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Is small beautiful? Transitional and structural effects of municipal amalgamation on voter turnout in local and national elections

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ABSTRACT

The effect of jurisdiction size on democracy is hotly debated. Allegedly, smallness promotes democracy, whereas effectiveness and efficiency increase with size. Neither claim has strong empirical underpinnings. We provide evidence for the former. We use municipal amalgamations as a source of exogenous variation in jurisdiction size and show that it reduced voter turnout in Dutch elections in the 1986–2018 period. This period is sufficiently long to separate potential temporary effects of the amalgamation process from a structural effect of size increase. Surprisingly, we find no evidence of the former. Municipal amalgamation reduces turnout in local elections by 2.2 percentage points and in national elections by 0.7 percentage points. Both effects are long-lasting, persisting at least five elections after amalgamation. More detailed analysis reveals that the most likely driving forces are a weakening of the social norm to vote, and, in municipal elections, increased distance between voters and politics.

1. Introduction

Democratically governed jurisdictions are expected to effectively and efficiently provide services for their citizens, and to translate the preferences of their inhabitants into policy. In the literature, there is a lively debate about the optimal jurisdiction size to achieve each goal (e.g., Dahl and Tufte 1973; Treisman 2007). Conventional wisdom has it that effective service provision requires large jurisdictions, but that democracy thrives in small jurisdictions.

This is not just an academic issue. Jurisdiction size is not only the result of demographic developments and locational decisions of households, but also of institutional choices. Many countries have considerably increased the size of subnational jurisdictions, like municipalities and school districts, through amalgamation (or consolidation). This is the redrawing of boundaries with the aim of creating larger jurisdictions, for instance a merger of two or more municipalities.

An important driving force behind amalgamation has been the desire to benefit from economies of scale and scope (Treisman 2007). However, amalgamation has been criticized for its negative effect on democracy. Larger jurisdictions are presumably less responsive to the needs and preferences of the communities within their borders (Allen 2003; Dollery 2010). Thus, potential gains in efficiency and efficacy may come at the expense of the quality of democracy (Dahl 1994; van Houwelingen 2017).

Additionally, decentralization of government may compel local governments to amalgamate, in order to gain the capability to execute new tasks. Ironically, this may undermine the main motivation for decentralization, namely the desire to better tailor public services to local needs and preferences (Oates 1972). After all, if decentralization is followed by jurisdictional size increase which in turn weakens democracy, the potential gains of making decisions locally instead of centrally may be lost through lower representativeness or accountability.

Recent empirical studies suggest that jurisdiction size increase does not necessarily make local government more efficient (Allers and Geertsema 2016; Bel and Warner 2016; Blom-Hansen et al., 2016; Allers and De Greef, 2018). This paper gives additional reasons to be skeptical about the net benefits of size increase, by confirming that municipal amalgamation negatively affects the functioning of democracy.

Democracy has many facets. In this paper, we focus on voter turnout as a proxy for the quality of democracy. Voter turnout is intrinsically important. From the perspective of democratic theory, elections serve as the main means to make government representative and accountable (Stokes et al., 2013). Moreover, voting is one of the most elementary forms of political participation, preceding various other forms of political participation like becoming an active member of a political party. As such, turnout reductions may signal much profounder changes, such as dwindling faith in the functioning of politics in general, or weakening

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interest in or commitment to the local community (Van Houwelingen 2017; Franklin 1999).

The literature contains a good number of studies which find a negative relationship between the number of eligible voters at a certain government tier and turnout in elections for that same tier (for recent examples see Tavares and Raudla 2018; Gerring and Veenendaal 2020; for a review see Cancela and Geys 2016; Van Houwelingen 2017). However, as we show below, there are theoretical reasons to expect that the size of local jurisdictions may also affect voter turnout in higher-level elections, something that is neglected in the literature. As far as we know, this is the first paper to study the effect of local government amalgamation on both local and national turnout.

Including national elections is interesting in its own right: we find that municipal amalgamation affects turnout in national elections. It also helps us discriminate between different causal mechanisms, because some may only apply to local elections, some to national elections, and some to both. Amalgamation both influences social or communal factors, and also factors relating to municipal politics but not national politics. Theories that explain voter turnout through social or communal factors may predict a change in turnout for both local and national elections whereas theories that explain voter turnout based on political factors predict only a change in turnout for municipal elections. For example, amalgamation dilutes the power of an individual vote in local but not in national elections. Thus, any effect found in national elections alone cannot be ascribed to this mechanism. On the other hand, if amalgamation weakens the social norm to vote, this may reduce turnout in both local and national elections.

A second limitation of the existing literature is that the empirical setup of most existing studies makes causal inference difficult. First, many studies rely on cross-sectional data, which tends to create endogeneity problems. In one of the most thorough cross-sectional studies, Denters et al. (2014) try to circumvent the difficulty of identifying causal effects by also studying intermediate effects through intervening variables. Secondly, most studies analyzing the effects of changes in size, using panel data, are limited to the immediate, i.e., short-run effects of amalgamation on turnout, which cannot automatically be ascribed to jurisdiction size alone.

It is important to realize that amalgamation is more than an increase in jurisdiction size. It is also a disruptive process (Andrews and Boyne 2012) which itself may temporarily affect voter turnout. E.g., public opinion is often hostile towards amalgamation, and citizens may need time to accept the newly created jurisdiction as their community. Amalgamation might also disrupt local party organizations. The short-term effect of amalgamation may differ from the long-term effect because it may include both a (permanent) jurisdiction size effect and a temporary effect linked to the amalgamation process. Only long-term effects can be attributed to size increase alone.

Most studies of the effect of amalgamation on local democracy are limited to effects immediately after amalgamation. Lassen and Serritzlew (2011) find that the municipal amalgamations in Denmark in 2007 had a detrimental effect on individual citizens' beliefs that they are sufficiently competent to understand and take part in politics. This may have resulted in a reduction of voter turnout, but that was not part of their study. Koch and Rochat (2017), Roesel (2017), Heinish (2018), and Zeedan (2018) find that amalgamation reduced turnout in local elections in the Swiss canton of Ticino, the German state of Saxony, the Austrian state of Styria, and Israel, respectively.

