



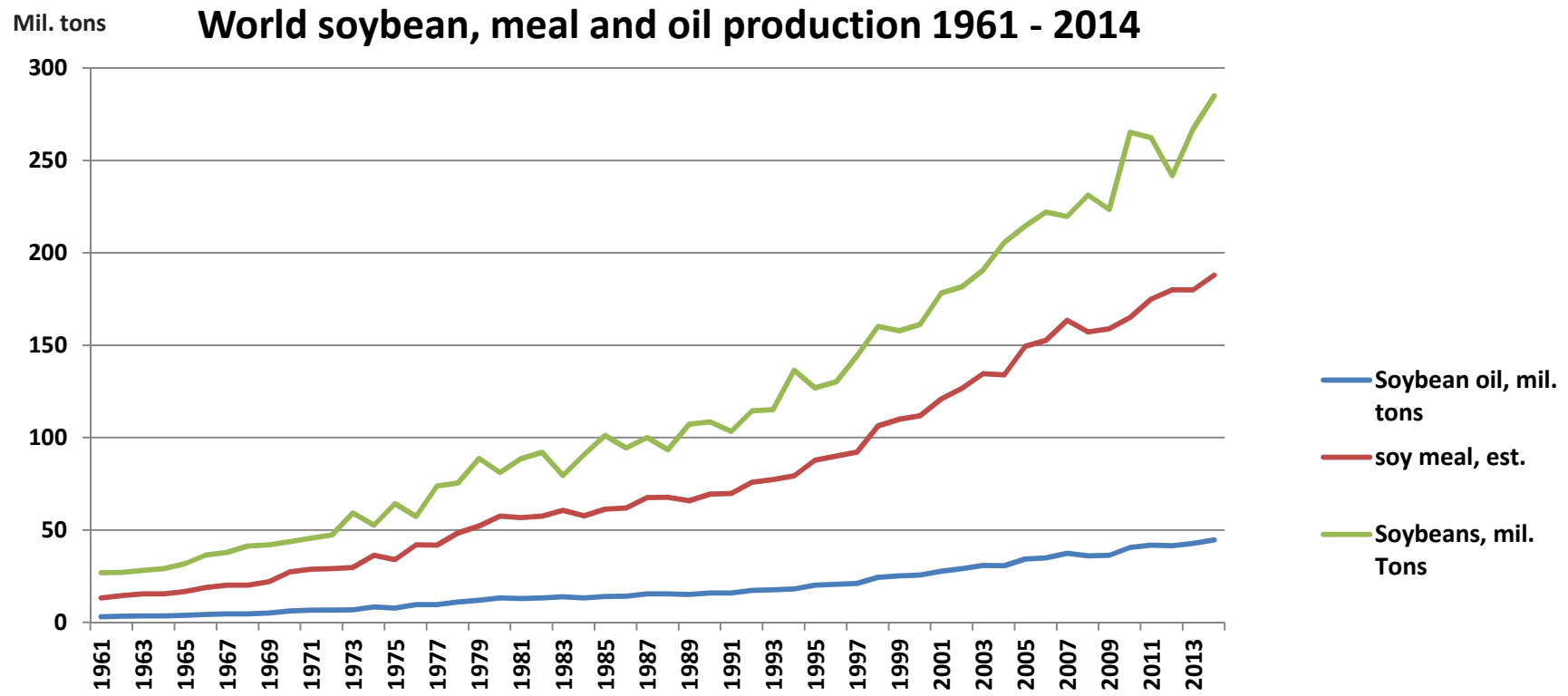
Analysis of the development of historical non-GMO premiums and the market

Aske Skovmand Bosselmann

Department of Food and Resource Economics
Faculty of SCIENCE
University of Copenhagen



