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The supply governance of appellations: the case of Prosecco

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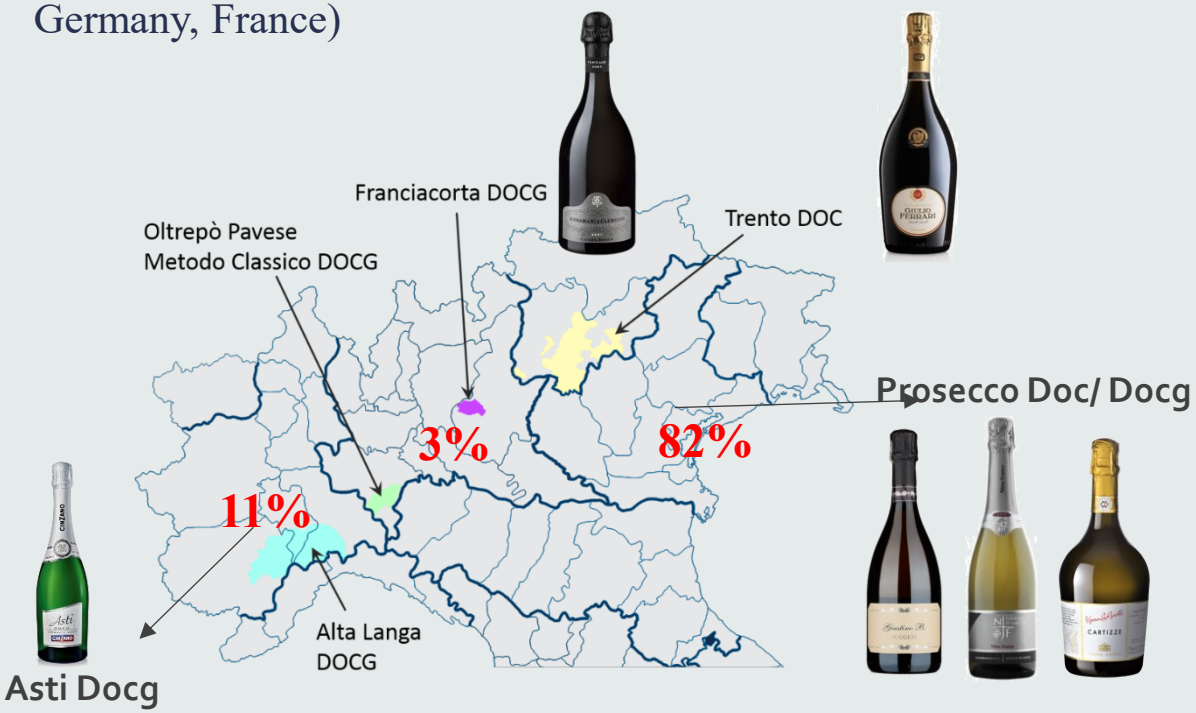
This paper aims to evaluate the effects of measures adopted by Prosecco Doc Consortium on the supply to maintain the market equilibrium and to figure out the optimal size of Prosecco according to the market demand

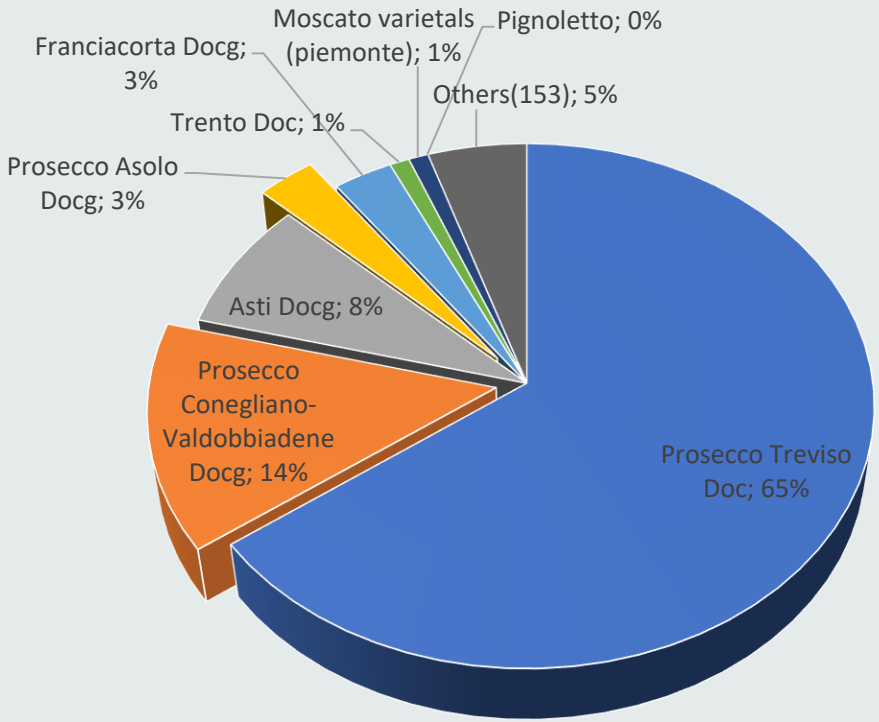
Summary

- Outlook & World Prosecco
- The size of appellations
- The governance of appellations
- The control over supply
- The model
- Conclusions

Outlook

- The sparkling wine Italian production (2019): ~ 645 millions bottles (around 800 millions in 2021)
- Sales on Italian market: 327 millions liters (14% of overall wine sales)
- The export market is increasing
- The Prosecco production accounts 82% of the Italian sparkling wine production (Prosecco Doc, Conegliano-
- More that 70% of Prosecco is exported (United States, United Kingdom, Germany, France)



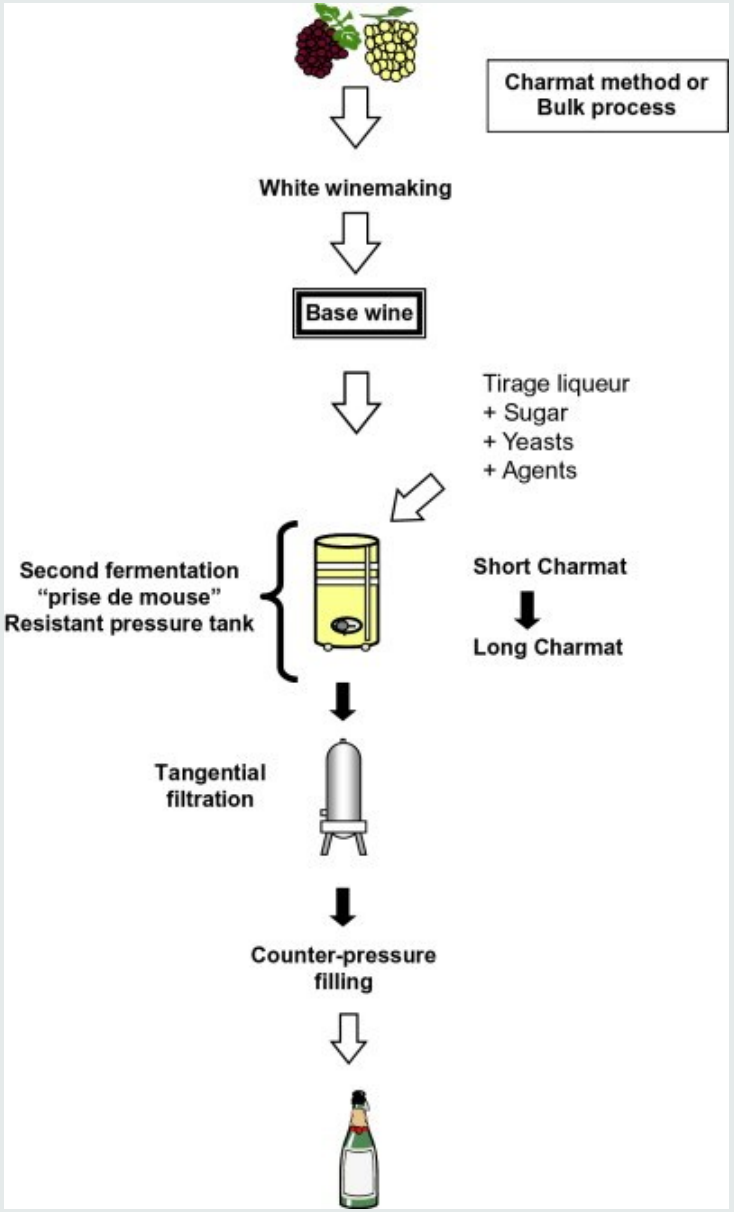


Sparkling wine production per geographical indication (millions liters, %)