We are aware of only two academic studies that include more than one election after amalgamation: Lapointe et al. (2018) and Bhatti and Hansen (2019) use three elections after amalgamation. We add to the literature by investigating an unprecedentedly long timespan: we study the effects of a series of amalgamations since 1983 on elections between 1986 and 2018. As we observe up to ten elections after amalgamation, we can confidently separate the transitional effect of amalgamation from the structural effect of jurisdiction size. We are primarily interested in the latter, but include the former in our study as well.

We further contribute to the literature by delving deeper into the causal mechanisms. For each potential mechanism we derive from the literature, we formulate the expected short-term and long-term effects. Next, we estimate the effects of amalgamation on voter turnout in the Netherlands, and compare outcomes with expectations. We investigate how these effects evolve over time, to separate the transitional effect of amalgamation from the structural effect of size. To discriminate between different causal mechanisms, we follow two strategies. First, as explained, we look at both local and national elections. Additionally, we distinguish three amalgamation characteristics: the extent to which jurisdiction size increases, whether amalgamating municipalities are small or already large, and the relative sizes of the jurisdictions in each amalgamation ("annexations" versus "mergers of equals"). As the next section will show, depending on the theory, a predicted change in turnout may be limited to, or be larger in, amalgamations with certain characteristics.

Pinpointing a single mechanism through which amalgamation influences turnout is, of course, impossible. We cannot reject the possibility of several mechanisms working simultaneously, perhaps even in opposite directions. Moreover, some mechanisms found in the literature lead to similar expectations. By systematically comparing expected and estimated effects, we aim to shed as much light as possible on the likelihood that certain mechanisms are at play.

2. Theories and hypotheses

To investigate the influence of jurisdiction size on voter turnout, we need to distinguish between structural and transitional effects of amalgamation. Structural effects exist if jurisdiction size influences voter turnout. They are permanent. Transitional effects of amalgamation are temporary, arising from the process that leads to a different scale. Little has been written yet about transitional effects of amalgamation on turnout, obliging us to draw on much more general models about voter turnout to develop our hypotheses. A second distinction we make here is whether local jurisdiction size is predicted to affect turnout in local elections, national turnout, or both. Finally, we take into account that different amalgamation characteristics are predicted to yield different effects on turnout.

2.1. Structural (or scale) effects

2.1.1. Instrumental voting

Instrumental voting theory posits that people vote with the aim of influencing government policy outcomes. Thus, citizens only vote if they believe their vote will achieve this, and yield enough benefits to outweigh the cost of voting. Objectively, it is rather unlikely that one individual vote will matter, except in very small electorates. However, what matters here is not true but perceived probabilities, and small probabilities seem to be greatly overweighed (Herrmann et al., 2019).

Seen from the perspective of an individual within a local political system, amalgamation reduces the probability that one's vote matters. A merger of two municipalities reduces the average citizen's share in power by fifty percent; a merger of five municipalities reduces it by eighty percent. Thus, amalgamation would have a negative effect on voter turnout in local elections, and increasingly so as more jurisdictions are included. Because the weight of an individual vote in national elections is not affected by amalgamation, no effect on turnout in national elections is predicted.

Alternatively, one might argue that larger municipalities have more resources at their disposal, and are less dependent on forces outside their control, possibly allowing them to better address the concerns of their citizens (Larsen 2002; Treisman 2007; Dollery 2010; McDonnell 2019). This would increase the power of a vote to deliver desired policy outcomes, because wielding influence over policy is more worthwhile if the elected body is more effective. The more jurisdictions are included in an amalgamation, the bigger the size increase of the jurisdiction for the

average citizen, and the greater the increase in effectiveness might be. Thus, this reasoning would predict amalgamation to have a positive effect on voter turnout in local elections, but not in national elections.

2.1.2. Perceived distance between voters and politics

Another common argument emphasizes that voters feel more distant from municipal politics in larger jurisdictions (Van Houwelingen 2017). This line of reasoning holds that citizens must feel that they are able to understand local politics and the issues at stake, otherwise they will not vote. In the literature, this feeling is called internal political efficacy (Lassen and Serritzlew 2011).

Dahl and Tufte (1973) argue that citizens feel less competent to vote in larger jurisdictions, where the representative-to-resident ratio is lower and the physical distance to the town hall greater, making direct contact with local politicians less likely. Furthermore, many political issues in a larger municipality concern distant neighborhoods or are more abstract and technical than in smaller municipalities (Lassen and Serritzlew 2011). Finally, keeping larger municipalities operational requires more bureaucracy and hierarchy (McDonnell 2019; Van Houwelingen, 2017). Hence, amalgamation is predicted to reduce turnout in local elections, particularly if it concerns small jurisdictions where voters do not perceive themselves distant from politics. However, the distance to national politics does not change due to amalgamation, so no change in voter turnout in national elections is predicted. Political distance is probably less affected if a jurisdiction is amalgamated with a much smaller neighbor (henceforth referred to as "annexation"). In the smaller jurisdiction politics may feel more distant, but this affects only a small part of the population of the newly formed municipality.

2.1.3. Social norms

A third common argument in this debate concerns social norms. People who realize that their individual vote will have little influence may still go to the polls because it is expected of them. Disruption of social ties may reduce turnout (Denters et al., 2014; Hansen 2015). Social norms and their enforcement could be more favorable to voting in small, more cohesive jurisdictions because citizens feel a greater sense of attachment to and responsibility for their community (Funk 2010; Knack 1992). If a certain size is exceeded, a jurisdiction might no longer be seen as an extension of the community because it has become too big. Thus, amalgamation might structurally weaken (the enforcement of) social norms favorable to voting. This may affect the decision to vote in general, not just in local elections. Hence, this line of reasoning predicts amalgamations of small jurisdictions to reduce voter turnout in both local and national elections. Social norms are probably less affected if a jurisdiction is amalgamated with a much smaller neighbor. Social norms in the smaller jurisdiction may weaken significantly, but this affects only a small part of the population of the newly formed municipality.

2.1.4. Preference heterogeneity

Finally, it is sometimes argued that small municipalities on average have a more homogenous citizenry than large ones. In a municipality where preferences are similar, voting may be less important. In the extreme case where everyone agrees on everything, one vote would be enough to produce the desired outcome for the entire population. If preference heterogeneity increases with size, political participation also becomes more important (Oliver 2000). Amalgamation may merge communities with different median preferences (Bönisch et al., 2019), especially if people have sorted themselves into jurisdictions with different characteristics (Tiebout 1956). According to this argument, amalgamation will positively affect voter turnout in local (not national) elections, and this effect will be stronger the bigger the size increase (the more jurisdictions are included).