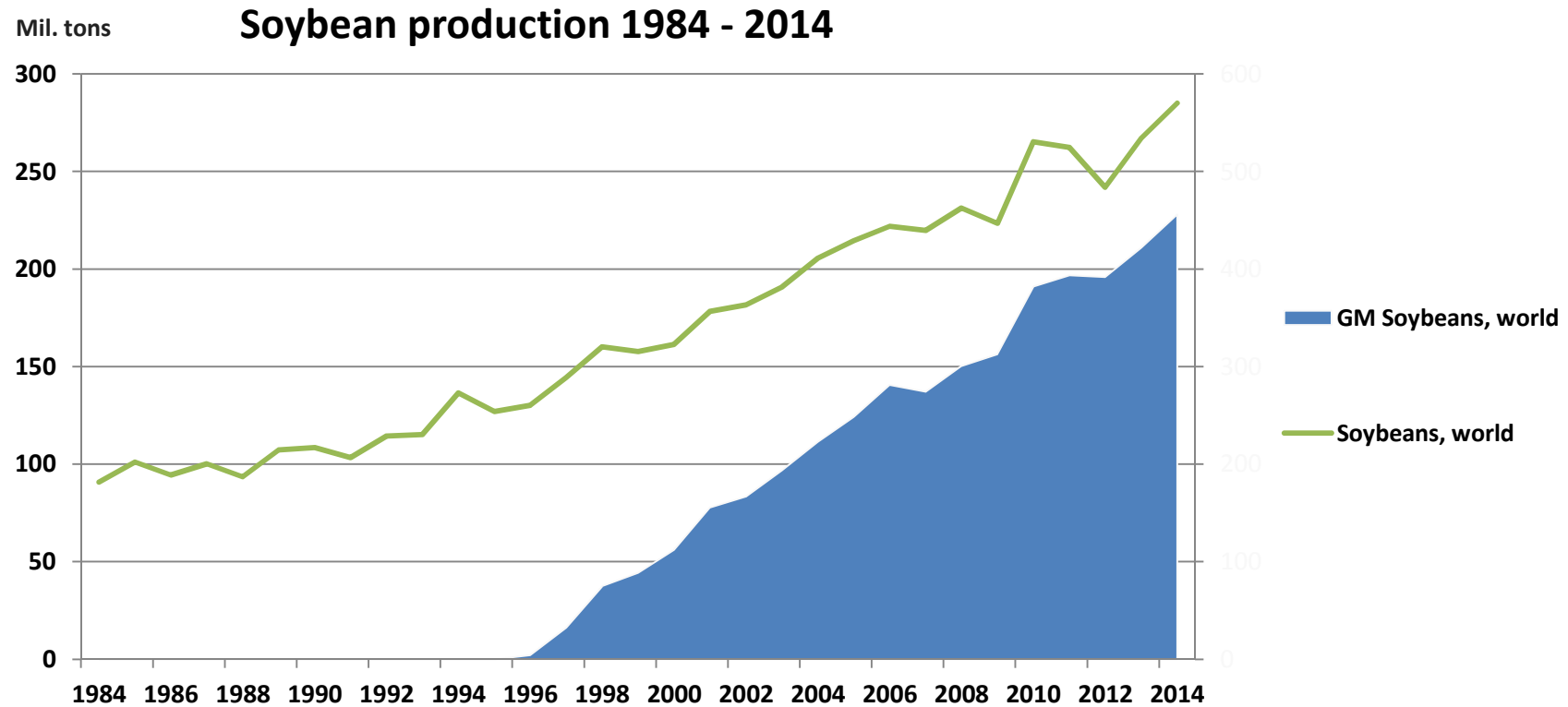
Soy Production



Source: FAOSTATS, USDA



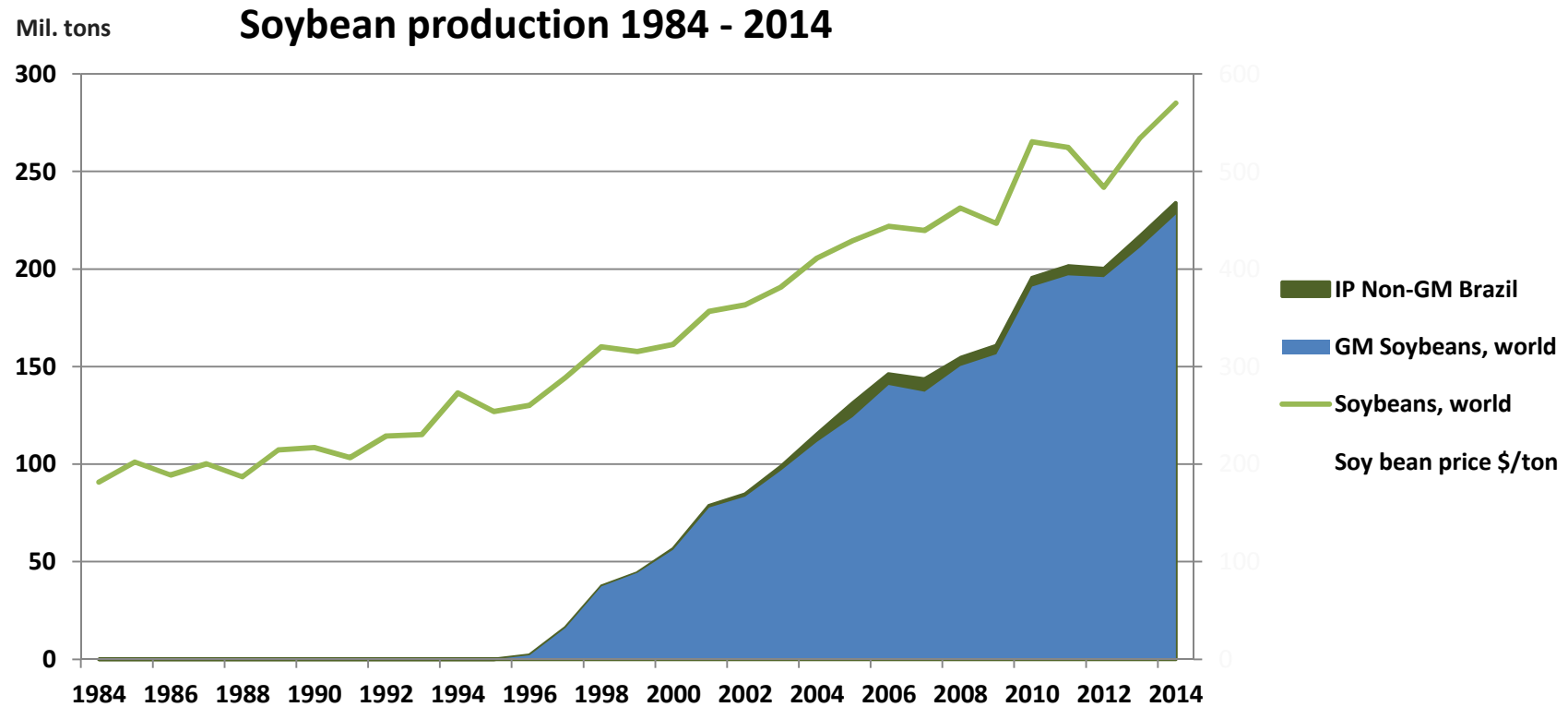
Soy Production



Source: FAOSTATS, USDA, ISAAA, Soystats.com



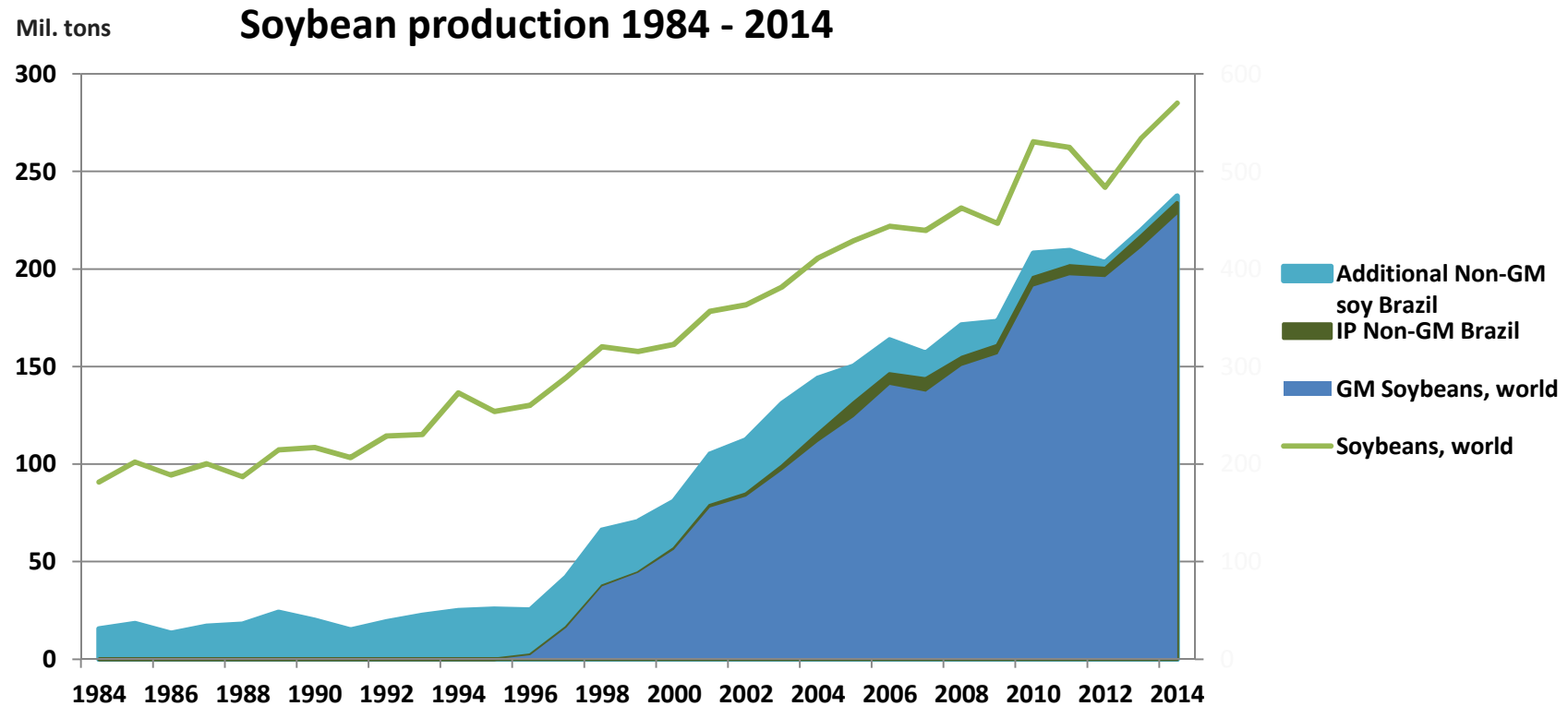
Soy Production



Source: FAOSTATS, USDA, ISAAA, Soystats.com, CERT ID