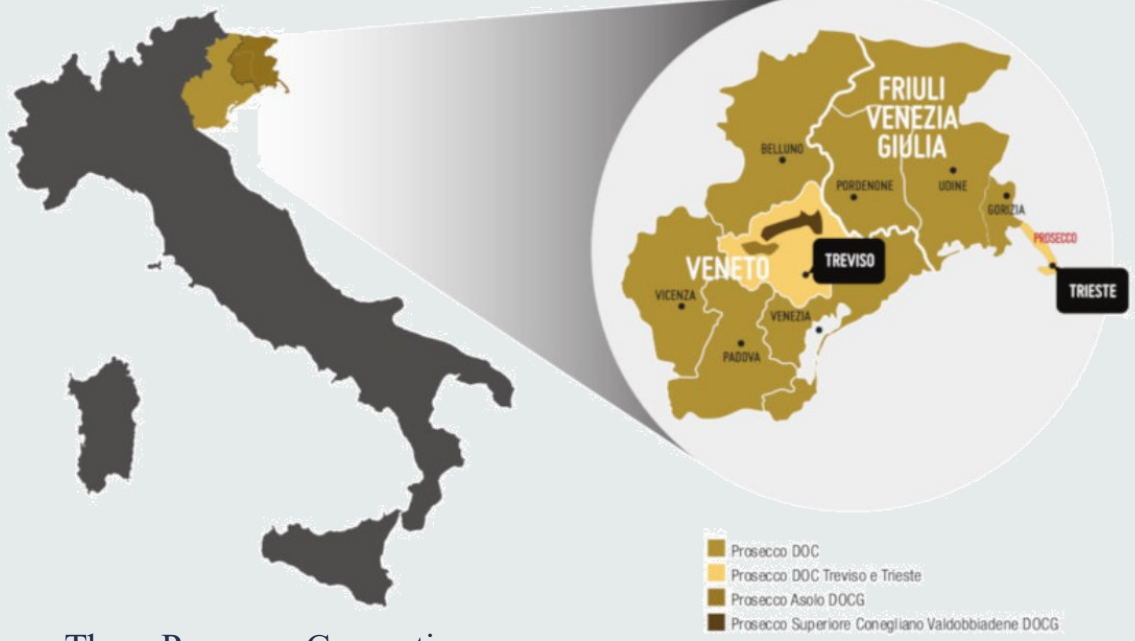
Source: Euromonitorr, 2022 Corriere Vinicolo and Ismea, 2021

The world of Prosecco

- **The Prosecco in a complex system**
  - Three Geographical indications (GIs → Protected Denomination of Origin): Treviso Doc, Conegliano-Valdobbiadene Docg, Asolo Docg
  - The Treviso Doc area overlaps both Prosecco Docg
  - Each IG is managed by a Consortium (association among producers and processors)
  - Each IG has is own "*book of production rules*" (*chaier des charge* in France, *disciplinare di produzione* in Italy).
    - Main grape variety: Glera (min 85%)
    - Other allowed varieties (max 15%): Pinot white, Pinot gris, Pinot noir, Chardonnay and local varieties (Bianchetta, Perera, Verdiso)
    - Grape **yields** for Glera: max 18 ton/ha Treviso Doc yield; max 18 ton/ha for Conegliano-Valdobbiadene Docg and Asolo Docg
    - Grape → Wine: 70% (conversion rate)



The world of Prosecco



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CONSORZIO TUTELA PROSECCO DOC

CONEGLIANO VALDOBBIADENE DOCG
PROSECCO SUPERIORE DAL 1876

CONSORZIO ASOLO PROSECCO

- Three Prosecco Consortia
- The Consortium Prosecco Doc (Veneto and Friuli)
  - The area is 24.400 ha for Glera and 3.200 ha of other varieties (covering 5 Veneto provinces and Friuli Region)
  - Producers: 13.100 (88% wine-growers, 9% wineries, 3% "maison").
- The Consortium Conegliano-Valdobbiadene (CV) Docg (15 municipalities, hilly area in Treviso province)
  - The area is 8.700 ha for Glera
  - Producers: 2.100 (78% wine-growers, 18% wineries, 3% "maison").
- The Asolo Docg (19 municipalities, hilly area in Treviso province)
  - The area is 2.200 ha for Glera and 400 ha of other varieties

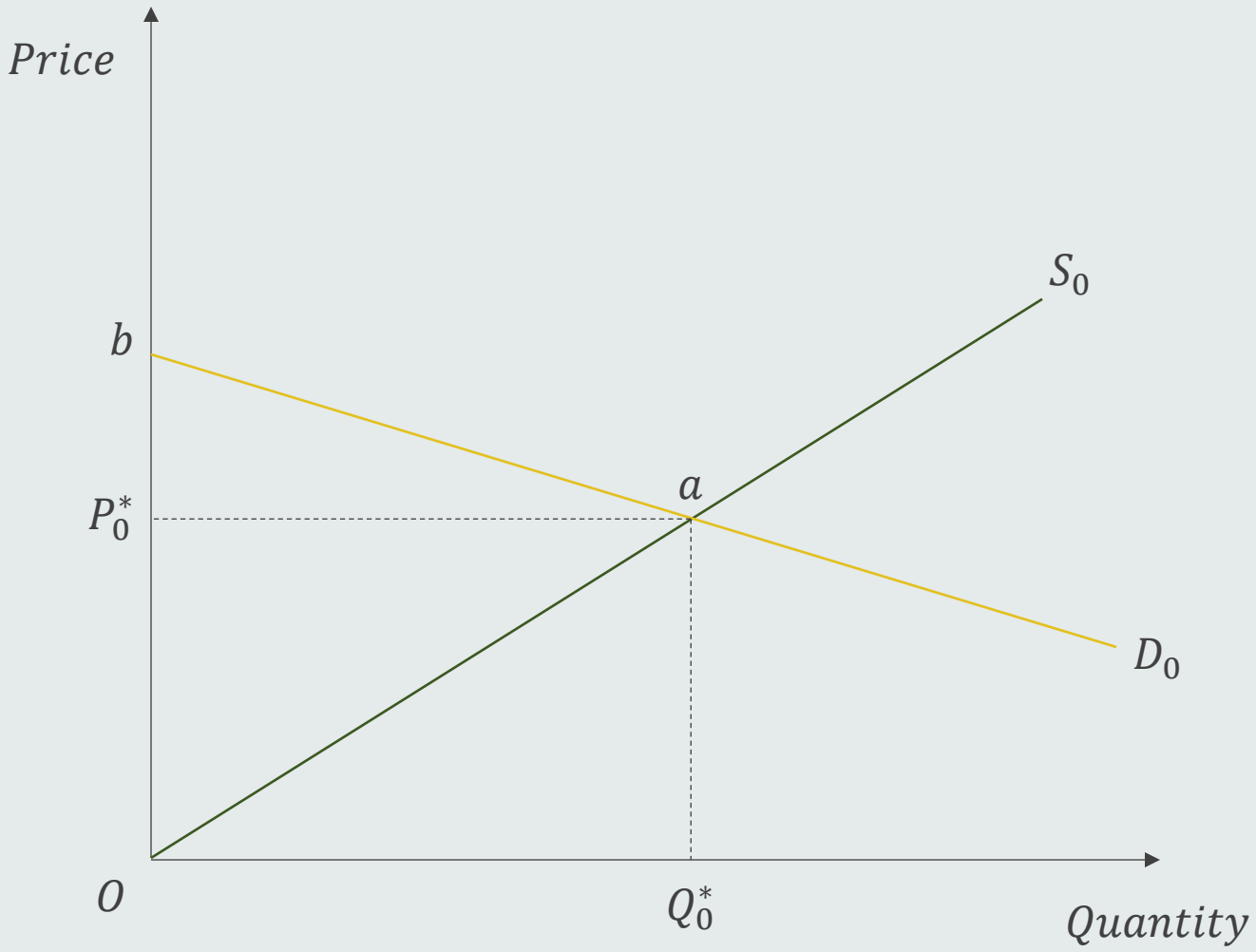
The Prosecco Doc area overlaps CV and Asolo Docg

Screen shots

The theory: the optimal size of appellations

- The economics of GIs has been investigated as the **quality level** provided to consumers overcoming **information asymmetry** or the "lemons" market failure as a result of regulating production (Moschini et al., 2008; Meloni et al., 2019; Alston and Gaeta, 2021).
- The positive consumer **welfare effects** generated by the appellation are reached when enhanced demand effects (better quality) are greater that reduced consumer surplus (high prices) produced by supply restrictions (Mérel and Sexton, 2011).
- The size of appellation affects the social welfare. The social optimal appellation size is complex to be defined as it is a balance between consumer effects such as having a better quality and effects accruing to producers such as higher costs (existing and new ones) and overall Gi's costs (eg. monitoring or marketing costs) (Deconinck and Swinnen, 2014; Meloni et al., 2019).
- The political appellation size may not match the social optimal size because of lobbying forces strongly driven by producers (Landi and Stefani, 2015).