2.2. Transitional effects

Municipal amalgamation may cause disruptions that temporarily affect voter turnout. The most important disruptions in our context are disaffection, information costs, political mobilization, and identity.

2.2.1. Disaffection

Public opinion is often hostile toward municipal amalgamation. Citizens may fear having to travel further for public services and ancient rivalries among nearby towns may fuel resistance. In the Netherlands, such hostility often does not stop politicians from completing the amalgamation process (Allers and Geertsema 2016). Given the salience of this issue, this may lead to disaffection with politics. Hostility is often especially strong in small jurisdictions which are amalgamated with a big neighbor (annexations). Inhabitants of this big neighbor, however, will probably be largely indifferent. We hypothesize that the net effect will be smaller in case of annexation.

This effect of amalgamation on turnout may exist in both local and national elections (Stoker, 2006). Amalgamations are carried through by passing a bill in Parliament. Inhabitants opposing amalgamation often appeal to members of Parliament for help, and may feel abandoned when the amalgamation is implemented. Although feelings of disaffection can linger for some time after amalgamation, they will fade as life goes on (Terlouw 2018). We hypothesize that disaffection will have a negative effect on turnout in the first local and national elections after amalgamation.

2.2.2. Information costs

There is some empirical evidence suggesting that being informed about politics positively affects the propensity to vote (Lassen 2005). Immediately after amalgamation, the information citizens have accumulated becomes incomplete and partly obsolete (Koch and Rochat 2017; Geys 2006). E.g., new parties and new candidates may have joined the fray, perhaps from other municipalities involved in the amalgamation. This could reduce voter turnout in the first elections after amalgamation.

Following an annexation, citizens of the dominant municipality will rarely notice many changes. Only inhabitants of the junior partners face high information costs. Thus, we would expect this short-term effect on turnout to be weaker in annexations.

2.2.3. Political mobilization

Amalgamation can disrupt party organizations at the local level, which can affect the capacity of political parties to mobilize voters (Geys 2006; McDonnell 2019). For instance, networks of politicians and party activists willing to volunteer during election time can be disrupted by amalgamation. This could reduce turnout in the first elections after amalgamation, after which these political networks would be rebuilt. Local political networks might also help mobilize voters in national elections (Horiuchi et al., 2015). So, this theory predicts that we would find a temporary negative effect of amalgamation on turnout in both local and national elections. This effect would probably be smaller in annexations, as party organizations in the largest jurisdiction involved would be relatively unaffected.

2.2.4. Identity

Altruistic voting theory holds that voters do not only derive utility from policy as it affects themselves, but also from how it affects others (Geys 2006). Humans form communities, which are part of their identity. Closer communities may evoke more altruism between their members, leading them to vote. Amalgamation destroys the symbolism of being a recognized community, in the form of a municipality (Denters et al., 2014). It takes time before its inhabitants will accept the newly formed municipality as a community rather than just an administrative unit. Note that this reasoning is close to the hypothesized effect of social norms. The difference is that above we argue that a larger size, which is structural, might permanently change social norms. Here we propose that citizens may need time to accept a newly formed jurisdiction as a community, which would lead to a transitional effect on turnout. Based

on these considerations, we expect amalgamation to have a temporary negative effect on voter turnout in municipal elections. This effect would be especially strong in small jurisdictions which are annexed by a big neighbor. However, inhabitants of the big municipality would be relatively unaffected, resulting in a weaker net effect in annexations. No effect on national elections is to be expected based on this causal mechanism.

2.3. Predictions

Table 1 summarizes the predictions we derived. A plus sign (+) indicates that the theory in question predicts a positive effect on voter turnout. A minus sign (−) indicates a predicted negative relationship. The table also indicates whether the effects of amalgamation are transitional or structural, and whether we expect them to be stronger or weaker if the number of amalgamating units is larger, if amalgamating jurisdictions are small, or in case of annexation.

3. Institutional setup

The Netherlands is a decentralized unitary state with three territorial layers of government: the national government, 12 provinces and (in 2018) 380 municipalities. Municipalities are democratically governed jurisdictions with considerable autonomy over spending decisions, carrying out a broad range of governmental tasks. Virtually every year, some municipalities are amalgamated. In countries using a "big bang" approach to amalgamations, these are often accompanied by other institutional changes affecting local decision making. This is not the case In the Netherlands, which makes it an ideal testing ground for this study. Between 1983 and 2018, average municipality size rose from 18,500 to 45,000 inhabitants. This increase of 143 percent far exceeds national population growth, which was 20 percent.

Municipal amalgamation is realized by law, and can be pushed through by the central government against the wishes of affected jurisdictions. Amalgamation may occur at the request of the affected municipalities, but usually the initiative is taken by a higher government tier.

A municipality is governed by its municipal council and an executive board of mayor and aldermen. Aldermen are appointed by the municipal council. The mayor, who has a mostly non-executive function, is formally appointed by the crown. In practice, the crown appoints the candidate selected by the municipal council. The municipal council is elected directly by the inhabitants of the municipality and is responsible for legislating municipal policies, for monitoring the executive board, and for representing the inhabitants of the municipality.

In both municipal and parliamentary elections, numerous parties participate. The allocation of seats among parties is based on proportional representation, with one electoral district and no electoral threshold. Pre-electoral coalitions are uncommon and post-electoral coalitions are not easily predicted. This implies that the idea of 'close' elections is barely relevant in the Dutch context. In municipal elections, every permanent resident aged 18 or more is eligible to vote. In national elections, only Dutch nationals can vote. Parliamentary elections are held every four years, or earlier if a government falls. Regular municipal elections are conducted every four years, simultaneously in all municipalities. Amalgamations, however, require special elections to produce councils for the new municipalities. These elections are held several months before amalgamation, on a different date to the one on which regular elections are held, even if these occur within the same year. We exclude these special elections from our analysis to guarantee that we are comparing similar elections.