Soy Production



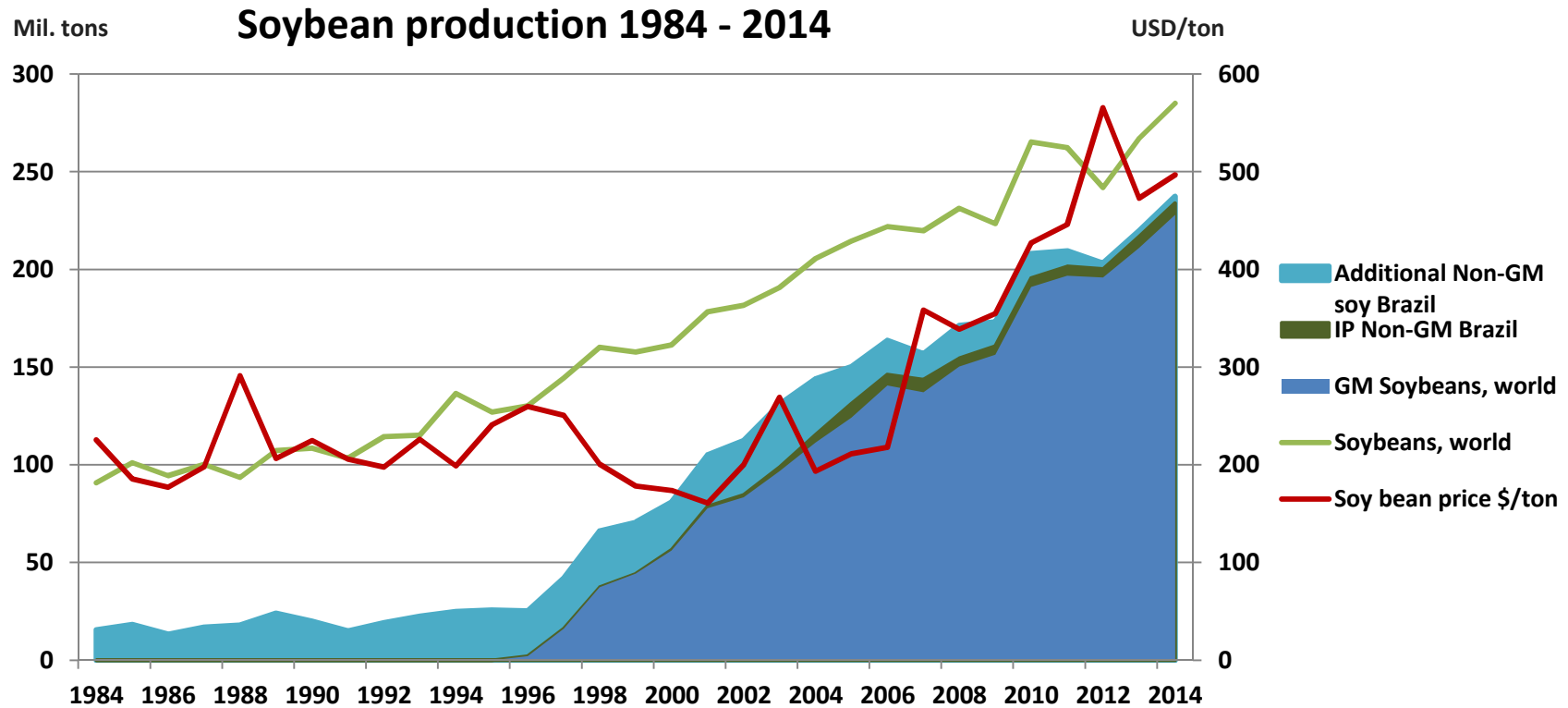
Source: FAOSTATS, USDA, ISAAA, Soystats.com, CERT ID

Current non-GM soy availability in Brazil is between 10 % and 25 % corresponding to 9 - 20 million tons per year.

4 - 6 mil. tons IP, certified.



