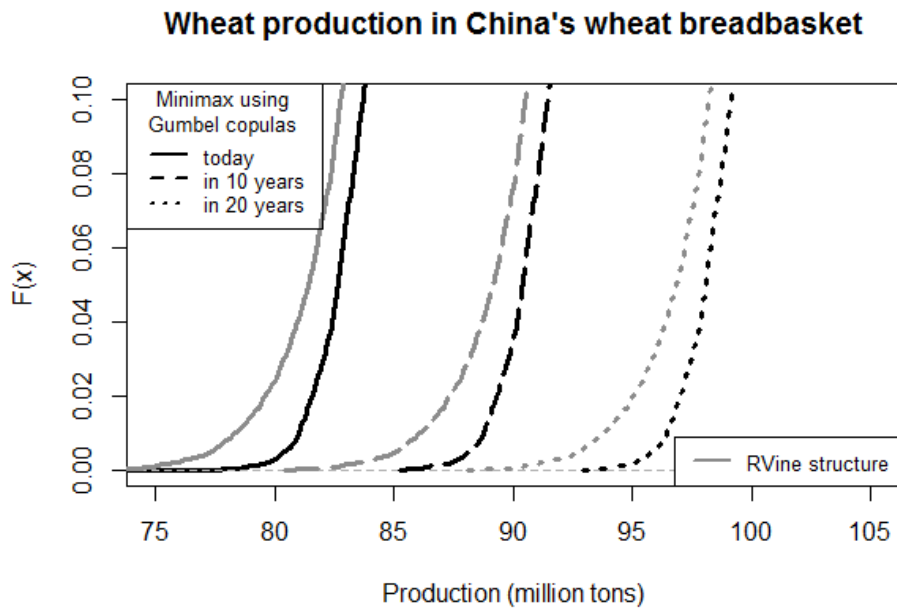# Supplementary material

1. Wheat production curves

Wheat production curves up to the lower 10 percentile of the production distribution for the Chinese (a), Argentinian (b), Australian (c) and US (d) breadbaskets.
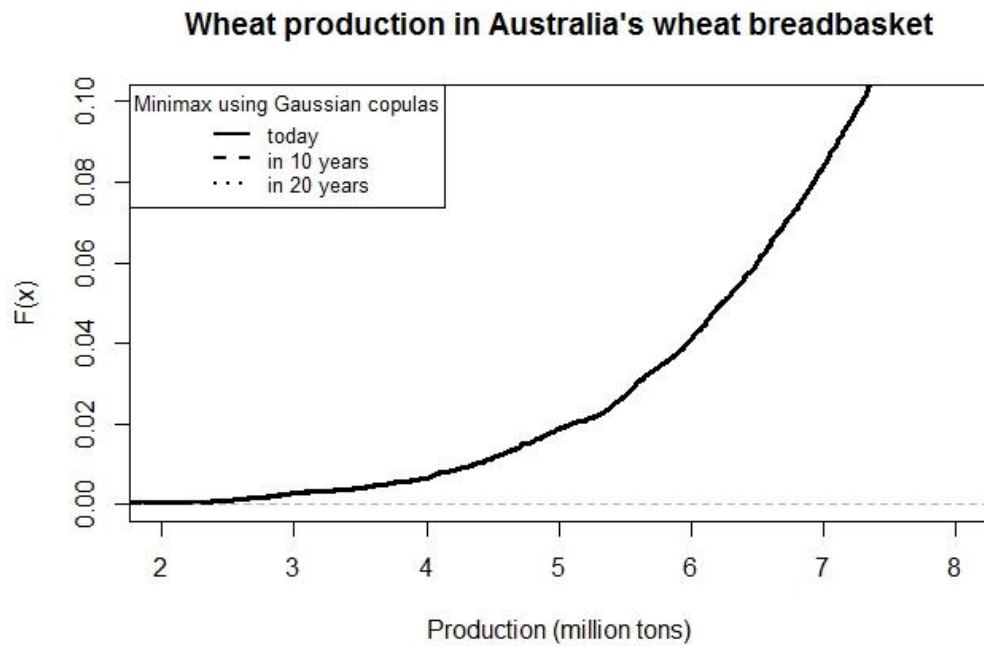
(a)