Voters may have a preference for candidates from their own village or pre-merger home municipality (Saarima and Tukiainen 2016). Party lists are semi-open; preferential votes may be cast to express this preference. Also, it is easy to start a new party and win seats, as elections thresholds are low. Such a new party may, e.g., represent inhabitants from one of the pre-merger municipalities. Unfortunately, we have no data on when and where this has happened.

4. Identification strategy

There are three important methodological challenges we need to deal with. The first is that numerous factors exist that may influence voter turnout, of which many are unobserved. The second is a potential reverse causality problem. Both of these issues can be solved simultaneously by using a differences-in-differences (DID) approach. The third issue, however, is that our DID estimates may be biased if treatment effects are time-varying (Goodman-Bacon 2018).

The problem of reverse causality may arise if people with unobservable preferences for voting sort into jurisdictions of different size

Table 1
Predicted effects of municipal amalgamation on voter turnout.

Theory	Effect on turnout	When more municipalities amalgamate, the effect is:	If amalgamating jurisdictions are small, the effect is:	In case of annexation, the effect is:
Municipal elections				
Structural (scale) effects				
Instrumental voting: vote weight	−	Stronger		
Instrumental voting: municipal efficacy	+	Stronger		
Political distance	−		Stronger	Weaker
Social norms	−		Stronger	Weaker
Preference heterogeneity	+	Stronger		
Transitional effects				
Disaffection	−			Weaker
Information costs	−			Weaker
Political mobilization	−			Weaker
Identity	−			Weaker
National elections				
Structural (scale) effect				
Social Norms	−		Stronger	Weaker
Transitional effects				
Disaffection	−			Weaker
Political mobilization	−			Weaker

(Lassen and Serritzlew 2011), and if the likelihood of amalgamation depends on size. E.g., people who are more likely to vote may prefer to live in smaller municipalities. Potentially, this endogeneity problem may be solved by using instrumental variables, but it is unlikely that these could be found in this case. Instead, we investigate developments in municipal size and turnout over time, exploiting the panel dimension of the data. This enables us to control for many unobservable factors that might affect people's preferences for voting, and jurisdictions' likelihood to be amalgamated, by using jurisdiction fixed effects and time fixed effects. Including all relevant variables would solve the reverse causality problem. Although one can never be sure to control for everything that is relevant, in this way we control for everything that is time-invariant, and everything that takes place in a specific year.

Thus, instead of comparing turnout in jurisdictions of different size at a certain moment, we rely on a differences-in-differences approach. This is similar to approaches used earlier for, e.g., analyzing the effect of amalgamation on municipal expenditures (Tyrefors 2009; Allers and Geertsema 2016), on individual citizens' beliefs that they are competent to understand and take part in politics (Lassen and Serritzlew 2011) and on voter turnout (Koch and Rochat 2017; Lapointe et al., 2018).

Despite these measures, selection bias might still be present. If some municipalities are badly governed, with deteriorating public services or rising tax rates, they may be more likely to be amalgamated and, at the same time, voter turnout may be higher (or lower). If, after amalgamation, such municipalities perform better, turnout could revert to more normal levels. To check whether this bias might occur, we will examine pre-amalgamation turnout trends.

This brings us to the third methodological issue, the bias that may result from time variation in treatment effects (Goodman-Bacon 2018). In order to take a closer look at this, we present event study figures based on regressions with election-specific treatment variables. These figures show treatment effects for individual elections, relative to the last election before amalgamation. This allows us to inspect both pre-amalgamation trends and time variation in post-treatment effects. By including the DID estimates, the event study figures show how well these reflect the average post-treatment effects.

As a further check on possible bias resulting from treatment effect heterogeneity, we compute the share of negative DID weights, as suggested by De Chaisemartin and D'Haultfoeuille (2020). Negative weights arise because the coefficient of amalgamation is a weighted sum of several difference-in-differences, which compare the changes in outcome between consecutive elections across pairs of groups. However, the control group in some of those comparisons may be treated at both periods. Then, its treatment effect at the second period is differenced out, resulting in negative weights. In that case, treatment effects which are heterogeneous across groups or elections may bias the DID coefficient.

5. Model

Cancella and Geys (2016) review 185 empirical studies on voter turnout on both the national and the local level. They distinguish 14 independent variables which are commonly used, of which 12 are often statistically significant. These variables fall into three categories: socioeconomic, political and institutional variables. By focusing on elections in a single country and by using time fixed effects, we automatically control for institutional factors such as differences in voting laws. To control for concurrent elections, which might draw more voters to the polls, we include a dummy variable that indicates whether a municipal referendum was held simultaneously with a local or national election.

We control for socioeconomic and political variables by using municipal fixed effects and time fixed effects (Stockemer 2017). In addition, we control for natural population growth, i.e., changes in the size of the electorate that do not result from amalgamation, by including the number of eligible voters. Before amalgamation, this variable reflects the sum of eligible voters in the jurisdictions that will be merged. We use logs here to account for the large variation in electoral size, and because we do not assume an effect of electoral size to be linear.

Allers and Geertsema (2016) show that, in the Netherlands, small municipalities, densely built-up municipalities and municipalities in certain provinces are more likely to amalgamate. We already control for size by including the number of eligible voters. The other two factors, and many other unidentified sources that might drive selection bias, are controlled for by our use of municipal fixed effects.

This results in the following fixed effects model to estimate most of our regressions:

$$y_{it} = C + X_{it}\beta + \alpha_t I_n + \eta_i + \varepsilon_{it}$$

Subscript i indicates the observed municipality, subscript t indicates the election year. Moreover, y_{it} is our dependent variable: voter turnout in either local or national elections. C is a constant, X_{it} is a matrix of exogenous explanatory variables, $\alpha_t I_n$ represents time fixed effects (α_t is a time scalar and I_n is a column vector of ones), and η_i represents municipal fixed effects. Finally, we include an error term, ε_{it}, to account for any unexplained disturbances. We present robust standard errors that are clustered by municipality, to account for any potential heteroscedasticity or autocorrelation in the data.

Some researchers also include unit-specific time trends in specifications similar to ours to allow treated and control units to follow different trends. However, Goodman-Bacon (2018) demonstrates that these may bias results in a setting with time-varying treatment effects.

