



Response to Professor Tauger's Comments

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First, I want to emphasize that this is a response *only* to the comments on the published 2021 *Journal of Economic History* article (Naumenko 2021). Comments on the earlier 2018 working paper version of this article will just confuse the readers. Similarly, I will not reply to the comments on Markevich, Naumenko, and Qian (2023); it is still a working paper. My co-authors, Andrei Markevich and Nancy Qian, and I thank Professor Tauger for the interest in our work, his comments on the working paper will help us improve the draft.

Before replying, I will quickly describe the structure of my 2021 JEH paper. It is organized into five sections: (1) Introduction, (2) Background, (3) Data, (4) Results, and (5) Conclusion. The Results section is further subdivided into (a) “Weather and grain accounting” (hereafter “Weather” for brevity), (b) “Government policies,” (c) “Mechanisms: Why Collectivization Increased Mortality,” and (d) “Ethnic Composition and Mortality.”² An Online Appendix provides additional results referred to in the paper. All data and code used to produce tables and figures in the paper and in the appendix are published in the accompanying replication files.³ This organization is standard in the field of economics but might

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2. Per JEH style guidelines, sections and subsections are not numbered, but I add numbers here for the ease of reference.

3. As is customary, an Online Appendix is posted on the author's website: natalyanaumenko.com; it can also be downloaded directly [here](#). Replication files are uploaded to the journal's depository and are linked in the paper, I reproduce the reference here: Naumenko, Natalya. “Replication: The Political Economy of Famine: The Ukrainian Famine of 1933.” Ann Arbor, MI: Inter-university Consortium for Political and Social Research (distributor), 2020-12-8 ([link](#)). It is also not uncommon for interested readers to ask the author directly for appendices or replication files.

be unfamiliar to historians.

The Introduction section states that the 1933 famine in Ukraine is an important topic for economists to study, summarizes the main findings, and places the paper in the context of broader literature. The Background section is an abbreviated and simplified description of the events that led to the famine; it doesn't present any new findings but summarizes the history for readers unfamiliar with the context. The Data section describes the main data sources and the structure of the data used in subsequent analysis. The Results are the meat of the paper; they can and should be discussed and debated. The Conclusion restates the main findings and suggests questions for future research. Professor Tauger mostly criticizes the sections (1) Introduction, (2) Background, and (4a) Weather, dismissing the regression analysis in the rest of the Results section: "all of those numbers are statistical probabilities" (Tauger 2023, 289). I will present Professor Tauger's arguments and my responses when discussing each of the sections.

Comments on Introduction and Background

Criticism of the Introduction ("Descriptions of Ukraine as the 'breadbasket' of Russia have long been a conventional assumption that reflects Ukrainian nationalist views," Tauger 2023, 257) doesn't change the findings of the paper. I thank Professor Tauger for pointing out inaccuracies and oversimplifications in the Background section; it could certainly have been written better. In future work I will be more nuanced in describing the War Communism era, trading of food during the early years of the collectivization drive, and organization of collective farms. Nevertheless, the Background section doesn't present any new findings and doesn't affect the conclusions of the paper. At the same time, I would like to push back on some of Professor Tauger's remarks.

First, Professor Tauger argues that even during the early months of the collectivization drive Soviet officials understood the importance of food trade. Some officials may have understood it, but at the same time, trade was in legal limbo until the 'neo-NEP' reforms of May 1932. For example, during the All-Union Grain Conference in Moscow in June 1931, a 1930 slogan was reiterated again: "Not one kilogram of kolkhoz grain and the grain of the collective farmer to the private market for speculation" (Davies and Wheatcroft 2004, 82). Even when collective farm markets were officially legalized again in May 1932, peasants were allowed to sell their produce there only after the whole region where they lived fulfilled its compulsory grain procurement quota (*ibid.*, 289).

Second, Professor Tauger notes that after the publication of Stalin's "Dizzy with Success" article in early March 1930 most of the collective farms took the

form of *artely* (allowing private gardens and some livestock), not *kommuny* (aiming to eliminate all private production of food). It is true. However, if the remaining private gardens and livestock were sufficient for subsistence, there would have been no famine.