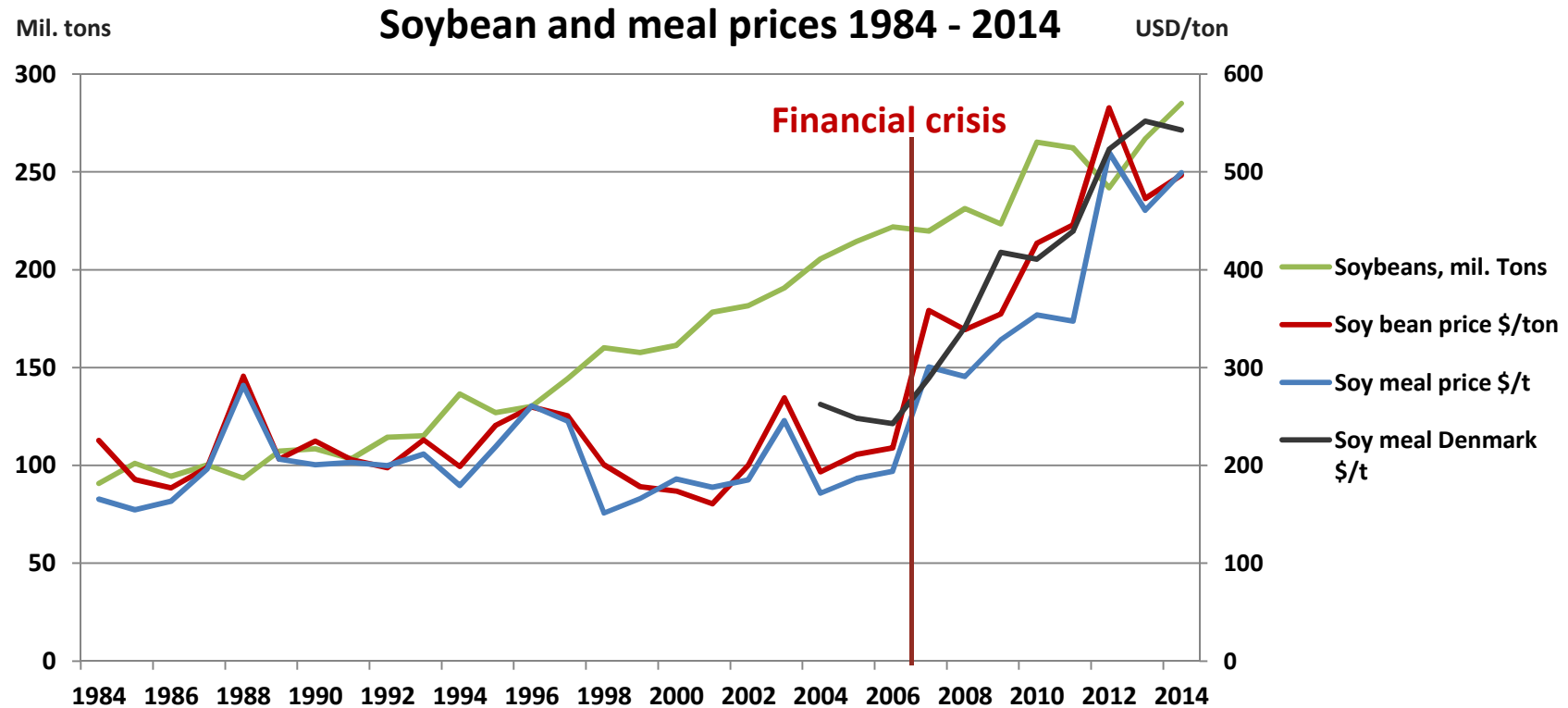
Soy Production



Source: FAOSTATS, USDA, ISAAA, Soystats.com, CERT ID
 WB data for Chicago US soybean futures contract reported each October.



Prices

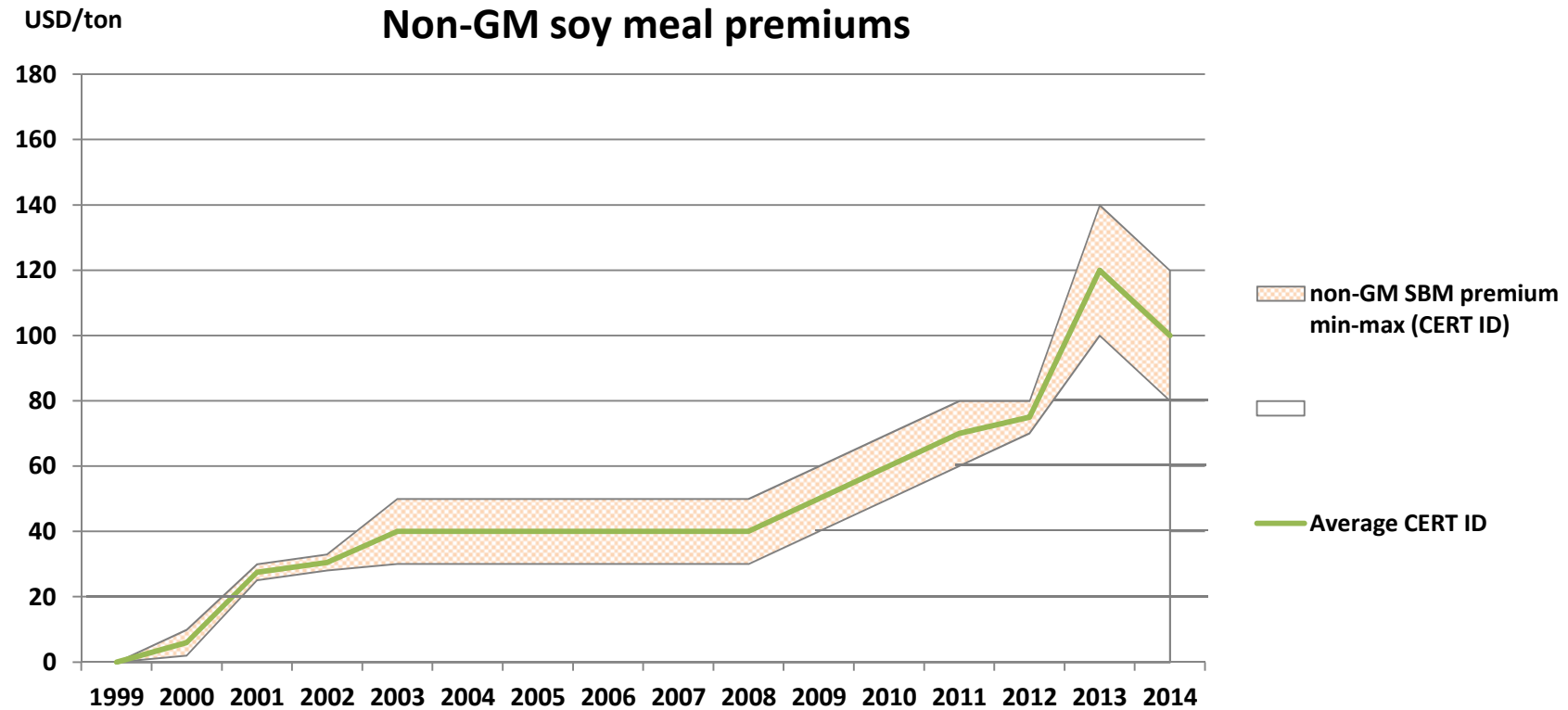


Source: FAOSTATS, WB data for Chicago US soybean and soy meal futures contracts, Danish Knowledge Centre for Agriculture.

