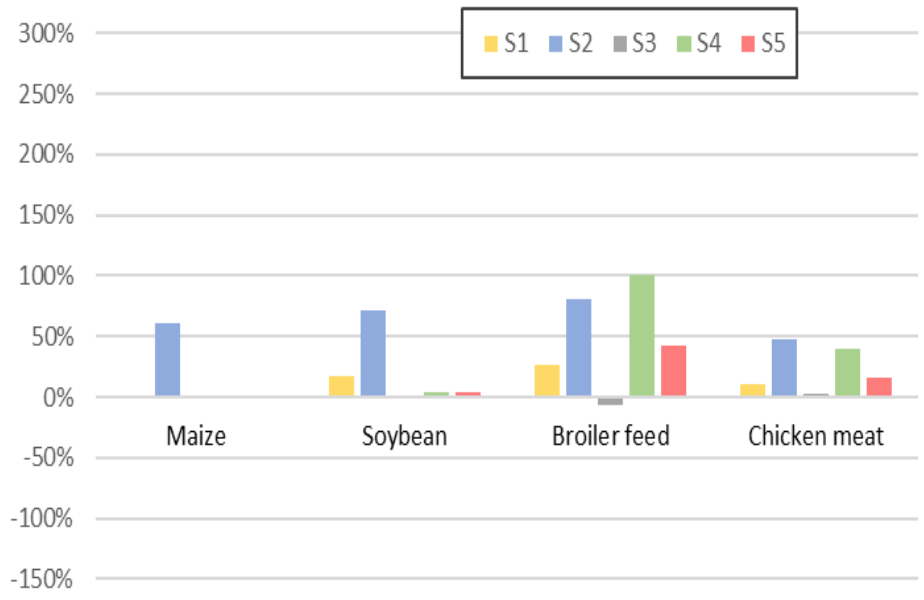
National-level Drivers

- Exchange rate depreciation,
- Investment and feed production capacity,,
- feed conversion ration.

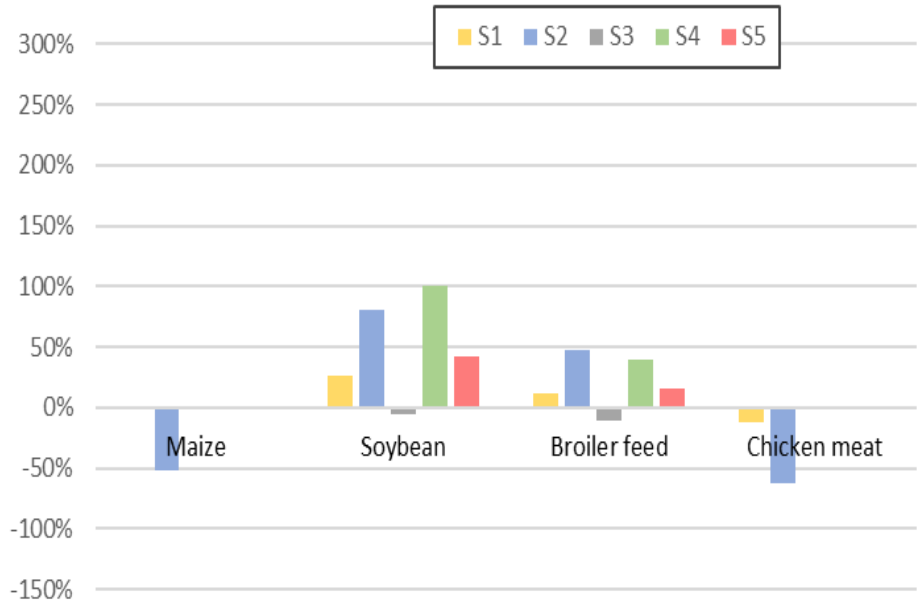
Scenario	Description
Base	Calibrated model at observed values of demand and supply
Sim1	Increase exchange rate by 10%
Sim2	Increase exchange rate by 50%
Sim3	Optimal feed conversion ratio, i.e. 1.68
Sim4	Doubling national level of broiler feed production
Sim5	Increasing feed capacity by 50% and feed market liberalization

