

# Reassessing the Link between Revolutionary Threats and Democratization

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## Abstract

A prominent theory of democratization posits that suffrage extensions are a response of incumbent elites to revolutionary threats by the excluded. A recent study contends that Britain's Great Reform Act of 1832 conforms to this view (Aidt and Franck 2015). The authors posit that the reform-friendly Whigs obtained a majority of seats in the House of Commons in the 1831 election due to the violence of the Swing riots. This conclusion hinges on two-stage least squares (2SLS) estimates that are approximately two to five times larger than their corresponding (uninstrumented) Ordinary Least Squares (OLS) ones. I argue that the divergence in these estimates is an artifact of interpreting the average treatment effect on the treated (ATT) as the average treatment effect (ATE). An appropriate interpretation of the 2SLS estimates reveals that the claim that the riots were instrumental in passing the Reform Bill is not supported by the data.

Keywords: Democratization, threat of revolution, Great Reform Act of 1832

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# Introduction

Why would incumbent elites share their power with others by extending the franchise is a central question for the historical study of democratization. In an influential study, Aidt and Franck (henceforth AF) seek to answer this age-old question (Aidt and Franck 2015). Specifically, they examine the process of democratization in Britain by linking the so-called Swing Riots to the passage of Britain's Great Reform Act in 1832. AF postulate a causal chain running from observed riots to the elites' perceptions of the threat of revolution and the eventual adoption of democratic reform. They argue that: (1) local disturbances convinced voters that the extension of the franchise was necessary to defuse a revolutionary threat; (2) electors then reacted by backing reform-friendly Whig candidates; and (3) this reaction gave the Grey ministry the majority it needed to take the reform process forward.

AF compare election results across the 244 English constituencies in the 1831 general election called shortly after the Reform Bill's second reading. Exploiting the political geography of the Unreformed Parliament, they link the number of Swing riots that happened within a 10 km radius of each constituency in the winter of 1830–1831 to the share of seats won by reform-friendly candidates. AF estimate this relationship with least squares, probit, matching, reduced form, and instrumental variable estimators. Based on their findings, they conclude that voters' exposure to rural riots was instrumental in returning the large Whig majority needed to move the reform process on. This conclusion, however, hinges on their two-stage least squares (2SLS) estimates. These estimates are about two to five times larger than their corresponding (uninstrumented) Ordinary Least Squares (OLS) estimates, and account for the entire difference in the share of Whigs elected in 1830 and 1831.

The IV estimates could be larger than the OLS ones if: (i) the former are unbiased but the latter are downward biased; or (ii) the latter are unbiased but the former are upward biased. AF note that there is no a priori reason to expect a downward bias in the OLS

estimator.<sup>1</sup> They also use a credible research design; so it is unlikely that the upward bias in the 2SLS estimates could be attributed to weak identification. Instead, an examination of the evidence suggests that the most cogent explanation for the OLS/IV divergence is the existence of heterogeneous treatment effects. With heterogeneous responses, the IV estimates do not reflect the true population average treatment effect, but rather a local average treatment effect (LATE) even if conditions for identification are satisfied.

The LATE interpretation of AF’s 2SLS estimates has two important implications. First, according to AF, voters who lived in areas exposed to violent unrest perceived a greater threat of revolution and were more likely to vote in favor of the reform. The empirical evidence, however, indicates that revolutionary fears were stoked more in constituencies that were comparatively exposed to fewer, rather than more, riots. Second, with one endogenous variable and one instrument, 2SLS identifies a weighted average of all individual treatment effects, where the weights are the linear effect of the instrument on the endogenous variable. In this case, the *compliant* sub-population, is not only significantly smaller than the whole sample, but also riddled with less riots. Therefore, by presenting the average treatment effect on the treated (ATT) as the average treatment effect (ATE), AF overstate the riots’ impact on extent of the Whig victory in the 1831 election.

Once the partial effects are *extrapolated* to the whole sample, the impact of riots on the reformers’ seat gains becomes inevitably smaller, and correspond to the OLS estimate – implying that only 22 of the English seats that the reformers obtained in the 1831 election can be attributed to the Swing riots. Given the popularity of parliamentary reform both inside and outside of England, the 1831 election gave the government a majority of 130 to

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<sup>1</sup>AF speculate that the OLS estimates could be downward biased if “... riots happened to be concentrated around constituencies where, for reasons unobserved to us, the voters and patrons favored the Tory party, or because attenuation bias is more important than any (positive) selection bias ...” (p. 536.). Their findings, however, show that local riots are uncorrelated with the Whig electoral success in the 1830 election. They also indicate that selection on unobservables would have to be two and a half times as important as selection on observables for their least squares results to be entirely attributed to a selection bias.