Financial crisis from late 2007 impacts soybean prices as well as the non-GM premium – increased prices and volatility



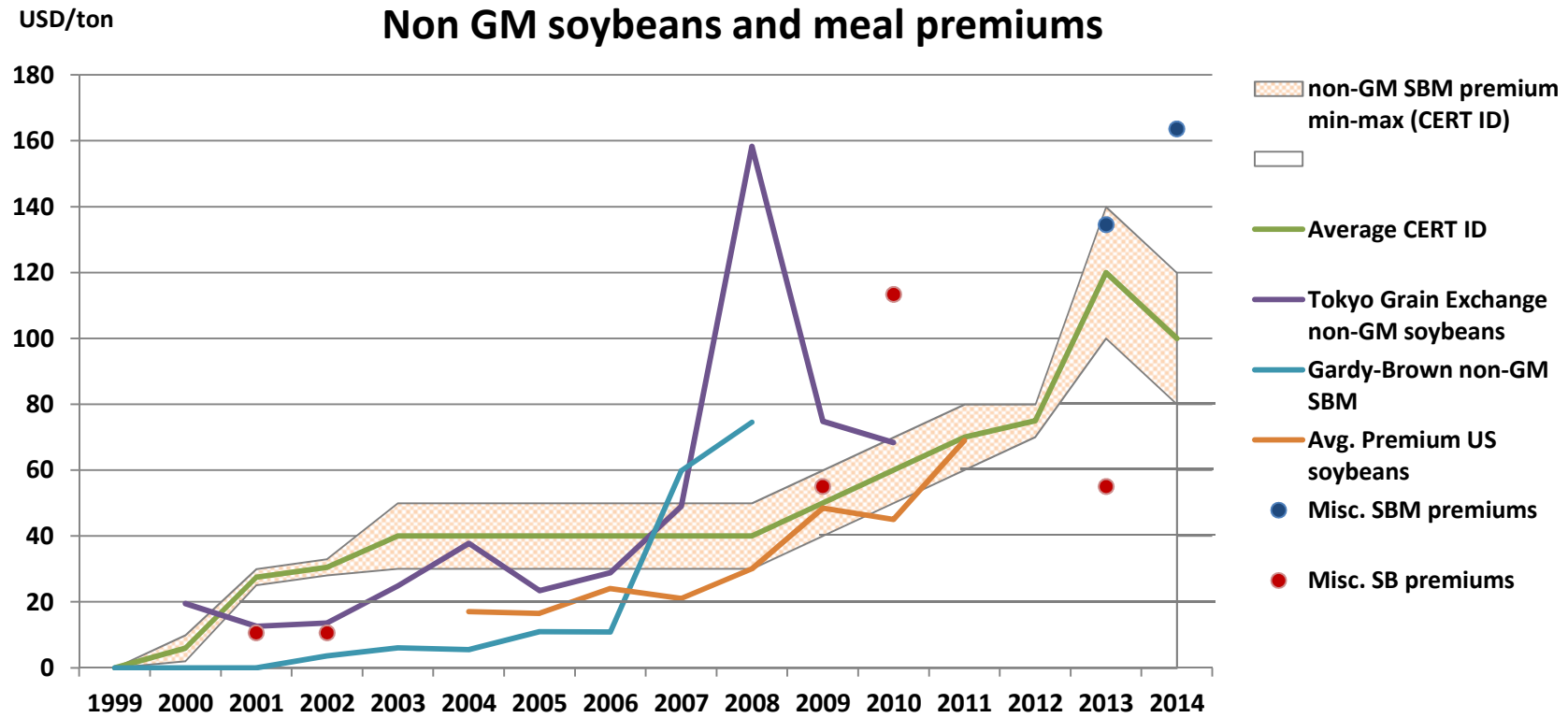
Non-GMO soy premiums



Source: TraceConsult. ProTerra premiums mainly consisting of a non-GMO premium. (2-4 USD/t for added sustainability standards)