Next, Professor Tauger notes that “When reports of these and other actions [dekulakization, closing of peasant markets, organizing peasants into *kommuny* instead of *artely*] reached top Soviet authorities, Stalin called off the first collectivization campaign on 2 March 1930 and criticized those actions as ‘excesses’” (Tauger 2023, 276). It is important to remember that Stalin was directly behind these ‘excesses.’ For example, here’s what Professor Kotkin says: “Suddenly, however, in a speech on the last day (December 27, 1929) of a weeklong Congress of Agrarians-Marxists, Stalin preempted the commission, thundering in words Pravda carried two days later that ‘we have gone over from a policy of limiting the exploiting tendencies of the kulak to a policy of eliminating the kulaks as a class.’ ... Stalin also used his pencil to hand victory to the more rabid members of the Yakovlev commission: the partially socialized artels were no longer to be allowed as the main form of collectives indefinitely, but would be superseded by a leap to the ‘higher-form’ *kommunas*. Stalin also crossed out mention of farmers retaining minor implements, chickens, or a milk cow and wrote in that collectivization was to be completed in just one to two years (depending on region), using dekulakization. All this became a politburo resolution approved on January 5, 1930” (Kotkin 2017, 35–36). With the “Dizzy with Success” publication Stalin threw his subordinates under the bus, blaming them for his own excesses.

Finally, and most importantly, I find Professor Tauger’s views on collectivization puzzling. He notes that:

These practices [farming under peasant commune] indicated that in many ways peasant villages already anticipated collective farms. This was one of the reasons why resistance to collectivization was relatively limited, and many peasants willingly formed or joined *kolkhozy*. (Tauger 2023, 287)

and

Collectivization did not eliminate incentives, because peasants earned labor days for their work and those who did more work would receive higher incomes in money and kind. (Tauger 2023, 271)

The commune coordinated harvesting and many other agricultural activities, but peasant households were still independent production units working their strips of land on the communal fields. This was not the case in the collective farms. While many researchers argue that peasant communes may have hindered economic

development (e.g., Castañeda Dower and Markevich 2018), relative to collective farms, communes provided more economic freedom. It is a consensus among most respected historians that collectivization did disrupt incentives and I am puzzled by Professor Tauger's views. Here are a few quotes from historians who can hardly be accused of spreading 'Ukrainian propaganda:'

A study of collective farms in the Urals in late 1930 reported that in all cases labor discipline was lower on the collective farm than it had been under communal land tenure when peasants worked their own allotments of land. The study concluded that there was no stimulus for improved labor productivity. The lack of material incentives to foster labor discipline was and continued to be throughout Soviet history a central reason for the low productivity of collective farmers. (Viola 1996, 212)

and

But the arrangements for remunerating collective work did not offer adequate incentives to replace the stimulus provided to the individual peasants by the market, and by the need to produce food for their own consumption. The ingenious system of labour days successfully adjusted the level of payment of the peasants for their work before and during the harvest to the size of the income available for distribution after the harvest. But it proved very difficult to design work norms suitable for the immense variety of jobs and territory in the USSR, and still more difficult to penalize shoddy, and reward conscientious, work. In the autumn of 1930, the novel labour-day system was not yet much used in practice, and all these weaknesses seemed to be temporary administrative difficulties which would be overcome with experience; the authorities were confident that the system would work smoothly once it had fully replaced payment per eater. But in the ensuing decades these temporary administrative difficulties permanently haunted the kolkhoz. (Davies 1980, 168)

and

The state continued to compel both collective farms and individual households to surrender very large quantities of grain and other products, for a purely nominal payment, and offered virtually no economic inducement to the peasants to work on collective land. (Davies, Harrison, and Wheatcroft 1994, 16)

To sum up, I wish I wrote the Background section in a more nuanced and detailed way, but some of Professor Tauger's comments show deep misunderstanding of the nature of the comprehensive collectivization campaign, collective

farms, and of Stalin's role in the unfolding crisis. It is indisputable that collectivization disrupted agricultural production, and that Stalin was directly responsible for the early 'excesses.' And, most importantly, none of the above changes the findings and conclusions of my paper.

Comments on Weather

The Weather section, first, presents rural grain retention (production minus procurement) calculated from official sources (Naumenko 2021, Figure 4). The section argues that the officially reported grain retention was too high in 1932, inconsistent with severe famine after the 1932 harvest. For illustration, it plots corrected retention figures based on corrected harvest estimates from Tauger (2001) and Robert Davies and Stephen Wheatcroft (2004) for the whole Soviet Union, and on my calculations for separate republics. Professor Tauger complains that I did not use his corrected figures for separate republics from Tauger (1991), only the figure for the whole Soviet Union; I wish I did, but I misread his 1991 publication thinking that he presented only estimates of the collective farms harvest, not total harvest. Not willing to impute numbers that he may or may not agree with, I instead cited him and explicitly followed his method in calculating corrected harvest by republic. Regardless, in complete agreement with Professor Tauger, the Weather section states that the official grain production figures were too high. Next, Professor Tauger argues that the procurement figure I use (4.2 million tons of grain procured from Ukraine in 1932) is planned procurement and not actual procurement. This is puzzling. Appendix Table E2 in Naumenko (2021) presents all numbers used to produce grain retention figures in the main text; notes to this table list the sources I used. In particular, 1932 procurement is from Table 33 in *Komitet po zagotovkam S.-Kh produktov pri SNK SSSR (1934, 19)*: total grain procurement from the 1932 harvest, including milling levy, by region. This is actual, not planned procurement, and Professor Tauger criticizes me for something that is not there in my text. That Table 33 also reports the total 1932 grain procurement for the whole Soviet Union (18.5 million tons), and this number is the same as the total 1932 procurement presented in Table 1 of Davies and Wheatcroft (2004, 449). My procurement numbers are also the same as presented in Table 14d of Davies and Wheatcroft (2004, 470—Grain collections by area supplying grain).⁴