140 in the House of Commons. Therefore, and contrary to AF, one should conclude that, regardless of the violence of the Swing riots, the Grey ministry was poised to pass the Reform Bill with an ample majority.

## 1 Riots and Reform Support

AF seek to identify the average effect of Swing riots on the share of seats won by reform-friendly candidates in the 1831 election. For simplicity, consider their baseline ordinary least squares (OLS) regression model:

$$\textit{Whig Share } 1831_i = \alpha_0 + \alpha_1 \textit{Riots within } 10 \textit{ km}_i + \varepsilon_i, \quad (1)$$

where the dependent variable is the share of seats in constituency  $i$  won by Whigs in 1831, *Riots within 10 km* is the measure of local Swing riots, and  $\varepsilon$  is a disturbance term.<sup>2</sup>

To remove any factors that would otherwise confound the relationship between the Swing riots and Whig electoral success, AF exploit the variation in the riots' geography induced by the travel-time distance between each constituency and Sevenoaks (the village in Kent where the first Swing riots occurred on 3 August 1830). The identifying assumption is that *Distance to Sevenoaks* affects the number of Swing riots that happened within a 10 km radius of each constituency in a significant way, but does not affect the share of seats won by the reform-friendly Whigs and Radicals in 1831, except indirectly through Swing riots.

As AF note, the Swing riots did not spread randomly after they broke out Sevenoaks. Instead, they spread systematically along a route that closely followed the pre-existing road network. Figure 1 shows the average number of riots within a radius of 10 km from a constituency for each distance in travel days by foot to Sevenoaks.<sup>3</sup> The dashed horizontal black

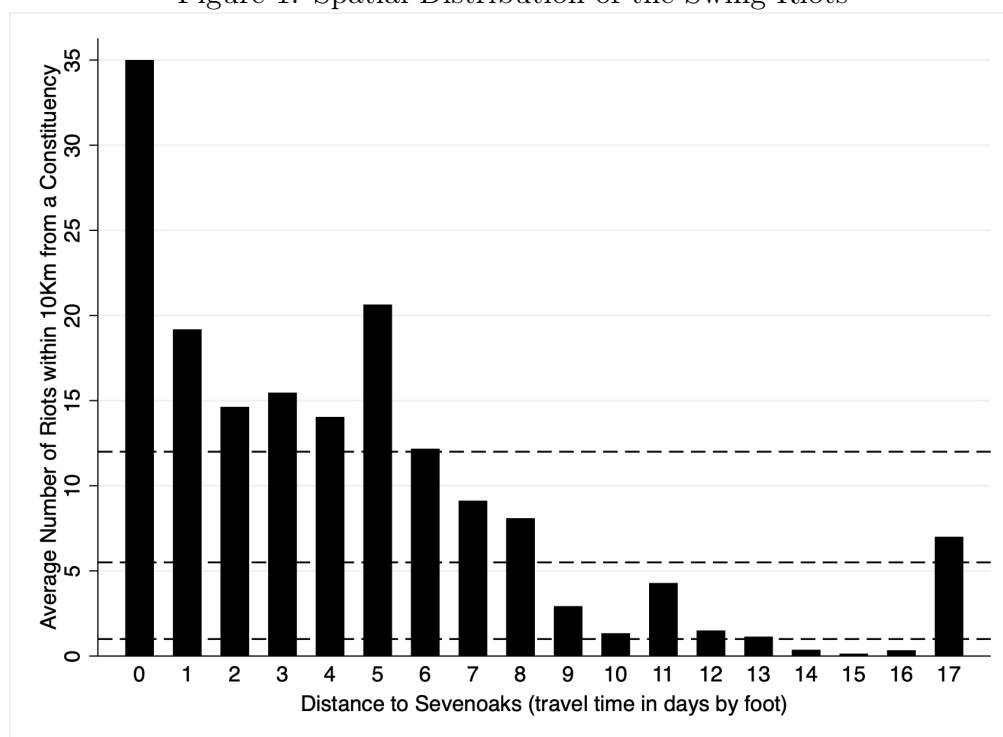
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<sup>2</sup>In this comment, I focus on a model with one endogenous variable and one instrument.