Simulation Results: Supply, Demand, Price, and Trade

a) Domestic production

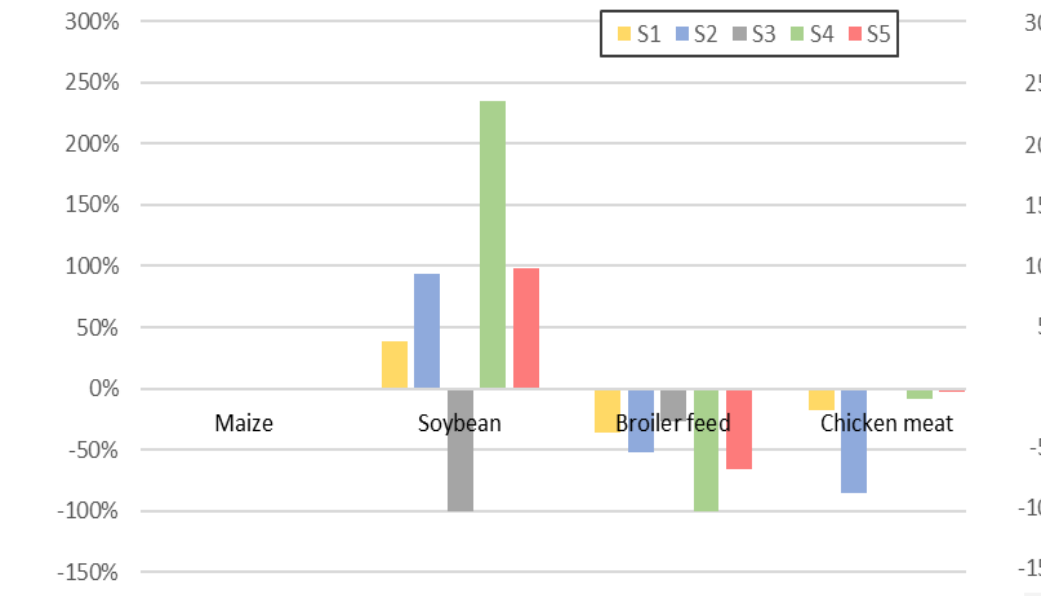


b) Domestic consumption

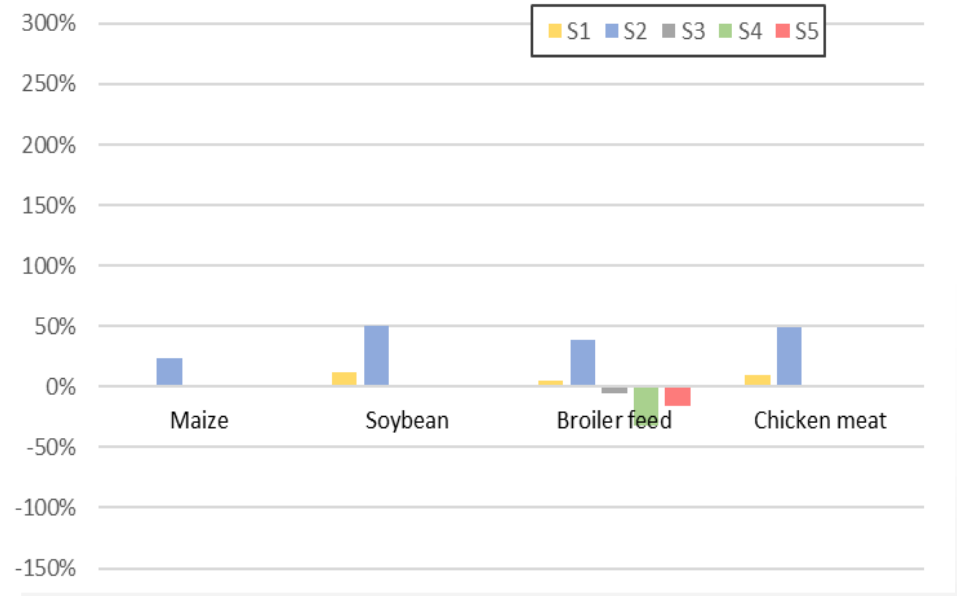


Simulation Results: Supply, Demand, Price, and Trade

d) Imports

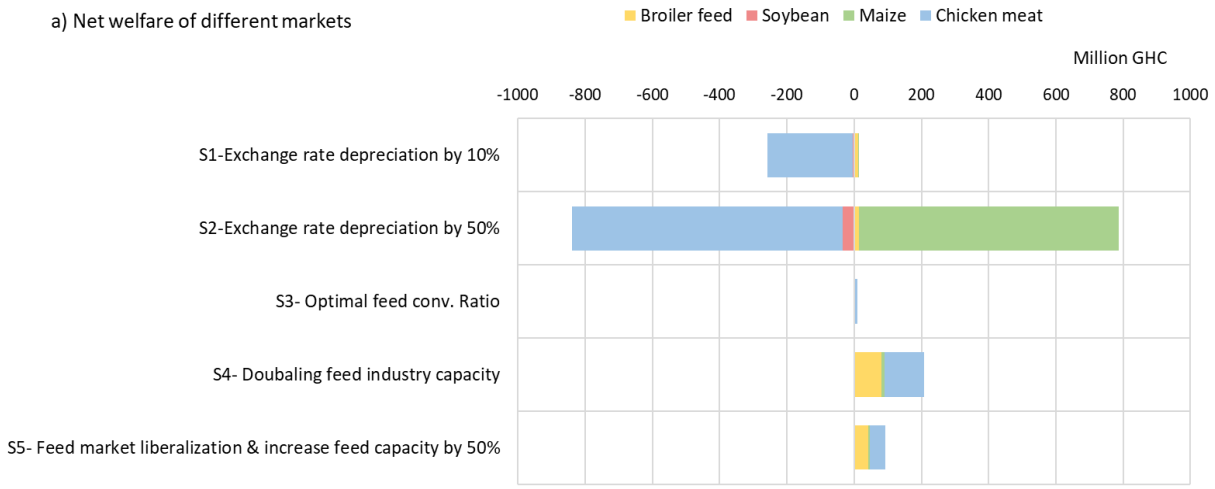


c) Market price

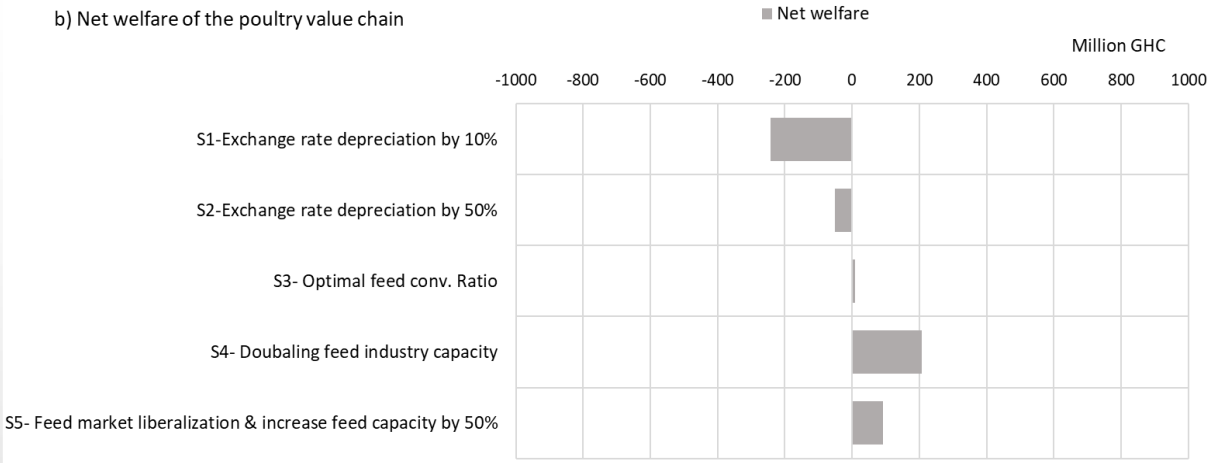


Simulation Results: Net welfare changes

a) Net welfare of different markets



b) Net welfare of the poultry value chain



Policy Measures

Impact of a subsidy on feed in 2030

Domestic production of poultry meat	221%
Consumer price for poultry meat (domestic & imported)	-24%
Private consumption volume of poultry meat	14%
Import value of poultry meat	-52.2%
GDP	-0.125

Impact of a feed subsidy on imports in 2030 (1000 US$)

EU15	-59.58
CEEC13	-2.93
USA	-62.2
Canada	-1.23
Mexico	-2.49
Brazil	-18.37
Rest Africa	-0.97
Rest of the World	-3.88

Conclusion

- The exchange rate depreciations increase domestic market prices for all products (the soy and chicken meat prices are affected relatively more).
- Although the exchange rate depreciation puts upward pressure on the demand for domestic intermediate products, the consumption of final products including chicken meat and maize would drop remarkably.
- Doubling the capacity of feed production may lead to decreasing the chicken meat price by around 30%.
- The domestic production of chicken meat has substantially developed after the I port ban in 2006.
- The farm-level analysis demonstrates that the performance of the typical conventional broiler farms from Senegal is better than those from Ghana.

Open issues

Thank you for your attention!