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## Weather and the Salem Witch Trials

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### **Weather and the Salem Witch Trials**

In her article on the potential economic macrofoundations of various witchcraft trials episodes in European history, Emily Oster (Winter 2004, pp. 215–228) offers a new, intriguing hypothesis regarding the Salem witch trials episode of 1692. Oster argues that, in general, witchcraft trials may be a large-scale example of violence and scapegoating prompted by a deterioration in economic conditions brought on primarily by an increase in winter severity and food shortages. Moreover, the most active period in witchcraft trials coincides with a period of lower than average temperatures known to climatologists as the “little ice age,” dating (roughly) from 1550 to 1800.

Oster’s focus on winter weather severity weakens a new hypothesis in Carlson (1999), that the physical condition of the accusers (melancholia/delirium, hallucinations, mania, etc.) in Salem, Massachusetts, in 1691–1692 can be explained by an epidemic of encephalitis, a mosquito-borne illness exhibiting many of the same symptoms possessed by the accusers. The Salem witchcraft episode began in the winter of 1691–1692, which is consistent with Oster’s argument. According to the Division of Vector-Borne Infectious diseases at the Centers for Disease Control, symptoms of the modern Eastern Equine Encephalitis—a variant of the strain believed by Carlson to have caused the physical symptoms of the witchcraft accusers in Salem in 1692—appear in only 4 to

10 days from being bitten by an infected mosquito. This suggests that any mosquito activity behind the Salem episode would have occurred during winter, when mosquitoes are already in their resting or hibernation period. It is likely also that any winter in the middle of the “little ice age,” such as the one of 1691–1692, would have prompted an earlier-than-usual mosquito hibernation. Thus, biological, climate and epidemiological data favor Oster’s economic macrofoundations thesis, not Carlson’s encephalitis hypothesis.

Oster’s macrofoundations thesis should not, however, be seen as a substitute for public choice (or economic microfoundations) interpretations of events in various witchcraft episodes, such as the (arguably) most famous one in Salem. Mixon (2000) suggests that the witchcraft episode in Salem was prompted by Reverend Samuel Parris’ attempt to increase the demand for Puritan ministerial services (that is, to fill the village meetinghouse and to convince the congregation to pay his salary), which was sagging at the time (see also Boyer and Nissenbaum, 1974). Mixon and Treviño (2003), supported by Boyer and Nissenbaum (1974), also argue that a secondary catalyst in the Salem episode was western (Salem) Villagers’ attempts to prevent eastern (Salem) Villagers’ efforts to align Salem Village with the economic, political and religious interests of (the contiguous) Salem Town. They point out a vast majority (and a statistically significant proportion) of the accused resided in East Salem Village, while a vast majority (and statistically significant proportion) of the accusers resided in West Salem Village (Mixon and Treviño, 2003). These public choice interpretations seem to complement Oster’s argument that severe winter weather contributed to the witchcraft episodes during the period 1550–1800.

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## Rationality and Voting

Timothy J. Feddersen (Winter 2004, pp. 99–112) offers some interesting insights into heroic attempts to resolve the paradox of not voting. Even though individuals have only a minuscule probability of changing electoral outcomes, they turn out to vote in substantial numbers.

The classic work of Downs (1957) on the reasons individuals vote depends on instrumental "investment" appraisal—that is, individuals are viewed as analyzing their net expected utility from changing the outcome of the election. Thus Downs predicted that individuals would remain "rationally ignorant," meaning that they would have no incentive to learn anything about the election because their individual vote is so unlikely to alter the outcome. Indeed, Blais and Young (1999) report experimental evidence that turnout falls when the decision to vote is described only in Downsian terms—that is, in terms of instrumental costs and benefits.

But if individuals truly follow the prescription of rational ignorance with regard to voting, they may choose to be completely ignorant of the "investment" reasons for not voting. It is internally inconsistent to argue that rational individuals have no reason to engage in this instrumental evaluation—and then to analyze voting patterns based on the proposition that the net expected utility from changing outcome is positive. With no incentive to focus on instrumental net expected gain, the decision of whether to

vote is sensitive to perceptions of the intrinsic value of action.

Thus, the focus shifts away from whether voting has instrumental investment benefits and instead to whether voting offers intrinsic consumption benefits. Therefore, Feddersen (p. 101) suggests the possibility of a "consumption benefit . . . from the act of voting." The importance of consumption benefits of voting is predictable precisely because it is irrational to engage in an instrumental calculus about whether a vote will alter an election.

In focusing on the consumption benefits of voting, Jones and Hudson (2000) distinguish between the decision of *whether* to vote and *how* to vote. The decision to vote depends on consumption benefits of taking such an action. Once a decision to vote is made, then the decision of how to vote depends on perceptions of electoral alternatives with which voters will associate.

The intrinsic consumption benefits of voting might be derived from performing civic duty and from expressing preference. An individual is said to be "intrinsically motivated to perform an activity when one receives no apparent reward except the activity itself" (Deci, 1971, p. 105). Intrinsic motivation to perform an act (or "duty") is based on moral and ethical considerations, but it is also affected by external intervention. In this context, individuals respond to low-cost signals that acknowledge the intrinsic value of action (Frey, 1997).

For example, individuals more willingly participate in voting the greater the esteem associated with participation—although it isn't clear whether this esteem is based on internal motivation or on signaling to others. Jones and Hudson (2000, 2001) demonstrate that in the 1997 UK General Election, a spate of allegations of "political sleaze" proved an important determinant of turnout. Individuals were less likely to incur costs of participation in a process demeaned by politicians. *Levels* of perceived integrity of politicians proved statistically significant when explaining turnout; *differences* in perceptions of political integrity and policy proved important when explaining how individuals voted.

In more recent work, we have looked at intended turnout in national elections across the EU in 2003 using Eurobarometer data. We find that intention to vote is significantly linked to the importance of voting as proxied by the perceived impact of national government upon the individual, which at first glance tends to support the "investment" notion that people vote in the