<sup>3</sup>To create each of these categories, I rounded the non-integer values in AF's variable *Distance to Sevenoaks*.

lines indicate the 25th, 50th (median), and 75th percentiles of the *Riots within 10 km* distribution in the sample. As Figure 1 demonstrates, voters and patrons in some constituencies were more exposed to Swing riots in the surrounding countryside than others. AF take advantage of this feature to instrument for the number of Swing riots that eventually occurred in the neighborhood of each constituency.

Figure 1: Spatial Distribution of the Swing Riots



AF do not explicitly calculate how many of the seats that the reformers obtained in the 1831 election should be attributed to the Swing riots. Nonetheless, they state that based on their 2SLS estimates, “... the share of Whigs elected in a constituency in the top quartile of the riot distribution is about 28 percentage points higher than in a constituency in the bottom quartile ...”. They thus conclude that “... the Swing riots contributed to the creation of a solid Whig majority in the House of Commons ...” (p. 536).<sup>4</sup>

<sup>4</sup>In the case of the model with one endogenous variable and one instrument (reported in column 1, panel A, Table IV), a simple calculation suggests that exposure to the average number of riots within a radius of

## 2 Heterogeneous Treatment Effects

AF’s main conclusion regarding the relationship between the threat of revolution and democratic change rests heavily on the linearity as well as homogeneity of the treatment effect. Suppose, however, that the effect of *Riots within 10 km<sub>i</sub>* varied across the different constituencies in the sample. With heterogeneous responses, the IV estimates will not reflect the true population average treatment effect. Instead, they will uncover a “local average treatment effect” (LATE); namely, the impact of the Swing riots on those constituencies whose treatment status was changed by the instrument.

AF’s identification strategy implies that in constituencies where first-hand exposure to the Swing riots influenced voters’ perceptions of a revolutionary threat, the 1831 election outcomes were driven by the marginal cost of upholding the status quo, rather than by the desire to implement a radical agenda. Therefore, the belief that parliamentary reform would defuse the (perceived) threat to the established order should have been substantially stronger in this sub-population compared to those constituencies that, despite being geographically very close to Sevenoaks, did not experience any Swing riots at all. Acceptance of parliamentary reform due to a fear of revolution should have also been stronger for constituencies that experienced Swing riots and were geographically close to Sevenoaks, relative to those constituencies where, despite being far away from Sevenoaks, Swing riots also occurred.

The LATE theorem applies to a causal model where a single dummy instrument is used to estimate the impact of a dummy treatment with no covariates (Imbens and Angrist 1994). In this case, there are multiple instruments as well as variable treatment intensity. Nonetheless, it is possible to generate a weighted average of the average causal response (ACR) for each instrument (Angrist and Imbens 1995). If the causal response function has a derivative, Angrist, Graddy, and Imbens (2000) show that, given the exclusion restriction, the indepen-

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10 km from a constituency (9.44) increased the share of elected Whigs by 12.43 percentage points, relative to a constituency that did not experience any riots at all (from 44.13 to 56.56 percent).

dence of instruments and potential outcomes, the existence of a first stage, and monotonicity, the 2SLS estimator identifies a weighted average of the derivative of the relationship of interest.<sup>5</sup> The IV estimator here would be the expectation over the partial effects of Swing riots on the share of seats won by reform-friendly candidates in the 1831 election, with weight given to each possible value of riots in proportion to the instrument-induced change in the cumulative distribution function (CDF) of riots at that point.

As in Dieterl and Snell (2016), I explore heterogeneity in partial effects of riots on voters' behavior at different values of the instrument by partitioning the sample based on the instrument and estimating separate regressions in different regions of the instrument distribution. First, I use the empirical cumulative distribution function of *Distance to Sevenoaks<sub>i</sub>* to order the observations in AF's seat-level data from smallest to largest. Next, I estimate the effect of riots on pro-reform support –  $\alpha_1$  in equation (1) – using rolling OLS regressions. I rely on equally-sized groups corresponding to one-quarter of the observations in the data, and increase each window's starting location one observation at a time. So, for example, the first estimate corresponds to the first 122 observations, the second one to observations 2-123, and so on and so forth, for a total of 368 estimation windows. This approach is similar in spirit to the use of rolling regression to assess the stability of model parameters in time series analysis. In this case, the null hypothesis is that  $\alpha_1$  in equation (1) is constant across distance, rather than the model parameters be time-invariant. If the effect of riots on pro-reform support is truly constant over the entire sample, then the rolling estimates over the rolling windows should not change much.