Initial equilibrium



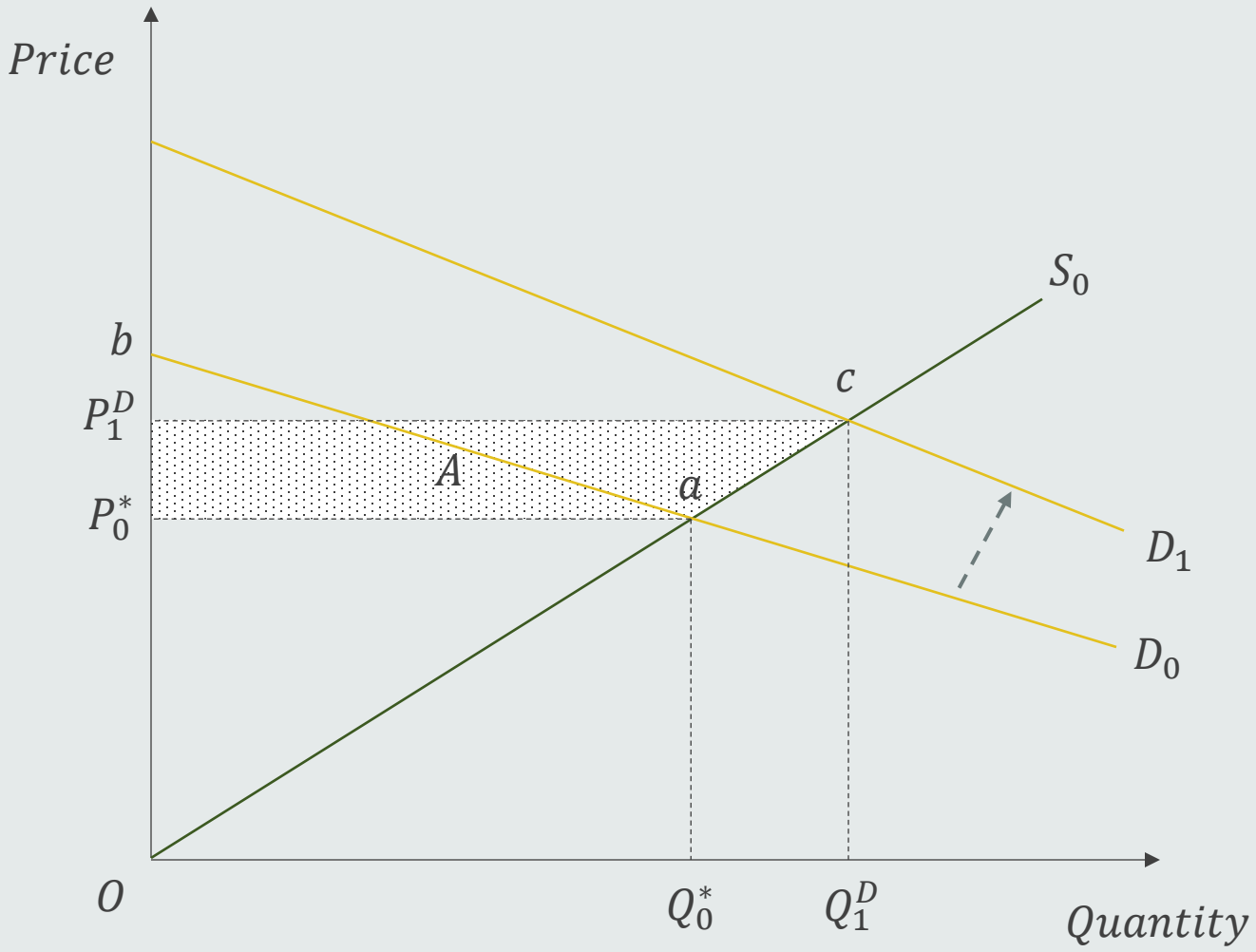
With no yield restriction, at the equilibrium, quantity Q_0^* is exchanged at price P_0^*

$$Consumer\ surplus = aP_0^*b$$

$$\text{Producer surplus} = OaP_0^*$$

$$Total\ surplus = Oab$$

Effects on producer surplus



Yield restriction

⬇

Increase in demand because of quality increase

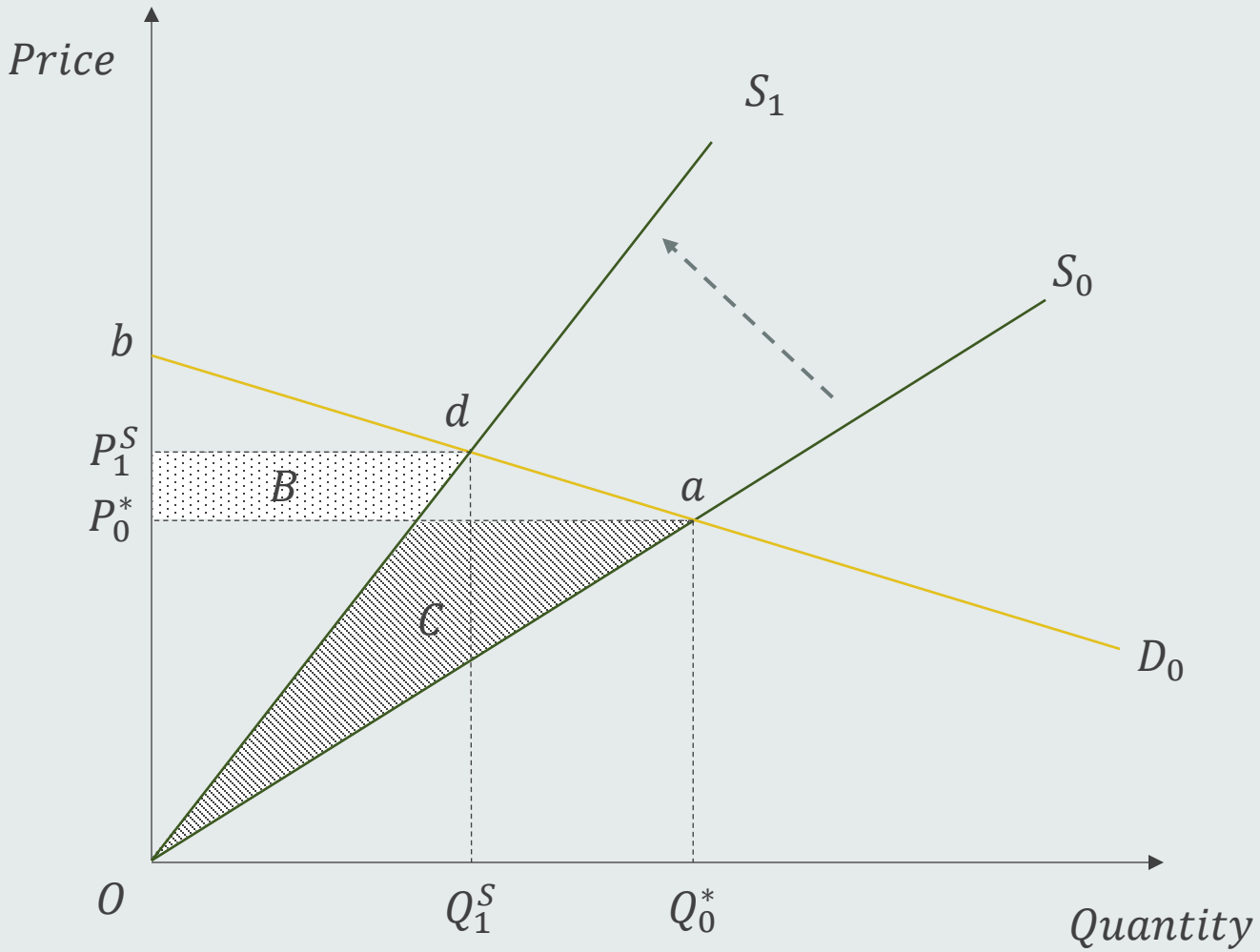
$$Producer\ surplus = OcP_1^D$$

$$\Delta PS = acP_1^D P_0^* = A$$

⬇

Demand-enhancing effect (always positive)

Effects on producer surplus (2)



Yield restriction

⬇

Decrease of supply because of cost increase

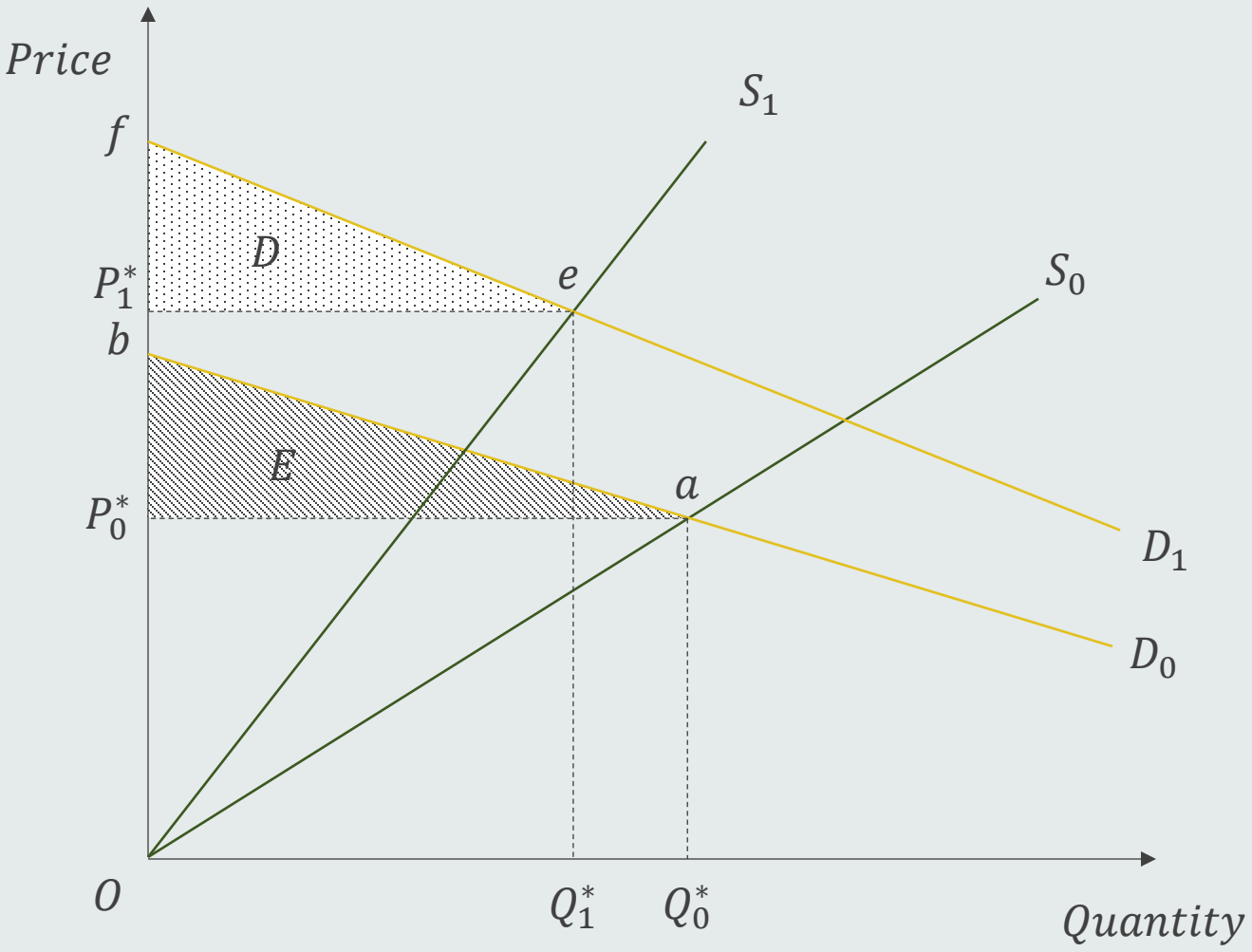
$$Producer\ surplus = OdP_1^S$$

$$\Delta PS = adP_1^D P_0^* - aOd = B - C$$

⬇

Supply-limiting effect (depends on the quality level)