6. Data

Our dependent variables are calculated using data supplied by municipalities to the Dutch Election Authority (Kiesraad). These variables measure voter turnout per municipality by dividing total votes cast by the number of eligible voters. We use voter turnout data for nine municipal elections in the 1986–2018 period and for nine national elections in the 1989–2017 period. Data on amalgamations and population are taken from Statistics Netherlands. As a control variable we use a dummy indicating a municipal referendum concurrent with municipal or national elections, based on data from Nijeboer and Vos (2018).

Election outcomes of jurisdictions entering an amalgamation are no longer observed separately, which means that our units of analysis are the 380 municipalities that existed in 2018. The database is organized as a panel and built such that amalgamations are retroactively applied. Municipalities that merged during our research period have their data combined for the years prior to amalgamation so that the units we analyze remain constant.

Our dataset contains amalgamation data for 1983–2021. Amalgamations outside this time frame are not taken into account. We drop five municipalities from our data set because they have been amalgamated more than twice during our research period. Fig. 1 shows the number of amalgamations that occur in each year in the 1983–2021 period.

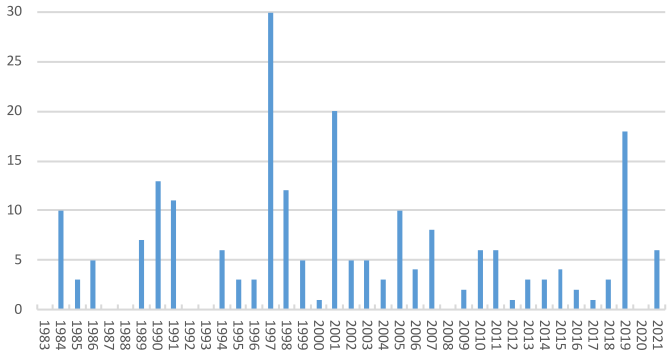

Fig. 1. Number of amalgamations in 1983–2021.

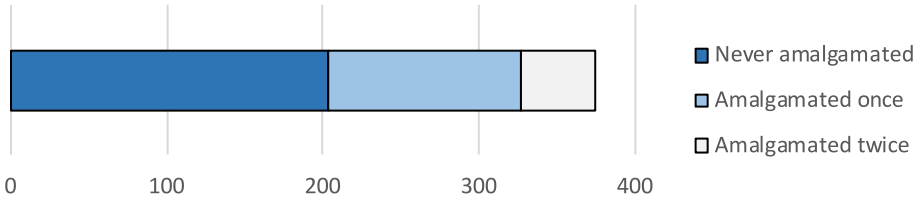

Fig. 2. Occurrence of amalgamations in dataset.

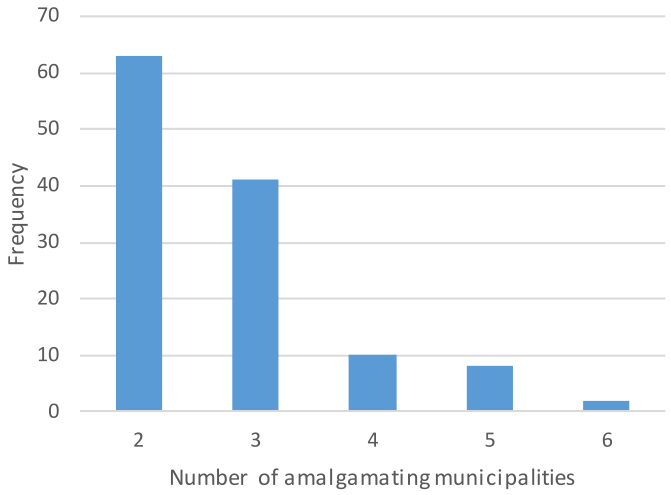

Fig. 3. Number of municipalities involved in each amalgamation (amalgamated once).

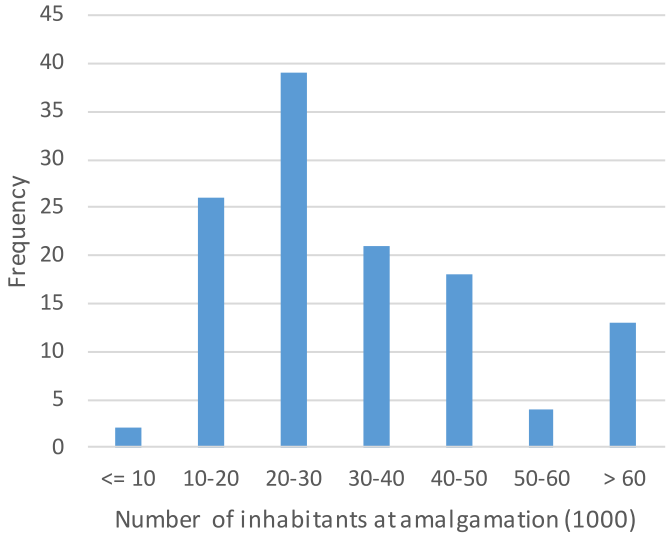

Fig. 4. Population size newly formed jurisdictions (amalgamated once).

Of the 375 municipalities left in our dataset, 203 never amalgamated in 1983–2021, 124 amalgamated once and 48 twice (Fig. 2).

For municipalities that amalgamated twice, serious complications arise when trying to define variables like time elapsed since amalgamation, number of jurisdictions involved, etc. To keep the analysis tractable, we excluded these jurisdictions from the analysis. However, in the online Appendix we show that including municipalities that amalgamated twice does not affect the outcome of our basic regressions.

To indicate whether a municipality existing in 2018 is the product of amalgamation, we use a dummy variable called 'Amalgamated', which is 0 before amalgamation and 1 after amalgamation. This variable may be viewed as an interaction of being amalgamated and being in the post-amalgamation period.

Fig. 3 shows that most amalgamations involved two or three municipalities. In two cases, six municipalities were included. To determine whether the number of jurisdictions involved in an amalgamation matters, we use a set of three dummy variables, indicating whether an amalgamation involves two, three, or more than three jurisdictions, respectively.

Fig. 4 breaks down amalgamations by population size group. Most amalgamations involve 10,000 to 30,000 inhabitants. To study whether an amalgamation in a certain size range affects turnout differently, we use three dummy variables. The first dummy indicates whether an amalgamation left the newly created jurisdiction below the threshold of 20,000 inhabitants (small to small). The second dummy indicates whether amalgamation involved a crossing of the threshold for the average participant (small to large), and the third whether the average participant in an amalgamation already had 20,000 inhabitants ex ante (large to large).