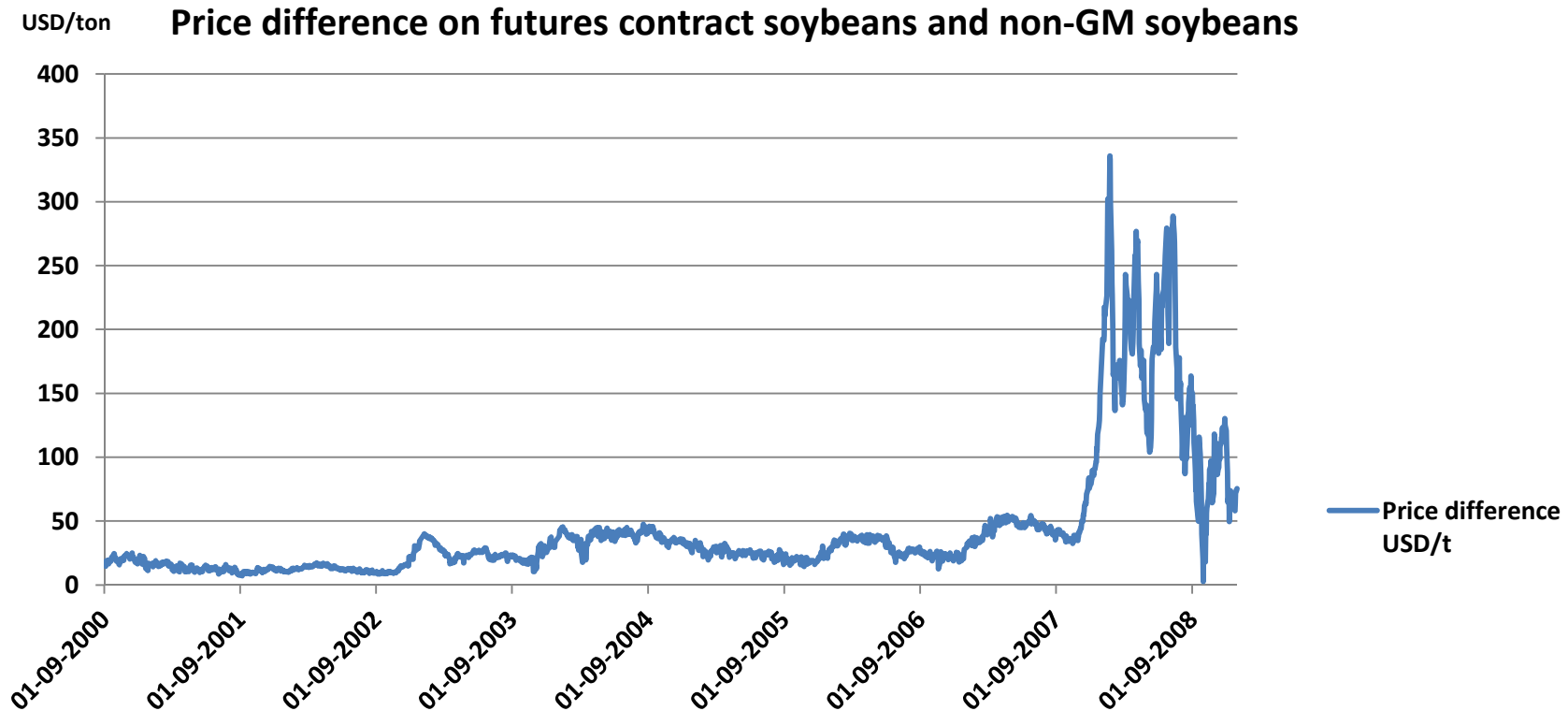
Non-GMO soy premiums



Source: TraceConsult, ABARE, Gardy-Brown, DLG, Uni. of Kentucky, Tokyo Grain Exchange



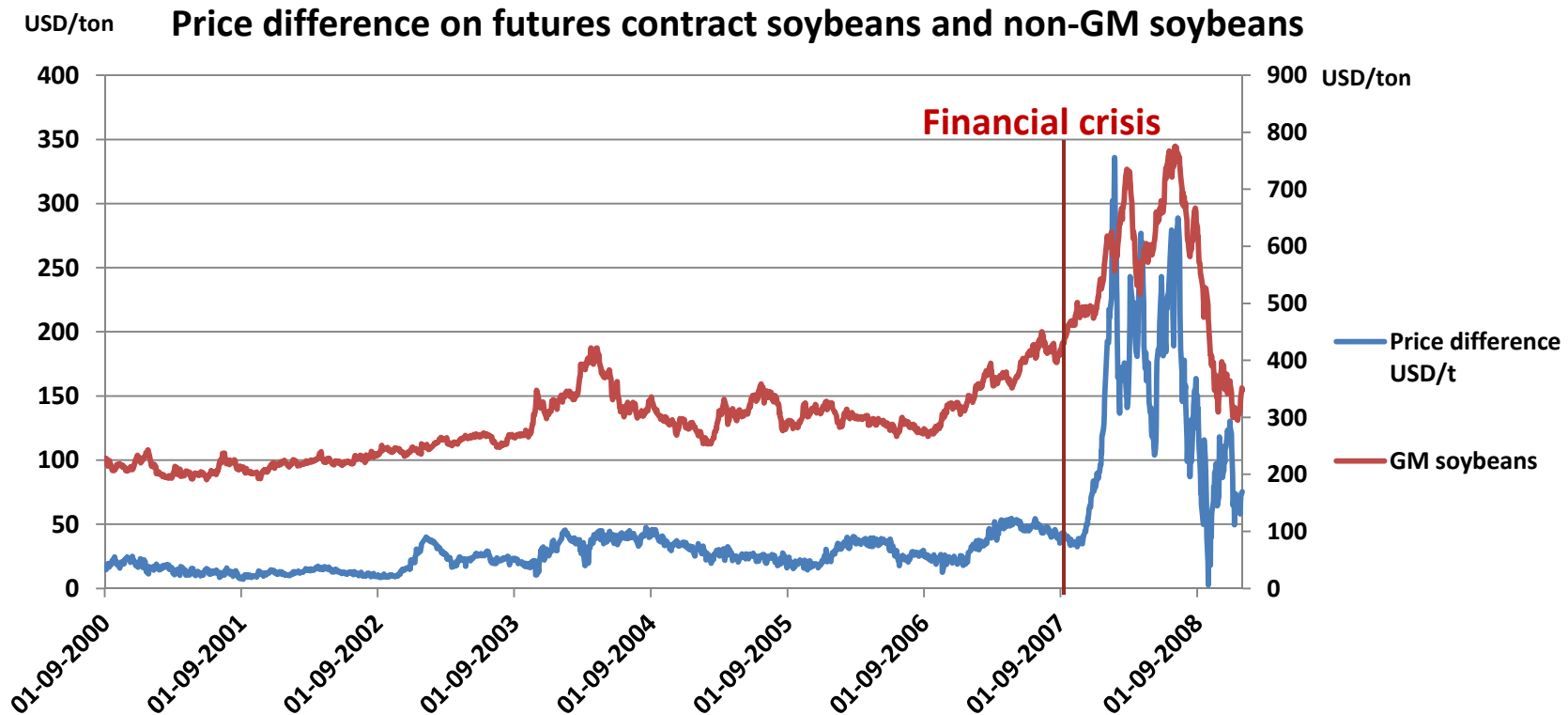
Tokyo Grain Exchange – “Mixed SB minus non-GM SB”