Welfare variations: change in consumer surplus



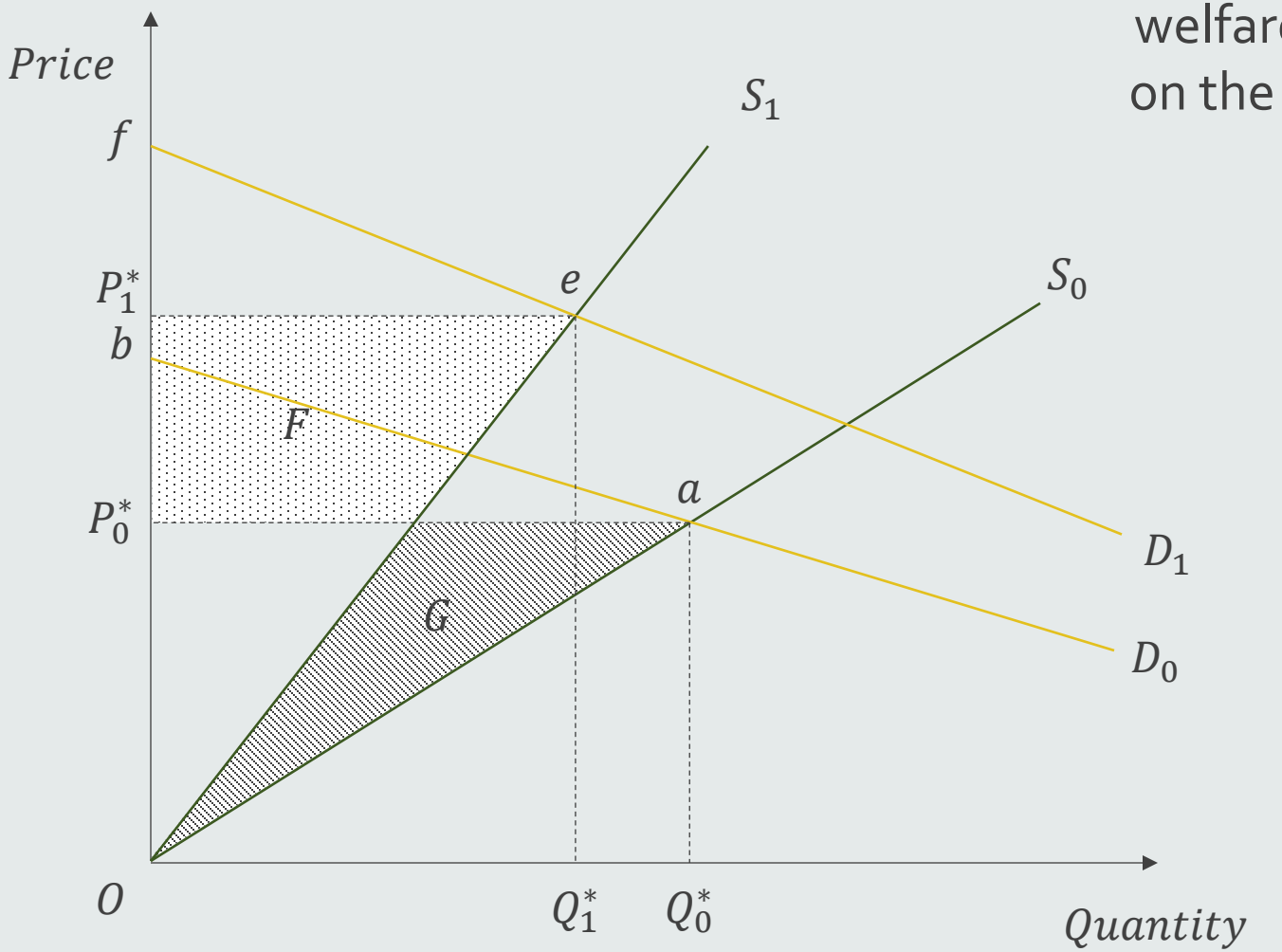
With yield restriction, the welfare gains (or losses) depend on the shape of the demand and supply curves

$$\Delta CS = eP_1^* f - aP_0^* b = D - E$$

Meloni G, Anderson K, Deconinck K, Swinnen J (2019) Wine regulations. *Applied Economic Perspectives and Policy*, 41(4).

Merel, P., and R.J. Sexton. 2011. Will Geographical Indications Supply Excessive Quality? European *Review of Agricultural Economics*, 39 (4)

Welfare variations (2): change in consumer and producer surplus



With yield restriction, the welfare gains (or losses) depend on the shape of the demand and supply curves

$$\Delta CS = eP_1^* f - aP_0^* b = D - E$$

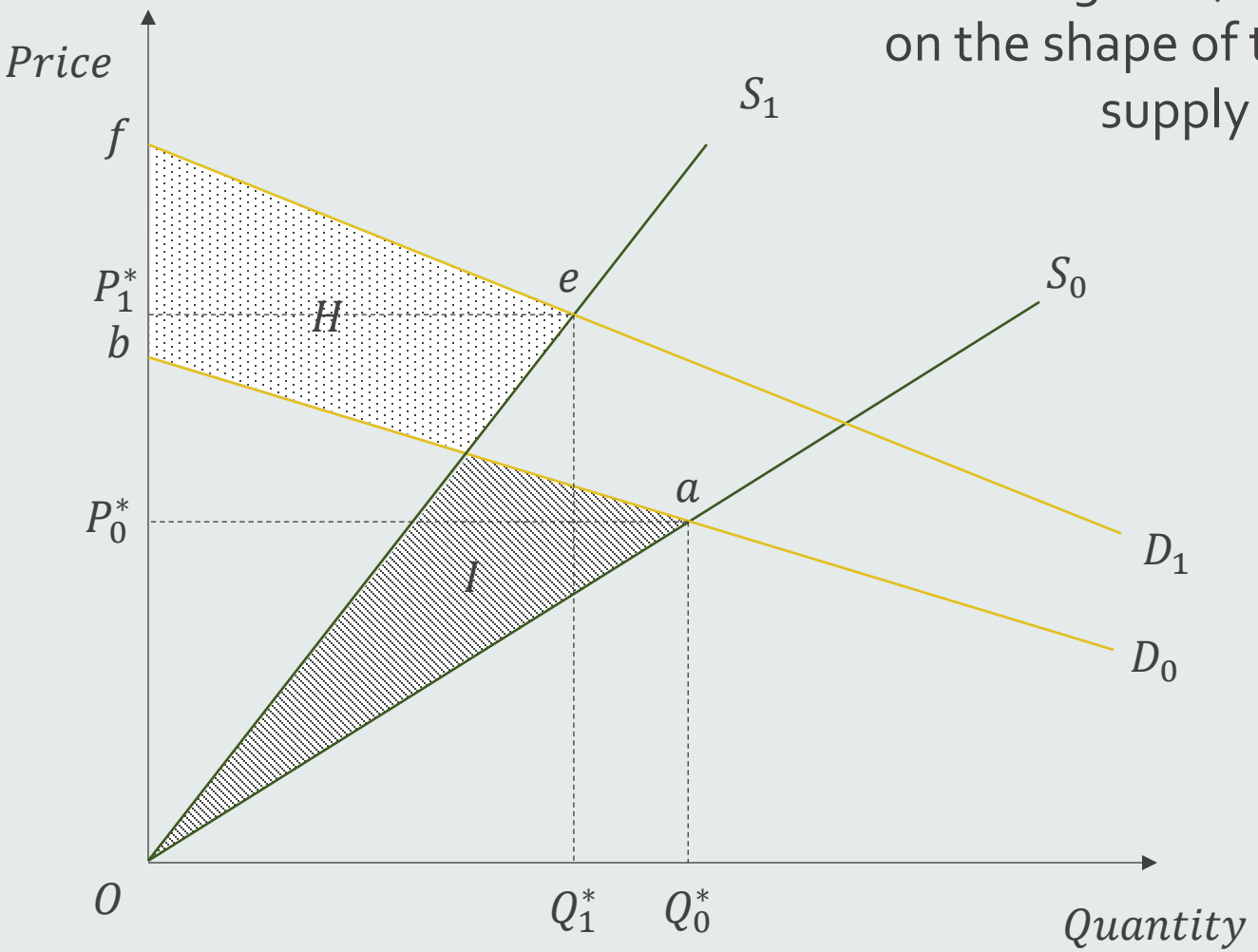
$$\Delta PS = eP_1^* O - aP_0^* O = F - G$$

Meloni G, Anderson K, Deconinck K, Swinnen J (2019) Wine regulations. *Applied Economic Perspectives and Policy*, 41(4).