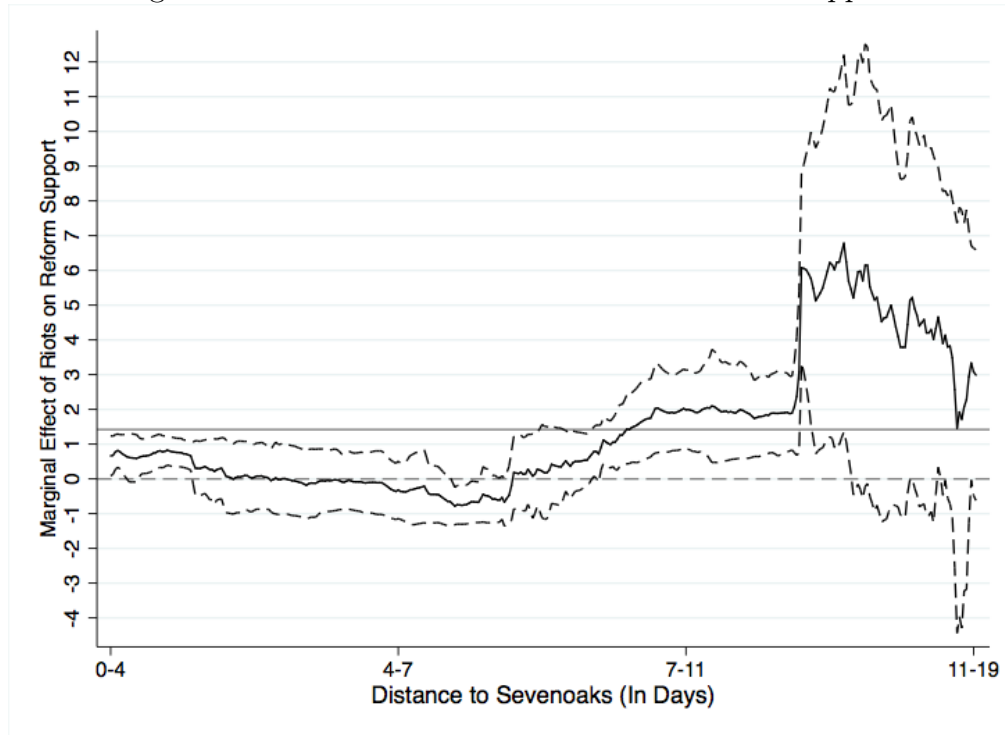
Figure 2 displays the effects of riots on reformers' electoral support conditional on the distance to Sevenoaks. In the horizontal axis, I arrange the estimation windows in ascending order using the instrument's empirical cumulative distribution function. I express each window's location in terms of the range of days that it would take to reach Sevenoaks traveling

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<sup>5</sup>See also Florens et al. (2008)

by foot.<sup>6</sup> The values of the  $\hat{\alpha}_1$  coefficients are presented in the vertical axis. The solid black line indicates the marginal effect of riots on pro-reform support. The dashed black lines represent 95 percent confidence intervals around these estimates. The horizontal solid grey line corresponds to the average value of  $\hat{\alpha}_1$  for the sample of the 368 estimation windows

Figure 2: Partial Effects of Riots on Pro-Reform Support



The evidence in Figure 2 reveals that the  $\hat{\alpha}_1$  parameters are not stable.<sup>7</sup> From a substantive standpoint, the findings indicate that riots had little to no effect on Whigs' electoral support in areas close (but not too close), or very far away from Sevenoaks. For example, exposure to one additional riot in constituencies in the bottom quartile of the instrument

<sup>6</sup>For example, the 122 observations in the first window – corresponding to the bottom quartile of the instrument's empirical distribution – are located at minimum distance of 0.3 days and a maximum distance of 4.4 days from Sevenoaks. To create each of the categories presented in Figure 2, I rounded the non-integer values in AF's variable *Distance to Sevenoaks*.