Futures contracts data provided by K. Aruga, Ishikawa Prefectural University



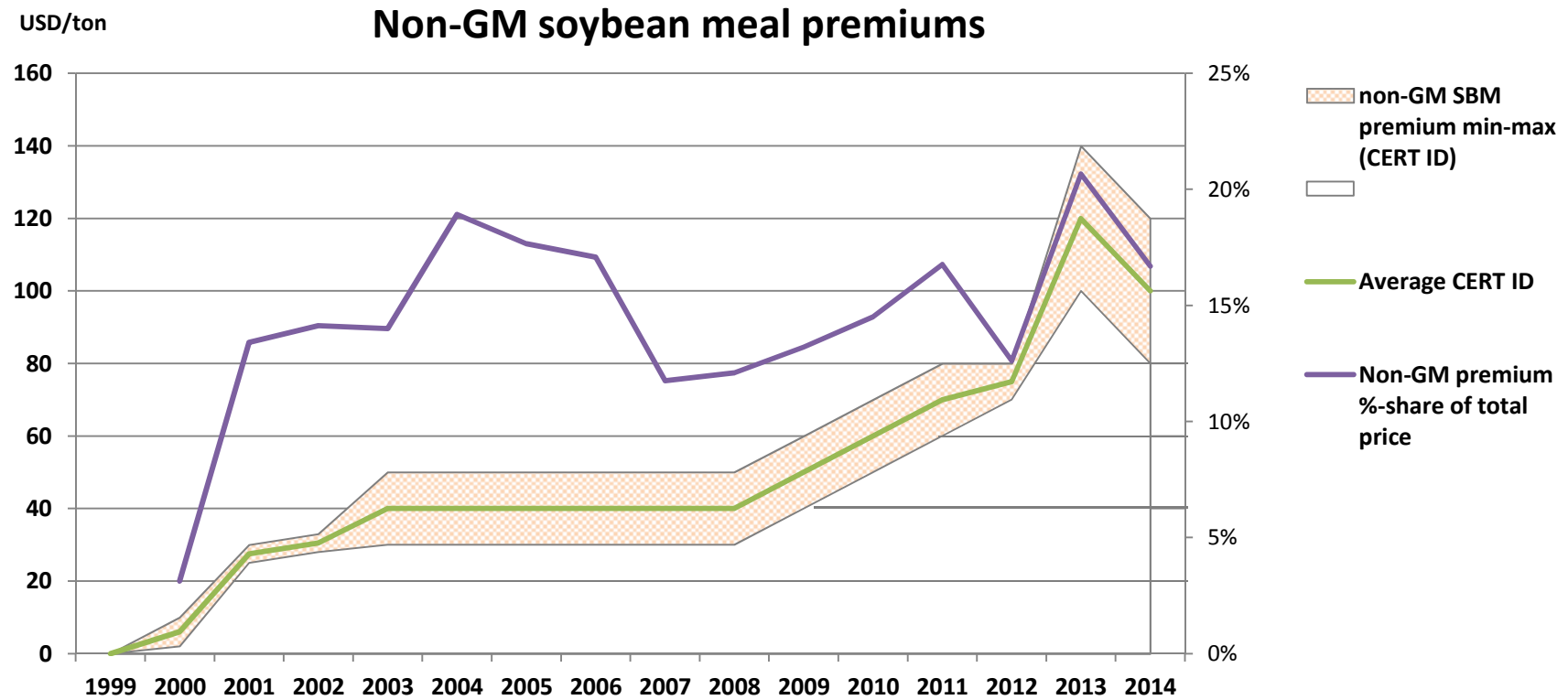
Tokyo Grain Exchange – “Mixed SB minus non-GM SB”



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Non-GMO soy premiums



Source: TraceConsult, WB.



Additional cost of using non-GM soy

Level of the value chain	Measures to ensure co-existence and traceability	Cost increase (% of product price on this level)
Seed producer The bill	<ul style="list-style-type: none"> ▪ Isolating fields ▪ Cleaning machinery ▪ Certification 	+ 2.5 %
↓ Farmer	<ul style="list-style-type: none"> ▪ Higher seed costs ▪ Buffer zone of 20 m ▪ Cleaning of machinery ▪ Monitoring of fields ▪ Certification 	+ 7.2 %
↓ Elevator	<ul style="list-style-type: none"> ▪ Higher costs of non-GM soy meal ▪ Testing of incoming commodity 	+ 8.3 % + 9.8 %
↓ Feed manufacturer	<ul style="list-style-type: none"> ▪ Higher costs of non-GM soy meal ▪ Testing of incoming commodity ▪ Etc. 	+ 8.3 % + 12.5 %

Costumers & consumers

Example from non-GM wheat



Experienced costs of non-GM users – Feed sector

Case of two Danish companies using non-GM soy meal:

- A compound feed manufacturer, segregation in time

Compound mixed feed, 40 % soy meal			
	Cost		% Cost
A. Additional commodity costs	21,6 \$/t		76.1%
B. Testing costs	0.03 \$/t		0.1%
C. Depreciation of add. storage	--- \$/t		---
D. Cleaning/Flushing costs	1.55 \$/t		5.5%
E. Production stop costs	5.18 \$/t		18.3%
F. Education and training	--- \$/t		---
G. Miscellaneous costs	--- \$/t		---
Total prevention costs	28.36 \$/t		100.0%

- And a feed ingredient manufacturer, spatial segregation

Feed ingredient, 100 % soy meal			
	Cost		% Cost
A. Additional commodity costs	63.60 \$/t		89.7%
B. Testing costs	1.27 \$/t		1.8%
C. Depreciation of add. storage	5.73 \$/t		8.1%
D. Cleaning/Flushing costs	0.34 \$/t		0.5%
E. Production stop costs	--- \$/t		---
F. Education and training	--- \$/t		---
G. Miscellaneous costs	--- \$/t		---
Total prevention costs	70.94 \$/t		100.0%



Additional cost of using non-GM soy – the feed sector

Case of two Danish companies using non-GM soy meal.

Expressed during interviews

Challenges:

Only partial sale as non-GM feed, part is sold on GM market at the lower price

No labeling of GM feed/food

No common promotion of use of non-GM feed in industry

Benefits:

Access to alternative markets

Higher WTP among costumers has made it worthwhile

Benefits are marginal

But perhaps a stop in non-GM production in near future...

No return to non-GM after GM feed becomes the standard



The market for non-GM soy

US, Canada and others are self sufficient

Main demand from EU (12 mil. t SB, 20 mil. t SBM – 4 mil. t non-GM) and Japan (less).