Merel, P., and R.J. Sexton. 2011. Will Geographical Indications Supply Excessive Quality? European *Review of Agricultural Economics*, 39 (4)

Welfare variations (3): change in total welfare

With yield restriction, the welfare gains (or losses) depend on the shape of the demand and supply curves



$$\Delta CS = eP_1^*f - aP_0^*b = D - E$$

$$\Delta PS = eP_1^*O - aP_0^*O = F - G$$

$$\Delta TS = eOf - aOb = H - I$$

Meloni G, Anderson K, Deconinck K, Swinnen J (2019) Wine regulations. *Applied Economic Perspectives and Policy*, 41(4).

Merel, P., and R.J. Sexton. 2011. Will Geographical Indications Supply Excessive Quality? European *Review of Agricultural Economics*, 39 (4)

The governance of appellations: the Power of Consortia

- **Consortium** → inter-branch organizations among wine-growers, winemakers and bottlers (European Union recognized Consortia as interprofessional organizations) within a geographical indication (PDO wines "appellations" including the Italian 'Denominazione di Origine Controllata e Garantita, Docg' and 'Denominazione di Origine Controllata, Doc')
- **Role of consortia**
  - Technical assistance
  - Communication and promotion
  - Appellation protection and safeguarding (brand management)
  - Supervision over sales
  - Supply control actions
- The **power of Consortia** depends on their representativeness (as producers and production)
  - Large Consortia (high representativeness) are entrusted to manage the appellation and to exert the so called "erga omes" (producers supporting the Consortium expenses are mandatory, regardless their membership of Consortia)

- **Issues**
  - Managing small vs wine Consortia
  - How to control large productions (quality variability)
  - Control over the price (discount vs. high price strategies)
  - Conflicts among producers
  - Pressures from entering producers
  - Strategies of large producers (bottlers) vs. small producers (wineries)

Consortium Moscato di Scanzo Docg (since 2009; raisin sweet red wine): 32 hectares, 19 producers

Consortium Prosecco Doc (since 2011): 24.000 ha, 13.000 producers

The governance of Prosecco: the control over supply

- The Italian regulation over wine sector (law n. 238, 12 December 2016) reinforces the power of Consortia in managing supply by:
  1) Creating a grape harvest surplus (blocage/déblocage);
  2) Reducing yields or downgrading the wine quality;
  3) Acting on the viticultural land register (stop in expanding appellation area, temporary or permanent enlargement of the appellation area);
  4) Creating a wine stock or reserve (blocage/déblocage).

- ***Short-term actions***
  - The short-term actions on supply governance such as grape harvest surplus (1), changing yields (2) and on wine stock (4) are aimed at regulating the supply according to the vintage (climate conditions and yields variability) and/or demand forecasts.
- ***Long-term actions***
  - The actions on appellation area produce long term supply effects then affect new plantings.

The governance of Prosecco: the process of getting the appellation

- Vineyard: the area of the Prosecco appellation is registered (viticultural land register)
  - As Prosecco Doc (24.400 ha)
  - As Prosecco CV Docg (8.770 ha) within the Prosecco Doc
  - As Prosecco Asolo Doc (2.200 ha) within the Prosecco Doc
  - **Some interactions are possible between Prosecco Docg and Prosecco Doc**

- Grape harvest: grapes have to declared (to the Minister agency) to have recognize as Prosecco (respecting yields)
- Still wine production: the conversion from grape to wine must respect the disciplinary
- Sparkling wine production and sale: sensorial controls (Commission) and label released for each bottle
  - Approximatively, 98% of harvests is bottled as Prosecco Doc

- **Prosecco features**
  - Prosecco is a young wine produced though the Charmat method, long stocking (as Champagne) does not work
  - Then, the Prosecco bottling responds to the demand requests

The governance of Prosecco: interactions

HARVEST

1) grape harvest surplus

Docg yield: 13,5 ton/ha + +20%: 2,7 ton/ha

Grape declaration

- 70% Docg
- 30% Doc
- 75% Doc

WINE

Wine

Wine: max 70% Docg yield + 5% surplus as Doc

- Max 94,5 hect. Docg
- 5% of surplus Doc

HARVEST

2) downgrading the wine quality

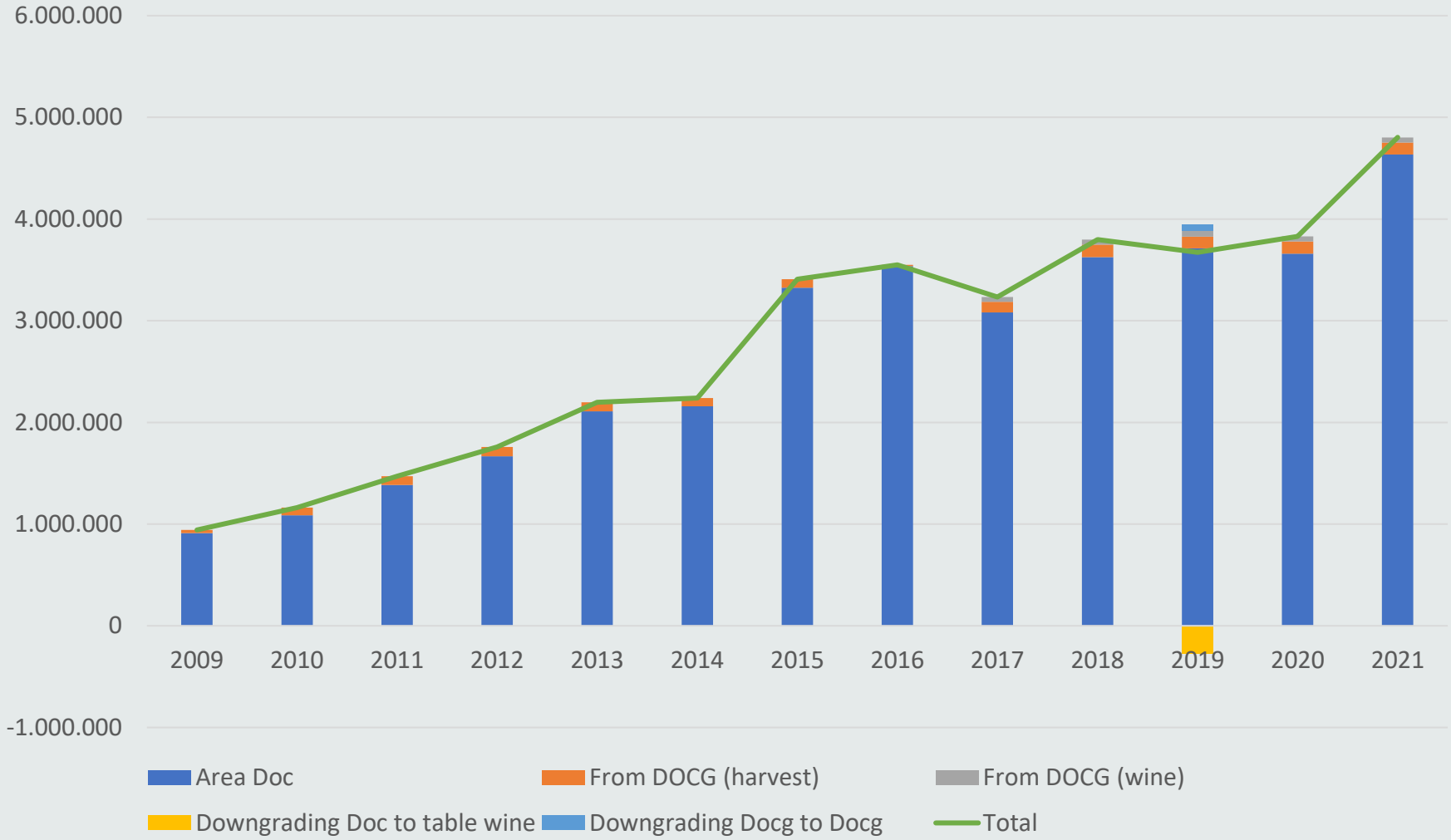
- Prosecco Doc → Table wine
- **Prosecco Docg** → Prosecco Doc

Area

No Prosecco → Prosecco Doc

3) Acting on the viticultural land register → temporary enlargement of appellation area

The governance of Prosecco Doc: actions in managing supply



- The Prosecco DOC :
- The grape production from DOCG is around 3-4% of total Doc
- The wine production from DOCG is around 1-2% of total Doc
- The downgrading was applied in 2019
- The temporary extension of Doc area (around +6.000 hectares) was applied in 2021