<sup>7</sup>The plot of the rolling regression coefficients is the most simple and informative technique. Nonetheless, a range of formal test statistics, such as the cumulative sum of squares (CUSUMSQ) statistic, as well as the sup-Wald (i.e., the supremum of a set of Wald statistics) test provide additional evidence of parameter instability.



distribution – located less than 5 days away from Sevenoaks – is associated with a moderate increase in Whigs’ electoral support,  $\hat{\alpha}_1 = 0.66$  (z-score: 2.25). The estimated effect becomes negative and imprecise ( $\hat{\alpha}_1 = -0.32$ ; z-score=0.76) at intermediate distances (i.e. the second quartile of the instrument distribution, or 4 to 7 days away from Sevenoaks). In constituencies located between 7 and 11 days away from Sevenoaks (the third quartile of the instrument distribution), the effect of riots on Whig’s electoral support is positive and statistically significant  $\hat{\alpha}_1 = 1.99$  (z-score: 3.43). Finally, in constituencies in the top quartile of the instrument distribution (located more than eleven days away from Sevenoaks) the estimated effect is much larger in magnitude but imprecise ( $\hat{\alpha}_1 = 3.08$ ; z-score: 1.70).

As AF note, the Swing riots were concentrated in the cereal-producing region, while the regions with dairy and extensive farming were less affected. The former region is located closer to Sevenoaks, while the latter ones are located much further away. As Figure 1 shows, constituencies located below the median of the instrument distribution (i.e. less than 7 days away from Sevenoaks) were exposed to a significant number of disturbances within a 10km radius. In contrast, constituencies located more than 7 days away from Sevenoaks were riddled with less riots in the surrounding countryside (approximately 3.7, on average).

With one endogenous variable and one instrument, 2SLS identifies a weighted average of all individual treatment effects, where the weights are the linear effect of the instrument on the endogenous variable. By placing more weight on constituencies located farthest from Sevenoaks the estimator puts more weight on the large positive partial effects and less on the moderately positive/negative ones. The result is a weighted average of 1.41, with a 95 percent confidence interval of [-0.35, 3.18]. This value is very similar to AF’s 2SLS estimate  $\hat{\alpha}_1^{2SLS} = 1.31$  (reported in column 1, panel A, Table VI). The patterns in Figures 1 and 2 however, imply that revolutionary fears were stoked more in constituencies that were comparatively exposed to fewer, rather than more, riots.

### 3 A Reassessment

The heterogeneous treatment effects uncovered in the previous section account for the divergence between the OLS and IV estimates in the AF study. The former reveals the average effect of Swing riots on the share of seats won by reform-friendly candidates across all the units in the sample, while the latter only recovers local average treatment effects. This interpretation of AF’s results raises a fundamental question: were the reformers’ seat gains associated with the Swing riots large enough to alter the course of history? AF do not directly address this issue. While they do not claim that the Swing riots (or the threat of revolution) were the *only* cause of the Great Reform Act, they posit that voters’ exposure to rural unrest contributed to the creation of a solid Whig majority in the House of Commons. Yet, the LATE interpretation of their IV estimates, suggests that AF overstate the riots’ impact on extent of the Whig victory in the 1831 election.

The average causal effect on *compliers* is not usually the same as the average treatment effect on the treated (ATT). But, if the treated population consists almost entirely of compliers (i.e. there are almost no *always-takers*), then LATE is the effect of treatment on the treated. A comparison between AF’s 2SLS and ATT estimates suggests that this is the case. Their nearest-neighbor covariate matching estimate (column 1, panel A, Table IV) indicates that Swing riots increased the share of Whigs elected in 1831 by about 11.1 percentage points in constituencies that were “treated” to more than one riot. The 2SLS estimate (column 1, panel A, Table VI) is 1.32, implying that the share of Whigs elected in the average constituency was 11.1 percentage points higher than in constituencies that were exposed to a single riot (56.56% versus 45.45%).

It thus seems appropriate to interpret the 2SLS estimate of  $\alpha_1$  as the effect of riots in electoral races whose treatment status could be changed by the instrument. The evidence presented above reveals that the *compliant* sub-population, was not only significantly smaller

than the whole sample, but also exposed to less riots. Ideally, one would like to account for the treatment effect heterogeneity uncovered above to calculate how many of the English seats that the reformers obtained in the 1831 election can be attributed to the Swing riots. Unfortunately, coming up with this estimate can be difficult when allowing fully for heterogeneity. Nonetheless, it is still possible to perform this calculation from the partial effect of the Swing riots on the share of Whigs elected at different values of the instrument.