Wheat production in China's wheat breadbasket

(b)

Wheat production in Argentina's wheat breadbasket
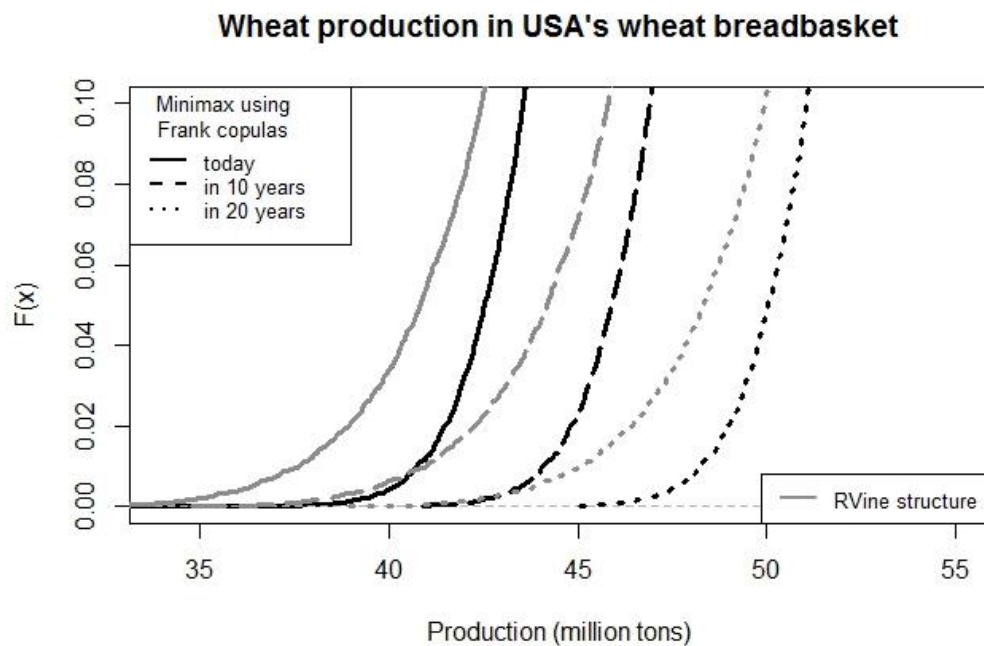
(c)

Wheat production in Australia's wheat breadbasket

As the Australian breadbasket only has 2 states, the copula is a bivariate Gaussian copula and RVine cannot be applied. Furthermore, the yield trend has reached a plateau and is not projected to increase in the future which is why the curves for the next years are identical.

(d)

Wheat production in USA's wheat breadbasket

2. Goodness-of-fit tests

Goodness-of-fit tests for the pair-wise minimax structuring methodology and different copula families. AIC and BIC values are the sum of all pair-wise AICs in each breadbasket. Vuong and Clarke test results are the sum of both Vuong and Clarke test results for all pair-wise copulas within one breadbasket.

AIC	Gaussian	Clayton	Gumbel	Frank
India	**-56.2243**	-35.6944	-51.9119	-50.7123
China	-46.6446	-34.1118	**-47.3023**	-45.2197
Australia	**-27.9684**	-22.1904	-25.2471	-24.4174
Argentina	-16.5641	-8.7899	**-25.8491**	-23.2601
USA	-39.9582	-32.7368	-35.062	**-43.1566**

BIC	Gaussian	Clayton	Gumbel	Frank
India	**-43.4239**	-22.8939	-39.1114	-37.9118
China	-39.3301	-26.7973	**-39.9877**	-37.9051
Australia	**-26.1398**	-20.3618	-23.4185	-22.5887
Argentina	-11.2115	-3.43733	**-20.4965**	-17.9075
USA	-23.5005	-16.2791	-18.6042	**-26.6988**

Vuong and Clarke	Gaussian	Clayton	Gumbel	Frank
India	1	-5	**5**	-1
China	0	-4	**3**	1
Australia	**1**	-1	0	0
Argentina	-2	-5	**6**	1
USA	0	-4	0	**4**