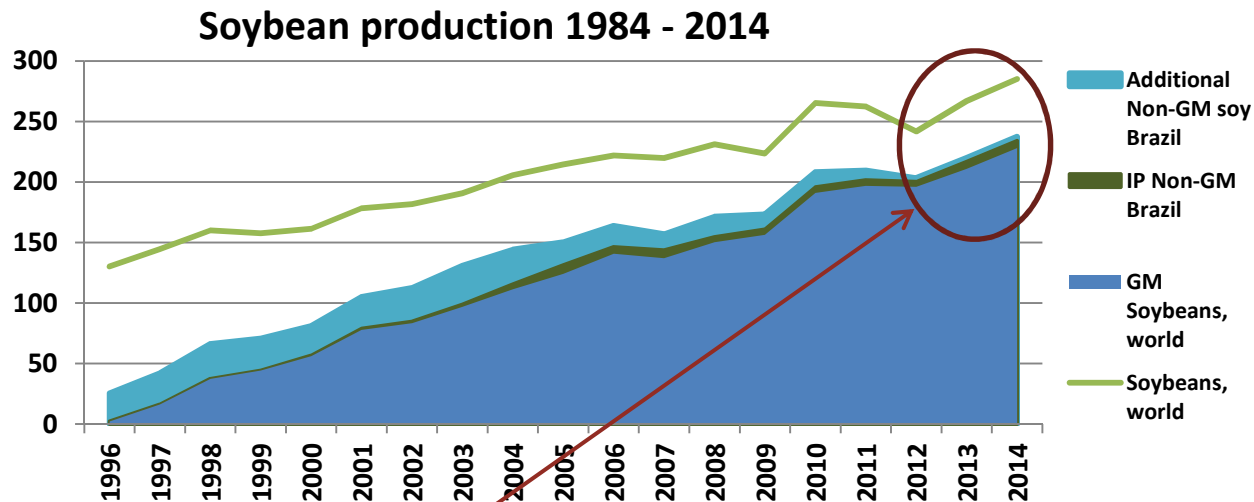
- Japan imports mainly US food grade SB for food production
- EU imports mainly S. American soy meal for feed production.

Change to EU demand: poultry and egg industries change attitude towards GM because of “low non-GM soy availability”.

- GB (retail), Germany, Denmark...



The market for non-GM soy



Uncertain amount.

Non-GM has decreasing share but about the same amount.

But at 9 or 25 mil. tons?

Neither way, EU demand well covered.

But smaller areas means greater risks.



The market for non-GM soy

Consumers' WTP is uncertain.

- Consumers want *responsibly* sourced soy (Danish study)
- WTP is shown in studies, but not in people's purchase – lack of GM labeling and promotion campaigns
- Consumers want and expect retail companies to make the decision for them!

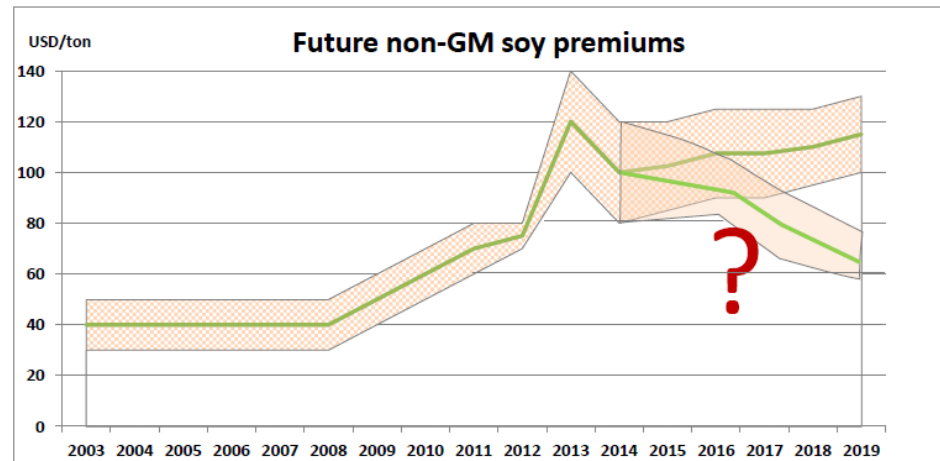
Retail do act!

- In some countries...
- Brussels Soy Declaration for non-GM soy.
- Mainly sustainability goals not involving the non-GM / GM debate

GM is not as straightforward as sustainable sourcing. Most multinational retail firms have 2015/2020 sustainability goals, but non-GM is far less frequently mentioned



The market for non-GM soy



Factors driving the price up:

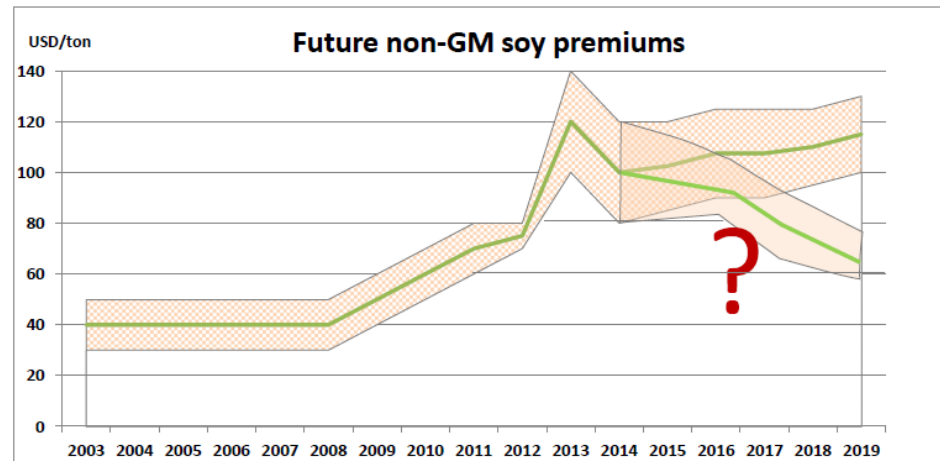
- Generally increasing grain costs
- Rising costs of IP due to smaller share of non-GM soy
- Decreasing share of non-GM
- New GM varieties => increased opportunity costs for non-GM farmers
- New certified farmers may be "higher hanging fruits", thus more expensive

Factors driving the price down:

- Improved segregated 'pipelines' for non-GM soy
- Non-GM soybeans available for IP in Brazil, India
- High premiums is an incentive for new certifications – if produce can be sold – thus increasing supply
- Lower demand in EU – once GM soy is accepted into the value chain, it is difficult to go back



The market for non-GM soy



Uncertain factors:

“New market in stormy times”

CERT ID: Certified volume depends on demand early in the year

- Stabilizing effect? Late demand may mean expensive contracts

Smaller non-GM area => higher exposure to risks such as bad weather

Return to non-GM after acceptance of GM soy?

Consumers' preference as:

- income increase?
- prevalence of GM foods increase?

Approval of new GM varieties

Reported trends:

US non-GM demand is increasing, and supplies seem to follow suit

Increased availability of non-GM seeds

Non-GM IP production started in China

Advanced discussion on GM labeling in US

- May influence debate in EU

Improved segregation at harbors: less costly and less risk of contamination