Consider again the analysis presented in Figure 2. One can use the rolling estimates of  $\alpha_0$  (i.e. the *intercept*) to gauge the predicted share of seats won by reform-friendly candidates in the *absence* of local Swing riots. The difference between the rolling averages of the actual share of seats won by reform-friendly candidates and the estimated  $\alpha_0$  values can then be interpreted as the riot-induced excess electoral support for reform in each of the 368 estimation windows. The average *surplus* electoral support amounts to 4.37 percentage points, indicating that approximately 21 of the English seats that the reformers obtained in the election can be attributed to the Swing riots (i.e.  $489 \text{ seats} \times 0.0437$ ).

As noted above, with one endogenous variable and one instrument, 2SLS identifies a weighted average of all individual treatment effects. Therefore, a simple calculation using AF's least squares estimates should yield a very similar result. This is indeed the case, as approximately 22 of the English seats that the reformers obtained in 1831 can be attributed to the Swing riots.<sup>8</sup>

According to AF, 276 pro-reform MPs were elected in 1831. Subtracting 22 from 276 yields 254 pro-reform MPs, which is roughly 52% of the English MPs. Their gains, however, were not limited to the English constituencies. Reformers also increased their representation in Ireland, Scotland, and Wales.<sup>9</sup> Therefore, the 22 additional seats associated with the

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<sup>8</sup>AF's OLS estimate (column 1, panel A, Table II) is 0.57, and the average number of riots within 10km is 9.44. A total of 209 constituencies experienced at least one riot within 10km, and there are approximately 2 seats per constituency. Therefore,  $(209 \times 2) \times \frac{0.57 \times 9.44}{100} \approx 22$ .

<sup>9</sup>A comparison between the votes on the second reading of the Reform Bill that took place before and after the 1831 election (i.e March 22 and July 6, 1831) indicates that the number of MPs that supported

Swing riots were not essential for the Act’s passage. For example, at the second reading on 6 July 1831, the Reform Bill passed with a majority of 387 against 241. The government followed that victory up with decisive successes at the committee stage. The support for reform can thus be explicitly gauged by examining the 40 meetings that took place between July 12 and September 7, 1831. A review of the information in Hansard reveals that a total of 38 divisions were recorded during that period.<sup>10</sup>

Figure 3 shows the Grey ministry’s margin of victory in those 38 divisions. The government prevailed in all but one of the divisions, with an average margin of victory of 95 votes, with a minimum of 30 and a maximum of 343.<sup>11</sup> If one were to take the 22 seats away from the government and give them to the opposition, the margin of victory – depicted by the horizontal solid grey line in Figure 3 – would be 44 votes. Excluding the single defeat discussed above, there are only four divisions where reallocating the pro-reform votes could have changed the outcome. Two of them, were related to the enfranchisement of tenants; while the other two pertained to the transfer of Downton to Schedule A, and representation in Huddersfield. Losses in these four divisions, however, would have hardly jeopardized the Reform Bill. In fact, the amended bill was passed on 22 September 1831 by a margin of 109 votes (345 to 236). Therefore, AF’s conclusions that: (a) “... the reform-friendly Whigs would not have obtained a majority of seats in the House of Commons in the 1831 election had it not been for the violence of the Swing riots ...”; and that (b) “.. without such a majority, the reform process would almost surely have come to a stop ...” seem unwarranted.