4. Professor Tauger also claims that 5.7 million tons of procured grain were returned to the Soviet countryside in 1933 (he doesn't break this number into regions). If true, this would only strengthen the statement that the official 1932 harvest was too high: if some grain was returned, it would increase rural retention, making official numbers further incompatible with the subsequent famine.

To explain the presumably catastrophic harvest, Professor Tauger next shows that in Ukraine rainfall from April to the first half of June was below average in 1931 and above average in 1932 (Tauger 2023, Table 3). Figure 5 in Naumenko (2021) shows exactly that. However, rainfall for these months was even more below average in 1934, without catastrophic famine in 1935. Rainfall was also very low in May 1936, again without famine in 1937. Similarly, rainfall was above average in 1933 (higher than in 1932 in May, slightly lower in April and June), and Professor Tauger agrees that the 1933 harvest was good. Thus, picking just one factor that deviated from the average as the cause of harvest failure and famine is wrong. Many years had larger deviations in rainfall or temperature without millions dying. If I were to predict catastrophe on too-dry or too-wet spring months in Ukraine, I would not pick 1931 and 1932 as the worst years: other years had larger deviations in temperature and rainfall.

Moreover, Appendix Figure B8 in Naumenko (2021) uses available daily weather data to plot extreme weather days—share of days in April–July each year when temperature or rainfall was more than one standard deviation away from the day’s 1910–1950 average. It shows that 1931 and 1932 had no more extreme weather days than other years. This is why it is important to not just look at one selected factor (April–June rainfall), but at weather overall.

As Professor Tauger himself says, “the weather processes in this region were never simple, but involved many complex changes that cannot be reduced simply to selected temperature and precipitation readings” (Tauger 2023, 267). To capture this complexity, I then use 1901–1915 weather (fall, winter, spring, and summer temperature and precipitation, their pairwise interactions and square terms), soil quality, and area—all parameters that did not change rapidly under the influence of collectivization—into harvest and calculate grain production function. I then use this grain production function to predict harvest from 1916 to 1936 (Naumenko 2021, Figure 6). I show that the weather-predicted harvest is similar to the officially reported (too high) harvest in Ukraine. This does not mean that the officially reported harvest is true. Rather, the weather does not predict catastrophic harvest failure in 1931 and 1932. If the harvest was low, it was not because of the weather.

Professor Tauger argues that this exercise is not valid because the period from 1901 to 1915 saw many harvest failures and I ignore them. This is a misunderstanding on Professor Tauger’s side. I never claimed (nor thought) that 1901–1915 were years of only good weather and good harvests. On the contrary, having weather-driven harvest failures during 1901–1915 helps predicting weather-driven harvest failures in the early 1930s. Indeed, if the weather was only good from 1901 to 1915, a grain production function would not capture bad weather when it presumably occurred in the early 1930s. Thus, Professor Tauger’s argument that harvest failures occurred before only makes a grain prediction exercise stronger.

Next, Professor Tauger restates his earlier arguments that pests and grain diseases led to harvest failure and were the main cause of the famine. First, while historians generally agree that the official harvest figures were too high, few (except Professor Tauger) cite grain diseases and pests as the main cause; for example, Davies and Wheatcroft (2004) blame the presumed drought of 1931 and unfavorable weather in 1932. Second, to the extent that weather facilitated the spread of pests and grain diseases, the grain production function should capture it.⁵ Third, Appendix Section B5 in Naumenko (2021) analyzes available published collections of documents prepared by international teams of respected historians (Berelowitch and Danilov 2000–2012; Danilov et al. 1999–2006). Neither collection indicates more often than usual mentions of pests and grain diseases in 1932 (Figures B11 and B12 in Naumenko 2021). Professor Tauger is correct that still-unpublished documents might show that there were more than usual number of pests or grain diseases. However, even if this were true, to explain why famine mortality is so strongly correlated with collectivization rate (as the estimates in my paper show) it will have to be the case that the geographic distribution of pests and grain diseases is correlated with collectivization—for example, if poor agricultural practices, disorganization, and low effort increased their spread. And in that case, the main cause of famine would be collectivization again.