Finally, we investigate whether the existence of one dominant amalgamation partner matters for the effect of amalgamation on turnout. To this end we use a dummy variable, named Annexed, indicating whether more than 80 percent of all people involved lived in one of the amalgamating jurisdictions. The Merged dummy, on the other hand, indicates whether the largest jurisdiction had less than 80 percent of the total population. The control group for both dummies consists of the municipalities which were not amalgamated.

Table 2 shows how often different amalgamation characteristics coincide. Annexations often involve only two jurisdictions and are relatively frequent in jurisdictions that were already large, on average, before amalgamation. There is no obvious relationship between number of amalgamating jurisdictions and size range across which the amalgamation occurred. Table 3 summarizes the data in our panel.

7. Results

7.1. Basic model

Table 4 presents our first regression results. The independent variable of interest is the Amalgamated dummy. As control variables we include the natural logarithm of eligible voters and a dummy variable which takes the value 1 if a local referendum is held concurrently.

Panel A of Table 4 concerns municipal council elections. Column 1 shows basic OLS regressions including time fixed effects but no municipality fixed effects or controls. In Column 2 we add fixed effects, and in Column 3 we add control variables. In the full model (Column 3), amalgamation reduces voter turnout in municipal elections by 2.2 percentage points, significant at the 1 percent confidence level. This effect is roughly the same as reported in a policy paper addressed to the Dutch Parliament (CPB 2014) which used a similar specification.

Table 2
Occurrence of different amalgamation characteristics (amalgamated once).

	Total	Stayed below threshold of 20,000 inhabitants	Crossed threshold of 20,000 inhabitants	Stayed above threshold of 20,000 inhabitants	Annexed	Merged
Total	124	28	74	22	20	104
2 jurisdictions	63	18	28	17	15	48
3 jurisdictions	41	6	31	4	4	37
>3 jurisdictions	20	4	15	1	1	19
Annexed	20	4	5	11		
Merged	104	24	69	11		

Table 3
Descriptive statistics.

	Observations	Mean	Standard-deviation	Minimum	Maximum	Dummies: count value = 1
Municipal elections						
Voter turnout (%)	3084	64	10	42	95	
Amalgamated	3084	0.21	0.40	0	1	738
Amalgamation of 2 municipalities	3084	0.11	0.31	0	1	331
Amalgamation of 3 municipalities	3084	0.08	0.28	0	1	255
Amalgamation of 4 municipalities or more	3084	0.05	0.22	0	1	152
Amalgamated and stayed below threshold	3084	0.08	0.28	0	1	261
Amalgamated and crossed threshold	3084	0.12	0.32	0	1	359
Amalgamated and stayed above threshold	3084	0.04	0.19	0	1	118
Annexed	3084	0.04	0.20	0	1	147
Merged	3084	0.17	0.37	0	1	591
Eligible voters	3084	31,515	47,686	700	674,286	
Referendum dummy	3084	0.002	0.05	0	1	7
National elections						
Voter turnout (%)	3300	81	6	56	150	
Amalgamated	3300	0.27	0.43	0	1	980
Amalgamation of 2 municipalities	3300	0.13	0.34	0	1	438
Amalgamation of 3 municipalities	3300	0.10	0.30	0	1	342
Amalgamation of 4 municipalities or more	3300	0.06	0.24	0	1	200
Amalgamated and stayed below threshold	3300	0.10	0.30	0	1	327
Amalgamated and crossed threshold	3300	0.15	0.36	0	1	488
Amalgamated and stayed above threshold	3300	0.05	0.22	0	1	165
Annexed	3300	0.05	0.21	0	1	185
Merged	3300	0.22	0.40	0	1	795
Eligible voters	3300	30,858	44,626	742	585,340	
Referendum dummy	3300	0.003	0.06	0	1	11

Notes: Municipalities amalgamated twice in research period excluded. Turnout in national elections may exceed 100 percent, as voters may cast their vote in another than their own municipality. The maximum value in this table, 150 percent, is not a typo but refers to a small island municipality that attracts many tourists.

Table 4
Effect of amalgamation on voter turnout.

Model	(1)	(2)	(3)
Constant	Yes	Yes	Yes
Time fixed effects	Yes	Yes	Yes
Municipality fixed effects	No	Yes	Yes
Panel A Municipal elections			
Amalgamated	0.5	−2.2***	−2.2***
	(0.7)	(0.4)	(0.4)
Log eligible voters			−0.1
			(1.2)
Referendum dummy			5.6***
			(0.7)
Observations	2795	2795	2795
R-squared	0.46	0.87	0.87
Panel B National elections			
Amalgamated	−0.1	−0.7***	−0.7***
	(0.5)	(0.2)	(0.2)
Log eligible voters			0.0
			(0.8)
Referendum dummy			0.0
			(0.4)
Observations	2939	2939	2939
R-squared	0.17	0.59	0.59

Robust clustered standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Dependent variable: voter turnout in percentages.

Adding fixed effects changes the estimate, but adding control variables does not, even though the dummy for concurrent referendums is highly significant. Recall that eligible voters concerns municipalities as they exist in 2018, so changes in this variable reflect demographic growth, not amalgamations. We will include both control variables in the regressions reported in other tables, but no longer report their coefficients.

Panel B of Table 4 shows our results for national (parliamentary) elections. The effect of amalgamation on turnout is lower here, but still very significant. Amalgamation lowers turnout by 0.7 percentage points.

The negative effect of amalgamation on voter turnout we find here, for both municipal and national elections, is consistent with all theories of voter behavior we discussed above except two. First, it is not consistent with the hypothesis, derived from the theory of instrumental voting, that increased municipal efficacy after amalgamating would make voting in municipal elections more worthwhile. Second, it is inconsistent with the prediction that an increase in preference heterogeneity due to amalgamation would lead to higher turnout in local elections.