Source: Consortium Prosecco & Valoritalia, 2022

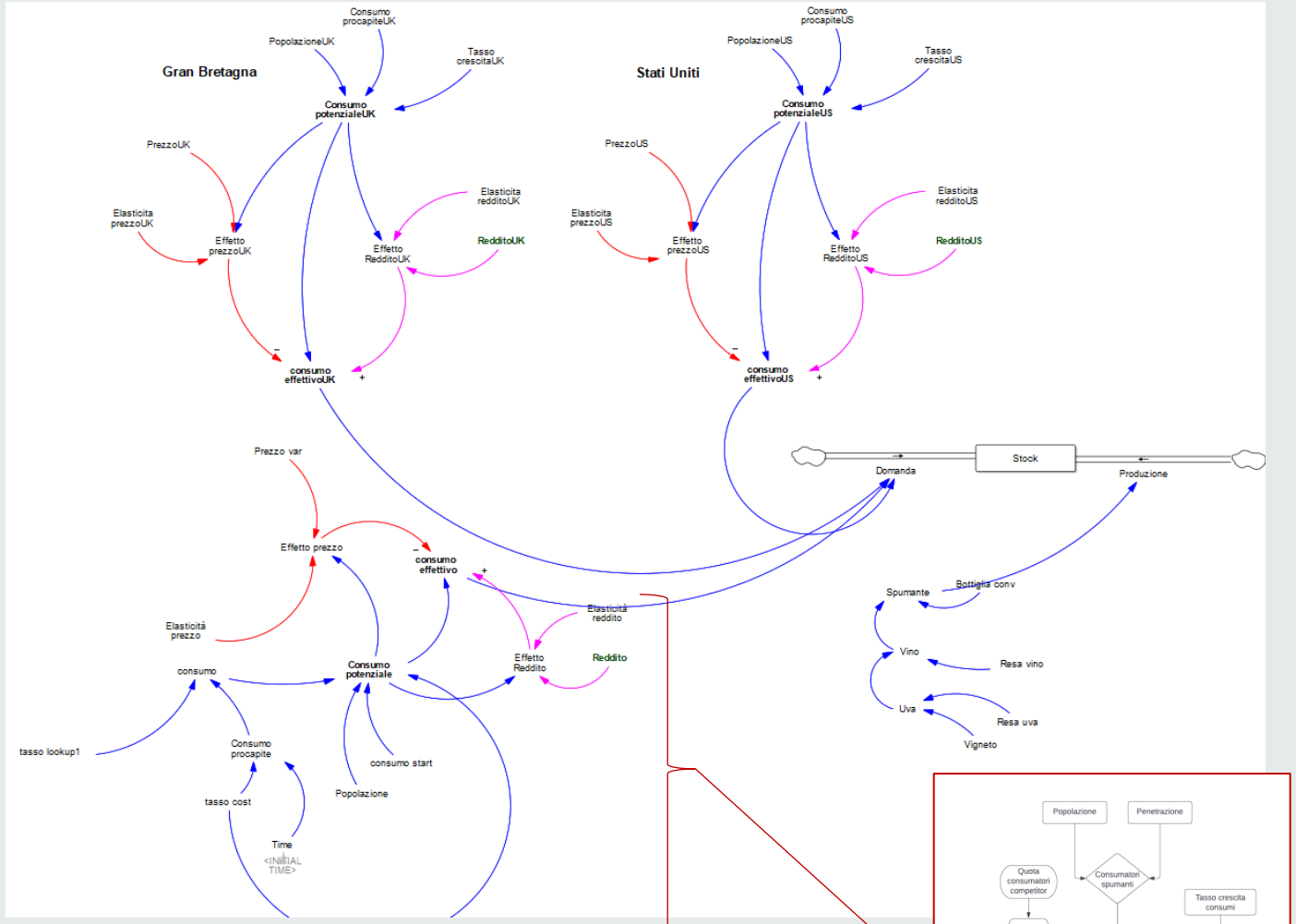
Research project

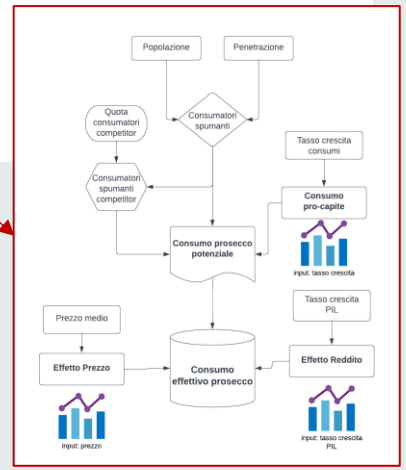
THE MODEL

- The System Dynamic Model
- Data Collection
- Parameters
- Simulation

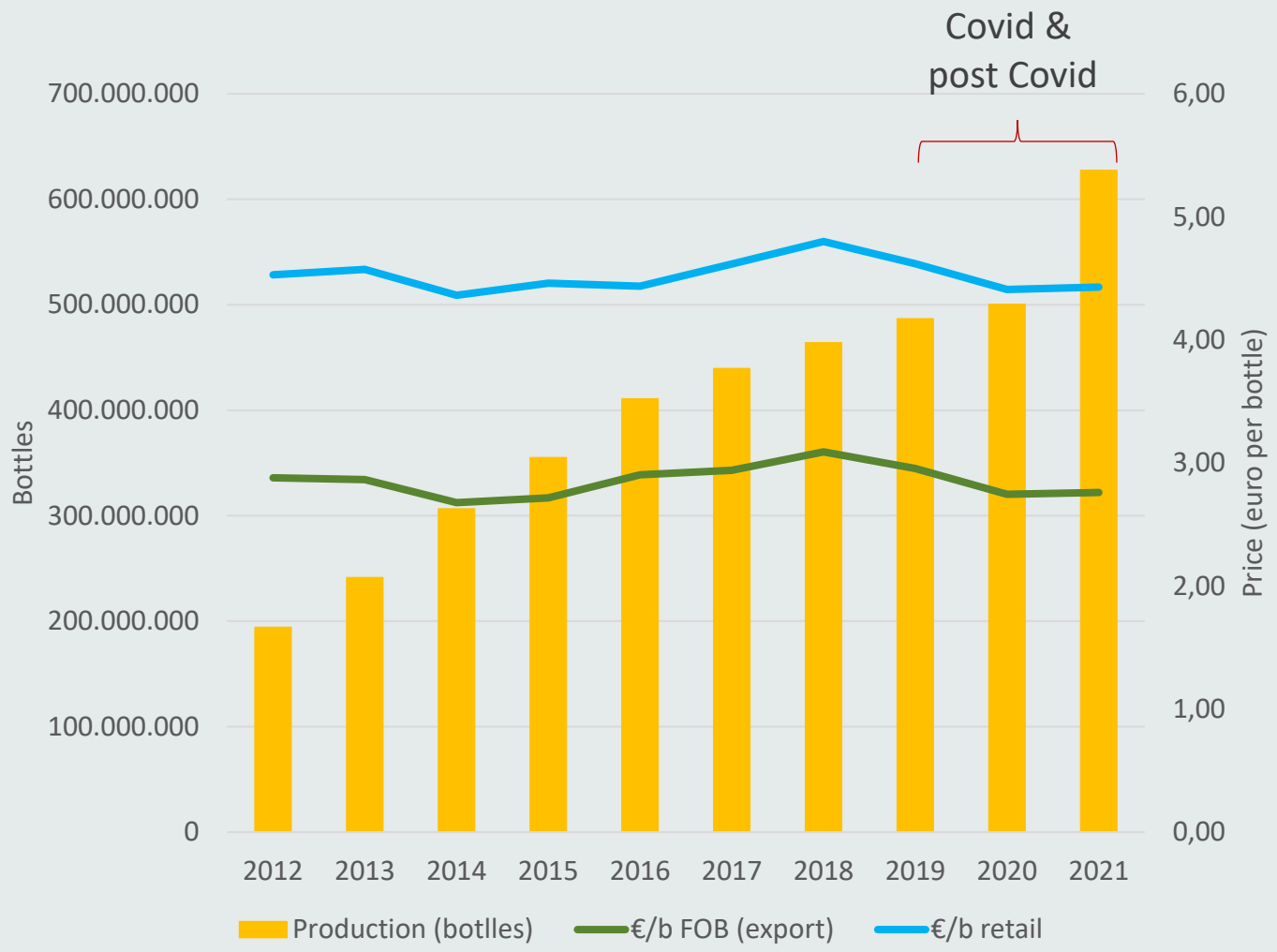
Methodolodogy

- System dynamics model
  - Year base
  - Building supply and demand
  - Calibration
  - Simulation
- Supply
  - Data collection: area, disciplinary restrictions, productions, bottles
- Demand
  - Domestic market
  - Export market: United States, United Kingdom, Germany, France, rest of the world
  - Potential demand for Prosecco
    - Population & Penetration
    - Consumption growth vs per capita consumption
  - Real demand → parameters
    - Substitution effect → cross elasticity
    - Income effect → elasticity
    - Price effect → direct elasticity