Finally, here is a broad-picture argument why weather or grain diseases and pests cannot be the main cause of the 1933 famine. The last large famine under the tsarist regime, the 1891–1892 famine caused by drought and accompanied by a cholera epidemic, killed roughly half a million people (Wheatcroft 1992, 53–59). From 1892 till 1913 agricultural productivity was slowly developing.⁶ By 1928, the Soviet economy roughly recovered to the pre-WWI level (Markevich and Harrison 2011). So let's say agricultural technology roughly returned to the 1913 level, or even to the 1891 level. How is it possible then that in 1933 drought, or mice, locusts, and grain rust, killed five to ten million people—an order of magnitude more than in 1892? Whatever unfavorable environmental conditions occurred, either they were of Biblical proportions (and should be easily spotted in the data, which they are not) or they were exacerbated by the government policies implemented at the time—by collectivization. Weather is almost never perfect, but the famine of that magnitude only occurred after the comprehensive collectivization

5. For example, Professor Tauger cites archival sources: “Infestation of ergot this year evidently has exceptional character and should be attributed to favorable meteorological conditions (warmth and moisture), and also to poor agricultural measures” (quoted in Tauger 2023, 269). Thus, weather might have been driving the spread of grain diseases, and therefore the impact of grain diseases should be captured by the weather-driven grain production function.

6. For example, Obukhov (1927) shows that, while volatile, on average harvest was increasing from 1883 to 1914 in the 50 provinces of European Russia, including future Soviet republic of Ukraine.

begun. And therefore the main cause of the famine must be government policies.

Comments on Government Policies

It is regrettable that excepting the Weather section, Professor Tauger ignores most of the Results section. The gulf in training and methods between quantitative fields like political science and economics and qualitative fields like history is unfortunate as it prevents a more informed debate. Below I'll try to briefly describe the main results in my paper as they relate to Professor Tauger's explanation of the famine.

Table 1 in Naumenko (2021) presents a regression analysis of the relationship between collectivization rate and famine mortality. For brevity, I will only discuss Panel C Column 4, as this is the main estimate in the paper. It uses a sample of regions (*okruga*, January 1, 1925, administrative borders). Essentially, it compares how mortality changed from 1927–1928 to 1933 in regions that had similar pre-famine characteristics ("controls") but different collectivization rates.⁷ It finds that, on average, if you compare two regions with similar pre-famine characteristics, one with zero collectivization rate and another with a 100 percent collectivization rate, the more collectivized region's 1933 mortality rate increases by 58 per thousand relative to its 1927–1928 mortality rate. Moreover, this increase in mortality is not only large in magnitude, but is highly statistically significant with p-value below 1 percent (in fact, that estimate's p-value is 0.2 percent).

Here we must talk about statistical probabilities and p-values. Imagine you had a coin and you wanted to test whether the coin was fair, that is, whether when you tossed it getting heads or tails was equally likely. Imagine you're tossing this coin and keep getting tails—perhaps, six times in a row. If the coin was in fact fair, the probability of getting six tails in a row (p-value) is approximately 1.6 percent—physically possible but not remotely likely. A reasonable person, after observing six tails in a row, would reject the assumption that the coin was fair. Similarly, the regressions presented in Table 1 show that if collectivization had zero impact on mortality, the probability of observing an increase in mortality of 58 per thousand is below 1 percent.⁸ Therefore we reject the assumption that

7. The full list of controls is: number of Group A workers per capita in 1930, distance to a railroad, de-meaned June 1931 temperature, de-meaned June 1932 precipitation, average grain production per capita as of 1925, livestock per capita in 1925, value of agricultural equipment per capita in 1925, urbanization rate according to the 1926 census, Polissia region indicator, rural literacy rate according to the 1926 census, and population density as of 1926 census.

8. In fact, the p-value of the estimate in Table 1 Panel C Column 4 is 0.2 percent—the equivalent of tossing a fair coin and getting heads nine times in a row.

collectivization had no effect on mortality. Simply put, this is a too large increase in mortality observed too often in more-collectivized regions to be just a coincidence. Many assumptions go into calculating this p-value and they can and should be debated. But they can't be just dismissed and ignored.

Finally, baseline estimates use the 1930 collectivization rate. Professor Tauger complains that it is not clear when collectivization was measured, before or after the “Dizzy with Success” publication; the paper clearly states that this is May 1930 collectivization (Naumenko 2021, 13). In addition, Appendix Table C3 in Naumenko (2021) presents estimates that use 1932 collectivization rate and the results are even stronger—larger in magnitude and as statistically significant; the main text presents conservative estimates.

Conclusion

I hope this response clarifies some of the questions and misunderstandings raised by my paper. I thank Professor Tauger for the productive and insightful discussion of my work.

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