As a robustness check, we computed the share of negative DID weights in both regressions in Column 3 of Table 4, as suggested by De

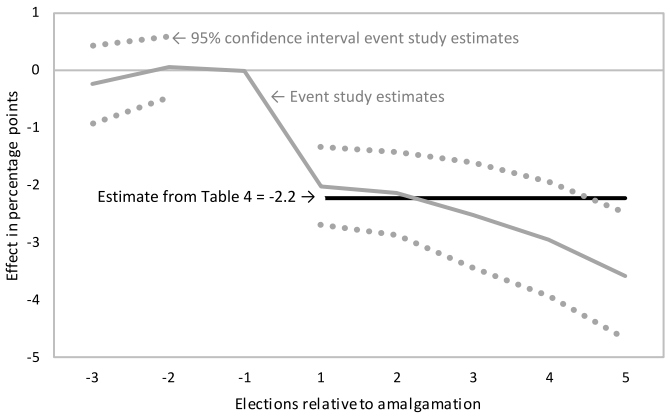

Fig. 5. Event-study and difference-in-difference estimates of the effect of amalgamation on voter turnout in municipal elections.
Event study estimates from a regression similar to that in Column C in Panel A of Table 4, with the Amalgamation dummy replaced by a set of dummies for the j-th election before or after amalgamation. Observations with $j < -3$ and observations with $j > 5$ are binned and not shown in the figure because they are unavailable for municipalities that merged early or late in our research period. They represent subsamples and may reflect level differences.

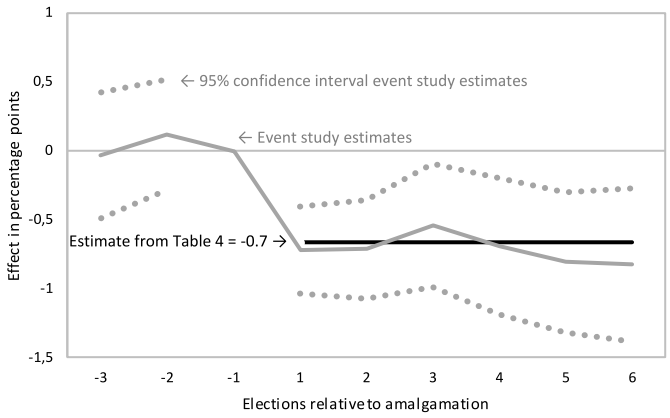

Fig. 6. Event-study and difference-in-difference estimates of the effect of amalgamation on voter turnout in national elections.
Event study estimates from a regression similar to that in Column C in Panel B of Table 4, with the Amalgamation dummy replaced by a set of dummies for the j-th election before or after amalgamation. Observations with $j < -3$ and observations with $j > 6$ are binned and not shown in the figure because they are unavailable for municipalities that merged early or late in our research period. They represent subsamples and may reflect level differences.

Chaisemartin and D'Haultfoeuille (2020). We conclude that our results have causal interpretation even though treatment effects are not homogenous.[1]

7.2. Time variation in treatment effects

Fig. 5 presents event study estimates of the effect of amalgamation on voter turnout in local elections, and compares these with the estimate in Table 4, Column 3. The event study estimates are based on a regression where the Amalgamation dummy has been replaced by a set of dummies for the j-th election before or after amalgamation. The omitted category is −1, the last election before amalgamation. The figure shows no pre-amalgamation trend, and a drop in turnout after amalgamation. The amalgamation effect increases over time. The difference-in-difference estimate from Table 4 may somewhat underestimate the average treatment effect, which is shown as a straight black line. However, the confidence intervals overlap.

Fig. 6 plots event study estimates for national elections. Again, we see no pre-amalgamation trend, and a drop in turnout after amalgamation. The post-amalgamation effect does not vary much, and the DID estimate reflects the average post-treatment effect well.

Figs. 5 and 6 show that amalgamation reduces turnout permanently, both in municipal and in national elections. Remarkably, even after five elections, i.e., when a new generation of voters has emerged, amalgamation still dampens voter turnout. Although the effect seems to gain strength in each post-amalgamation municipal (but not national) election, these differences are not statistically significant.

Thus, remarkably, we find no evidence of a transitional effect of amalgamation. Because theoretical expectations of a transitional effect all concern a reduction of voter turnout, there is little reason to believe that several bi-directional transitional effects occur and cancel each other out. If transitional effects do play a role here, then this implies that structural effects do not fully materialize yet immediately after amalgamation. However, the theories we describe above do not predict such a delayed effect. Another possibility is that transitional effects only play a role in (off-cycle) amalgamation elections which are excluded here, and that these effects have already disappeared in the first regular elections after amalgamation.

The outcome is consistent with the theory that amalgamation negatively affects social norms to vote in local and national elections, or the enforcement of those norms (Table 1). The effect in local elections may also partly be driven by an increase in political distance and a reduction of the power of an individual vote. This would explain why the effect is larger in local elections than in national elections.

7.3. Extended model including size increase

Municipal amalgamations are not uniform treatments. The effects may be different for amalgamations with different characteristics. We now turn to the question of whether the effect of amalgamation on voter

Table 5
Effects of amalgamation on voter turnout: size increase.

	Municipal elections		National elections	
	(1)	(2)	(3)	(4)
Amalgamation of 2 municipalities	−2.2***		−0.7***	
	(0.5)		(0.3)	
Amalgamation of 3 municipalities	−2.2***		−0.5*	
	(0.6)		(0.3)	
Amalgamation of 4 municipalities or more	−2.4***		−0.8*	
	(0.8)		(0.4)	
Amalgamated		−2.2**		−0.8
		(1.1)		(0.6)
Log average jurisdiction size		−0.0		0.1
		(1.1)		(0.6)
Observations	2795	2795	2939	2939
R-squared	0.87	0.87	0.59	0.59
p-value F-test on difference coefficients:				
2 versus 3 municipalities	0.94		0.42	
2 versus 4 municipalities or more	0.83		0.91	
3 versus 4 municipalities or more	0.88		0.51	

Note: OLS estimates. Robust clustered standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Dependent variable: Voter turnout (percent). Constant, time and municipality fixed effects and control variables included.

[1] For local elections, the share of negative weights is 5.7 percent, and negative weights add up to just −0.016. The standard deviation of the average treatment on the treated is 25.8. This means that our Amalgamation coefficient and the average treatment effect on amalgamated municipalities may have opposite signs only when treatment heterogeneity is implausibly large (De Chaisemartin and D'Haultfoeuille 2020). For national elections, the share of negative weights is 7.5 percent, they sum to −0.023 and the standard deviation of the average treatment on the treated is 6.5.

turnout depends on the resulting size increase. Amalgamation reduces the weight of an individual vote. Hence, if turnout depends on this weight (instrumental voting), we expect a higher drop in turnout when an amalgamation includes more municipalities.