Market equilibria

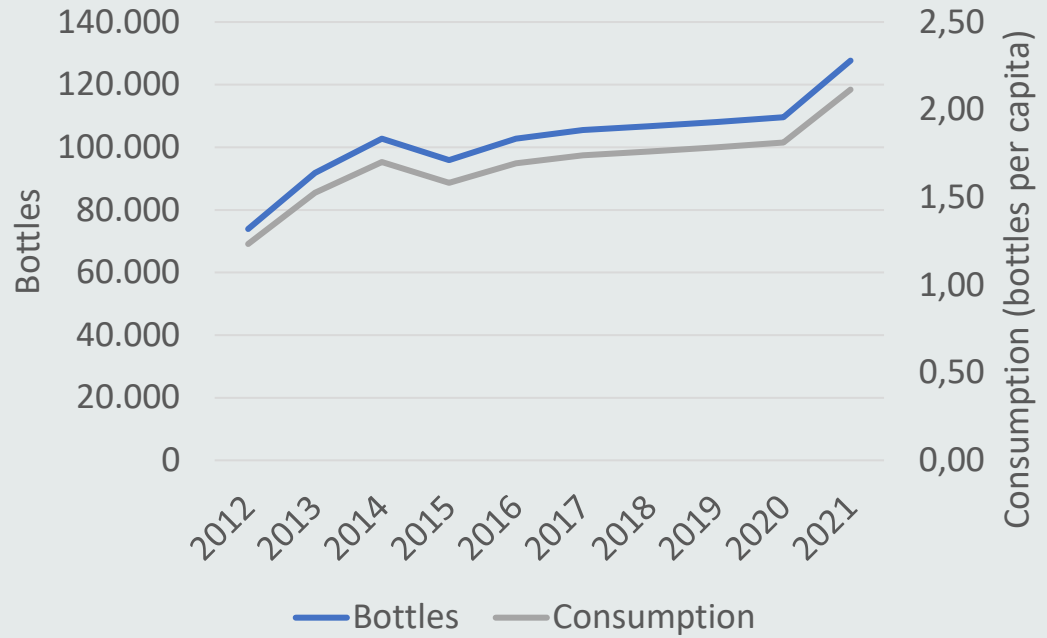


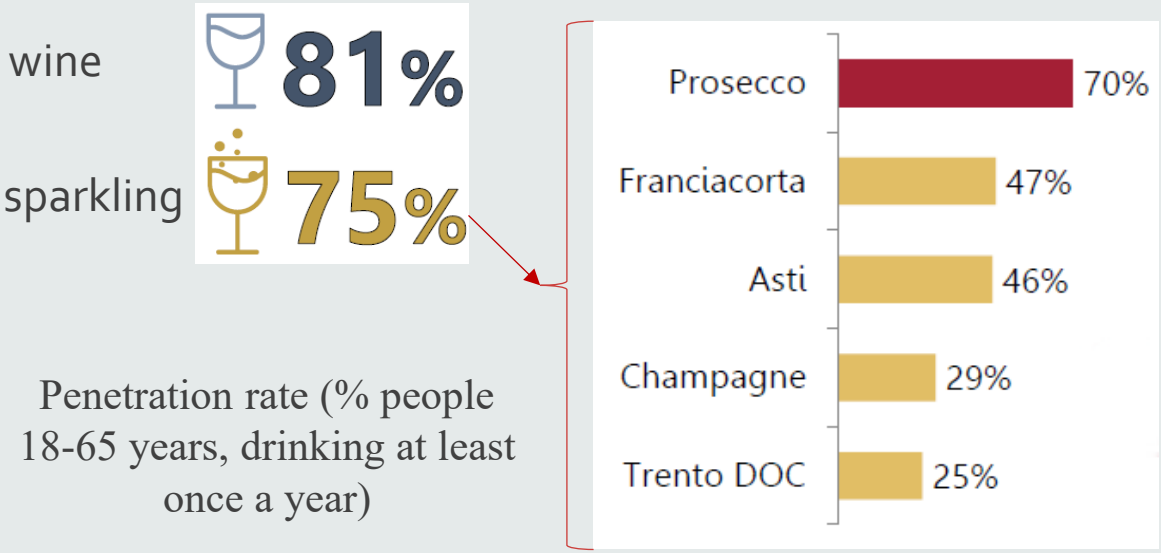
- **The Prosecco Doc supply:**
  - The production increases because of strong export demand
  - The domestic and export prices are stable
- The demand enlargement is supported by a supply increase
- **Issues**
  - The average price mask the price differences among market and marketing channels
  - The export price do not account local taxes and importer/retailer marketing margins
  - Production costs (e.g. energy) risk to squeeze the producer profits (stable price scenario)

Source: Consortium Prosecco on GTI and IRI-INFOSCAN data, 2022

Demand: Italy

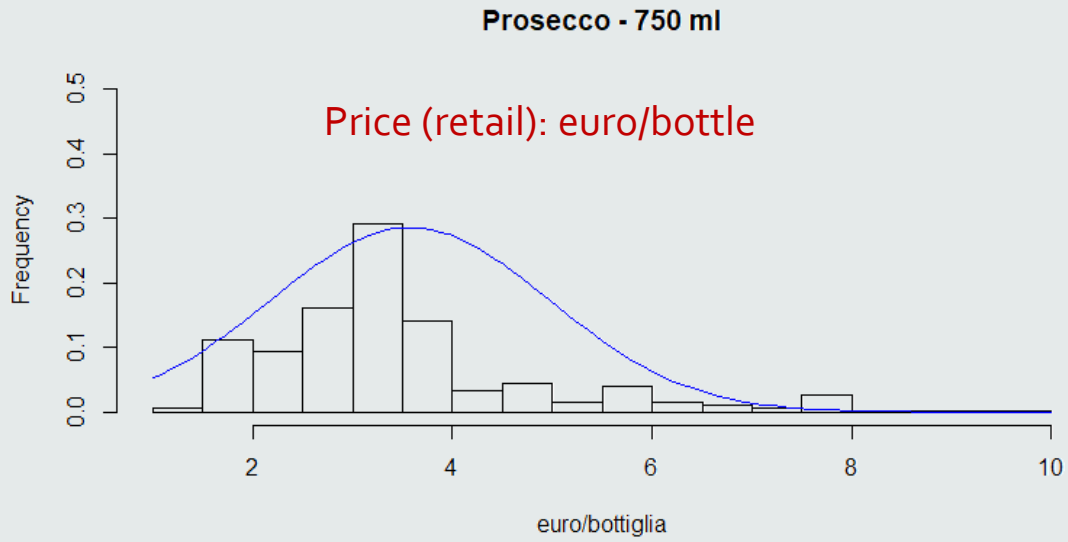
- Italy: 21% of total production (bottles)
- Per capita consumption: 2,1 bottles
- Population: stable
- Sparkling wine penetration: 62%
- Prosecco Doc penetration: 25%





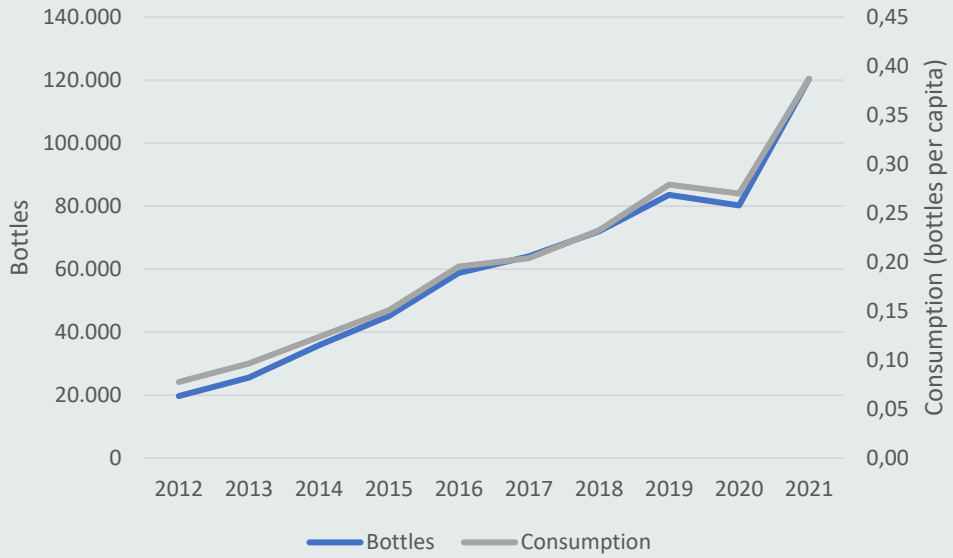
Penetration rate (% people 18-65 years, drinking at least once a year)

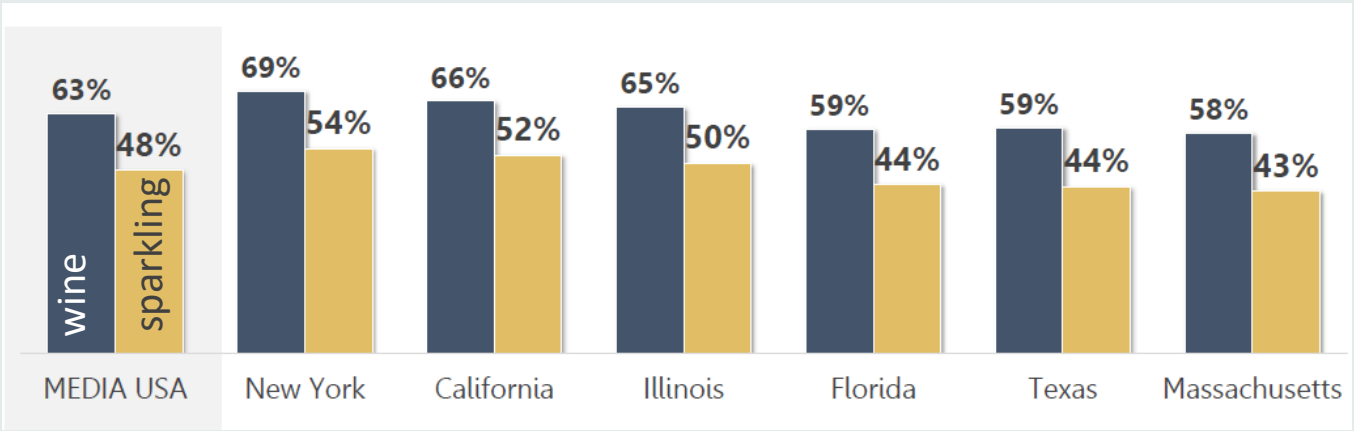
Source: Survey Wine Monitor Nomisma, 2021