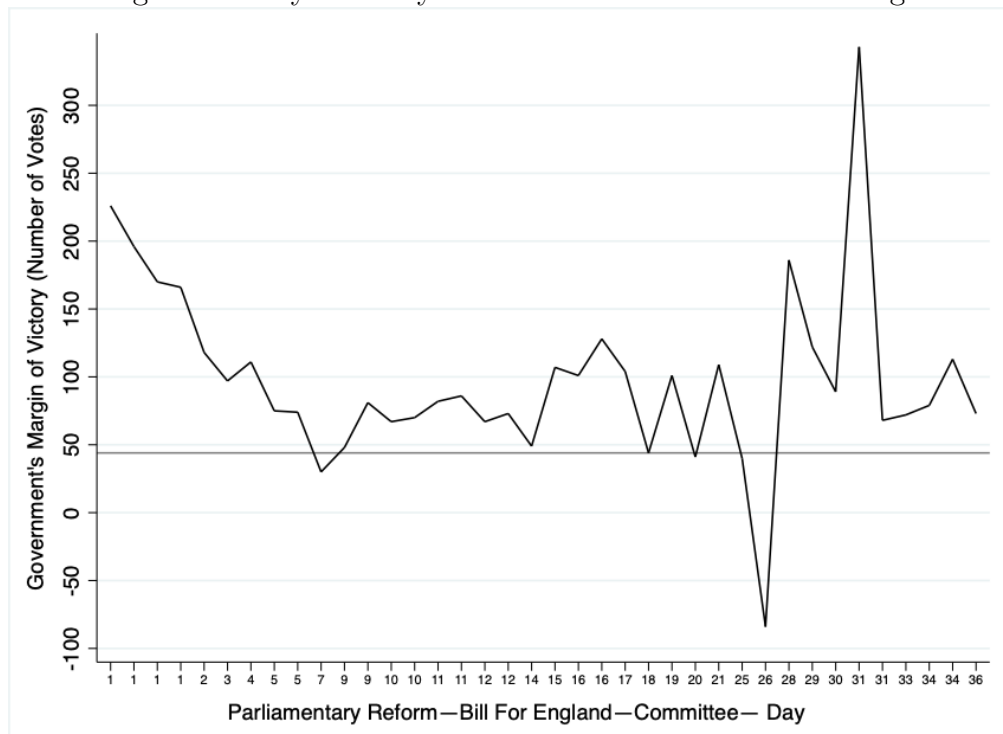
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parliamentary reform increased by 25.77% (from 225 to 283) in England; by 21.56 % in Ireland (from 51 to 62); by 84.61% in Scotland (from 13 to 24); and by 38.46% in Wales (from 13 to 18).

<sup>10</sup><https://hansard.parliament.uk/Commons/>

<sup>11</sup>The government’s single committee defeat took place on 18 August 1831. An amendment to give substantial tenants-at-will county votes proposed by the Marquess of Chandos was carried by 232 to 148. According to Brock (1973), the cabinet decided that they would resist it in the Commons but accept defeat on it, hoping that its mildly democratic flavor would make it unacceptable to the Lords.

Figure 3: Grey Ministry's Performance at Committee Stage



## 4 Conclusions

The Great Reform Act of 1832, introduced important changes in the parliamentary representation of England. The reform process was sparked by a combination of fortuitous circumstances that took place in 1830. These included the fragmentation of the old Tory party after the passage of the Catholic Emancipation Act; the death of George IV; the July Revolution in France; the 1830 general election; and the fall of the Wellington Ministry.

The parliamentary reform debate also took place against a backdrop of rural unrest known as the Swing riots. Therefore, the Act's passage is often cited as the quintessential example of a concession made by incumbent elites to thwart a revolutionary threat. This choice seems natural given Prime Minister Grey's famous declaration in the House of Lords that

“... The principle of my reform is, to prevent the necessity for revolution ...”<sup>12</sup> Taking Grey’s statement at face value, AF examine the link between the threat of violence and democratization. Their findings suggest that the Swing riots induced voters to vote for pro-reform politicians after experiencing first-hand the violence of the riots. They thus conclude that Britain’s oligarchic elite endorsed democratic reform because they feared a revolution that would fundamentally overthrow the existing economic and political order.

This article, however, cast doubts over AF’s interpretation of the effect of the Swing riots on the Great Reform Act of 1832. A careful examination of their instrumental variables estimates reveals that the notion that voters’ exposure to rural riots was instrumental in returning the parliamentary majority needed to achieve reform is not supported by the data. Instead, the analysis presented here seems to square with accounts that emphasize the role of other factors – rather than the threat of revolution –, as important drivers of franchise reform. For example, Lizzeri and Persico (2004) argue that reformers sought to incorporate new segments of the tax-paying population into the electorate in order to finance new public services; and, Aidt and Frank (2019) contend that peaceful agitation, mass-support, and political expedience played an important role in motivating the British oligarchic elite to endorse democratic reform.

This conclusion, however, should not lessen the Swing riots’ historical significance. As Aidt, Leon-Ablan and Satchell (2022) show, their spatial-temporal variation can be used to understand how people overcome collective action problems. They can also help elucidate the social and political effects of labor- saving technical change (Caprettini and Voth 2020). So, even though the Swing riots did not play a crucial role in the success of the Great Reform Act of 1832, their the causes and consequences are worth studying in their own right.

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<sup>12</sup><https://hansard.parliament.uk/lords/1830-11-22>

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