



Supplement of

Public granaries as a source of proxy data on grain harvests and weather extremes for historical climatology

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Remarks to public granaries in Prussia and in northern Europe

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10 In Prussia, granaries formed the backbone of state power. They became closely aligned with the military state and contributed significantly to armed victories in 1740, 1770 and beyond. Their significance remained substantial well into the 19th century, with Prussia's 'great granaries' organising the constitutive flow of grain from Poland, feeding the army and visualising the king's paternalist policies to his subjects, earning Frederick II the nick name 'bread father' (Atorf, 1999). Their symbolical and material success was so substantial that many other states tried to copy the policy.

15 In Norway, dependent on constant food imports and subject to a Danish grain monopoly, the king was forced to reintroduce granaries after the harvest failures of the 1770s and the 1780s. Due to the low population density, the granaries were eventually financialised in the 1830s (Løvdal, 2020). The municipalities sold their stocks and buildings and used the profits fund mutual savings banks instead.

In the Swedish kingdom (which included most of modern day Finland until 1809), discussion on establishing local grain
20 storehouses arose in the 18th century. The Crown had already storehouses for storing tax and tithe grain, as well as for providing grain for the army's needs, but these could not provide enough seed grain for the whole peasantry in years of severe crop failure. The initiative for local grain granaries was fostered by attempt to cope with recurrent weather-driven harvest failures on the one hand, and to stabilize grain market prices on the other (Berg, 2007). Consequently, more than 900 parishes established local grain storages during the second half of the century across the kingdom (Teerijoki, 1993; Berg,
25 2007). These parish storehouses were administrated on a local level and, in principle, the peasants were supposed to deposit grain in a good years and loan seed grain on years of poor harvest (Teerijoki, 1993).

However, due to the local admiration of the parish storehouses, the practices varied greatly across the realm. In Finland, although the parish storehouses were initially planned as emergency stores for seed grain, they soon became business enterprises which engaged in economic activities of a wider scope (Teerijoki, 1993). In many granaries, the amount of stored
30 grain was too little to provide seed grain to the land-owning peasants on years of poor harvest. Instead, the parish storehouses became an instrument of small-scale poor relief, providing minor loans to commoners whose payment capacity was known to be poor. By the end of the 18th century, approximately 40 % of the Finnish parish granaries had ceased to operate and 30 % of them had less than 16.5 litres of grain per inhabitant (Teerijoki, 1993). That is, they did not become an effective in increasing the local food security. In part of Sweden, on the other hand, the parish granaries survived and even

35 succeeded. However, the storage aspect declined in Sweden, and granting of agricultural credits became more important activity for the Swedish parish granaries (Berg, 2007). Thus, neither the Finnish or Swedish storehouse data of grain loans and deposits are not representing well the factual year-by-year harvest fluctuations.

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