Demand: United States

- Usa: **18%** of total production (bottles)
- Per capita consumption: 0,4 bottles
- Population (330 millions): increasing
- Share import sparkling wine : 40%
- Penetration sparking wine (survey): 48%





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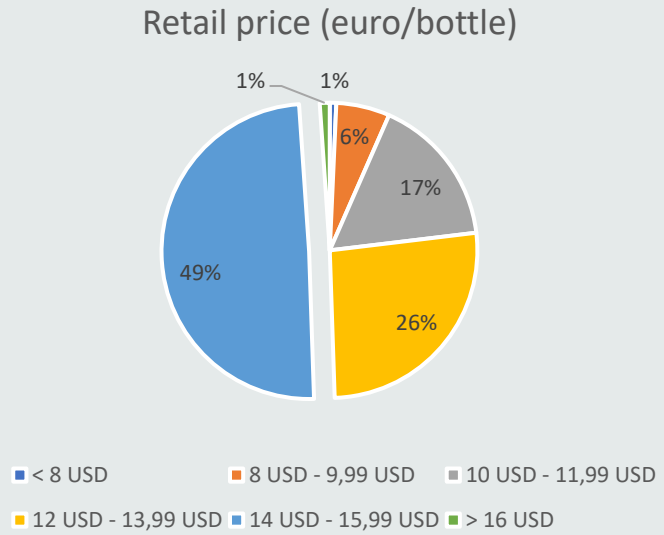


Source: Survey Wine Monitor Nomisma, 2022

Demand elasticities (estimates)

The standard first-differences L-AIDS model equation is

$$d\ w_i = b_i(d\ \ln X - \mathrm{d}\ln P) + \Sigma_j^n\ c_{ij}\ ln\ d\ p_j,$$

where w is the share of a good, X is the total expenditure on the good and its substitutes, and P is a price index for the goods, following Neves (1994).

Expenditure elasticity:

$$1 + \frac{b_i}{w_i}$$

Own-price elasticity:

$$\frac{c_{ii} - (b_i w_i)}{w_i} - 1$$

Cross-price elasticity:

$$\frac{c_{ij} - b_i w_i}{w_i}$$

Price Elasticity

	q_Wine	q_Beer	q_spirits
q_Wine	-0.9699		
q_Beer		-0.2055	
q_spirits			-0.64977

USA			
	q_Wine	q_Beer	q_spirts
q_Wine	-0,8872		
q_Beer		-0,4036	
q_spirits			-0,34487

ITALY			
	q_Wine	q_Beer	q_spirits
q_Wine	-0.9699		
q_Beer		-0.2055	
q_spirits			-0.64977

USA			
	q_Wine	q_Beer	q_spirts
q_Wine	-0,8872		
q_Beer		-0,4036	
q_spirits			-0,34487

Expenditure Elasticity

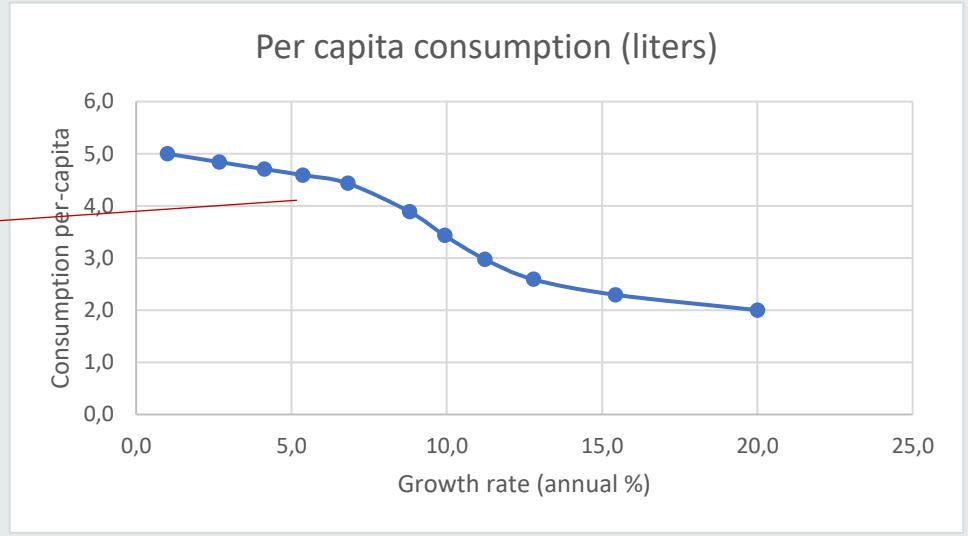
Data: Euromonitor, 2021

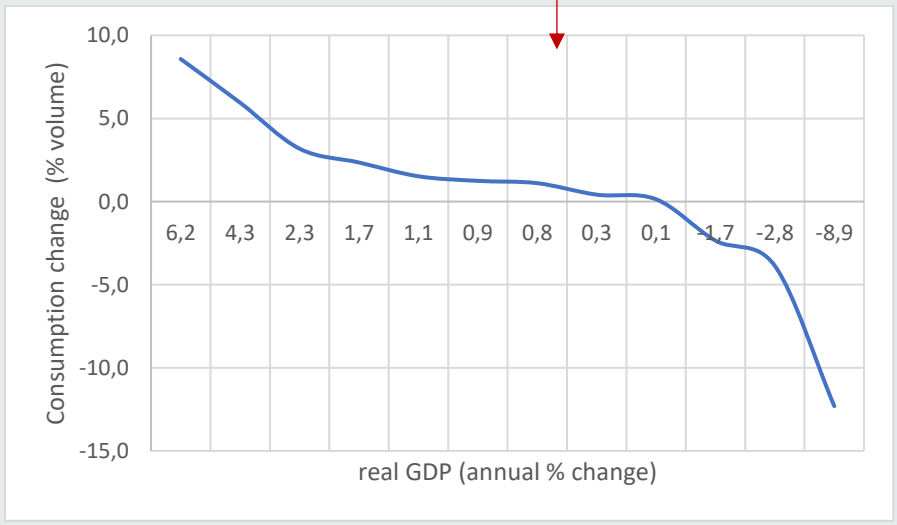
Lorraine Mitchell Lorraine (2016), Demand for Wine and Alcoholic Beverages in the European Union: A Monolithic Market?, Journal of Wine Economics, Volume 11, Number 3, 2016, Pages 414–43

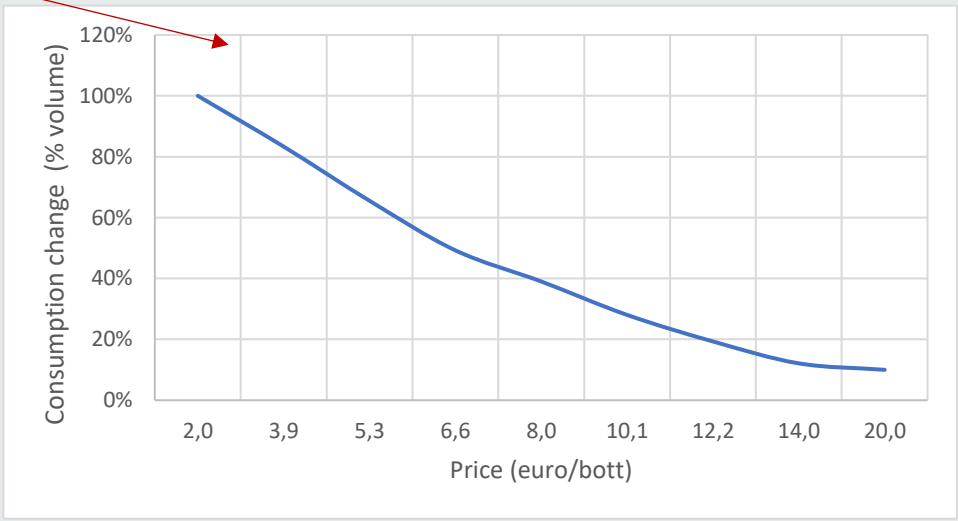
Calibration – Simulation

- The System Dynamics model is calibrated on last three years data
  - Penetration (variable)
  - Per capita consumption → relation → growth rate (variable)
  - Price effect (elasticity) → relations → price (variable)
  - Income effect (elasticity) → relation → gdp as change (variable)

Italy







Conclusions

- The **System Dynamic model** simulates consumption changes such as:
  - Potential consumption
    - Expanding consumption (new consumers) → penetration rate
    - Increasing individual consumption (existing consumers) → per capita consumption
  - Effective consumption
    - → price change
    - → income change

- **Issues**
  - Factors driving consumption change greatly from country to country
  - Elasticities can be hardly estimated on sparkling wines
  - The market is living an unexpected strong growth
  - Aggregate effects mask between areas and winey size

- Implications
  - Mistakes on short term actions are reversible
  - Mistakes on long term actions can be hardly recovered

Consortia are asking for

- Fixing a supply that meet consumer demand
- Ensuring a good image of Prosecco (price)
- Increasing selling price

Producers are asking for:

- Great production (increase the area)
- Selling as much as possible
- Discount strategies

Consumers are asking for

- Value for money
- Quality

Risks

The Prosecco market is a bubble
Lowering price and quality
Decrease overall welfare
Reputation loss

Cheers

Luca Rossetto, Leonardo Cei, Andrea Battistella