Columns 1 and 3 of Table 5 show that the effect on voter turnout in both municipal and national elections does not depend on the number of amalgamating municipalities. This implies that it does not matter whether the average jurisdiction size increase caused by amalgamation is 100 percent, 200 percent or more. The same result is found when size is explicitly included in the regressions. Columns 2 and 4 of Table 5 report results of regressions in which the Amalgamation dummy is accompanied by a variable reflecting average jurisdiction size, defined as in Allers and Geertsema (2016). Before amalgamation, average jurisdiction size equals eligible voters in the merging municipalities divided by the number of merging municipalities (i.e., the average number of eligible voters before amalgamation). After amalgamation, it equals eligible voters. Next to the Amalgamation dummy, the coefficients of average jurisdiction size are close to zero and insignificant. Amalgamation already implies an average size increase of at least 100 percent. Whether jurisdiction size increases more than that does not seem to matter for voter turnout. This outcome does not support the hypothesis that voting is less likely as the weight of an individual vote diminishes.

7.4. Extended model including size range

Amalgamation may create a mismatch between jurisdiction size and community size. This could weaken the social norm to vote and increase political distance, undermining internal political efficacy. If these mechanisms are driving the effect of amalgamation on turnout, we would expect a stronger effect if amalgamating jurisdictions are small. We use three dummy variables indicating whether an amalgamation left the affected jurisdictions below the threshold of 20,000 inhabitants, whether it involved crossing this threshold for the average participant, and whether the average participant already had 20,000 inhabitants before amalgamation. Because the latter category contains relatively many annexations, which may impact turnout independently, we repeat the exercise leaving annexations out of the regressions.

Table 6 suggest that turnout is reduced significantly when jurisdiction size is small before amalgamation, but not otherwise. This holds for both local and national elections, and the result is not driven by the fact that our third category contains more annexations. This is consistent with the hypotheses that the effect of amalgamation on local turnout is driven by a weakening of social norms or an increase in political distance. The effect on national turnout is consistent with our hypothesis that amalgamation weakens the social norm to vote.

Table 6
Effects of amalgamation on voter turnout: size range.

	Municipal elections		National elections	
	All observations (1)	Annexations excluded (2)	All observations (3)	Annexations excluded (4)
Amalgamated and stayed below size threshold	−3.5*** (0.6)	−3.5*** (0.6)	−1.6*** (0.4)	−1.6*** (0.4)
Amalgamated and crossed size threshold	−2.5*** (0.4)	−2.4*** (0.5)	−0.7*** (0.2)	−0.7*** (0.2)
Amalgamated and stayed above size threshold	0.1 (0.7)	−0.2 (0.9)	0.3 (0.4)	0.2 (0.3)
Observations	2795	2632	2939	2759
R-squared	0.87	0.87	0.59	0.58
p-value F-test on difference coefficients:				
Below threshold versus crossed threshold	0.16	0.13	0.04**	0.03**
Below threshold versus above threshold	0.00***	0.00***	0.00***	0.00***
Crossed threshold versus above threshold	0.00***	0.02**	0.03**	0.00***

Note: OLS estimates. Robust clustered standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Dependent variable: Voter turnout (percent). Constant, time and municipality fixed effects and control variables included.

7.5. Extended model including inequality of municipal size

In a final extension, we investigate whether the effect of amalgamation on voter turnout depends on differences in size among amalgamating municipalities. We use two separate amalgamation dummies, one indicating an annexation and the other a merger. Annexations are amalgamations where more than 80 percent of the population lives in just one of the participating jurisdictions. All other amalgamations are mergers. As a robustness test, we also show regressions with a cut-off point of 85 instead of 80 percent.

Table 7 suggests that mergers reduce turnout more than annexations, but the difference is only statistically significant in municipal elections. Annexations may affect a minority of the population particularly strongly, but they leave a large majority of inhabitants relatively unaffected. This may explain why we do not find significant coefficients there.

7.6. Robustness

The tables above report outcomes from different models. We ran regressions with and without fixed effects and control variables in our basic models. We used different variables to capture both amalgamation and size increase in our extended models. We checked whether treatment effect heterogeneity might compromise our estimates. In the online Appendix, we show that our results are not driven by excluding municipalities that were amalgamated twice. The results are robust.

8. Conclusions

Our main result is that local jurisdiction size increase causes a

Table 7
Effect of amalgamation on voter turnout: annexations versus mergers.

	Municipal elections Cut-off at 80%	Municipal elections Cut-off at 85%	National elections Cut-off at 80%	National elections Cut-off at 85%
	(1)	(2)	(3)	(4)
Annexed	−0.3 (0.9)	−0.2 (1.0)	0.2 (0.5)	0.1 (0.6)
Merged	−2.5*** (0.4)	−2.5*** (0.4)	−0.8*** (0.2)	−0.8*** (0.2)
Observations	2795	2795	2939	2939
R-squared	0.87	0.87	0.59	0.59
p-value F-test on difference coefficients	0.02**	0.03**	0.07	0.19

Note: OLS estimates. Robust clustered standard errors in parentheses. ***p < 0.01, **p < 0.05, *p < 0.1. Dependent variable: Voter turnout (percent). Constant, time fixed effects, municipality fixed effects and control variables included.

reduction in voter turnout in both local and national elections in the Netherlands. This result is based on an analysis of the effects of municipal amalgamation, a source of exogenous variation in jurisdiction size. Apart from this size effect, which is permanent, we find no evidence that the process of amalgamation in itself also temporarily reduces voter turnout in municipal or national elections. Consequently, theories that predict effects on voter turnout due to disaffection with politics, information costs, loss of identity or disrupted party organizations are not supported by our results.

The latter outcome seems to contradict the results of Horiuchi et al. (2015) that municipal amalgamations in Japan reduce voter turnout in national elections by disrupting party organization at the local level. The difference in outcomes might be explained by the fact that, unlike in Japan, clientelism is not a common characteristic of Dutch politics. In political systems with little clientelism, social norms may be more important than party organizations to maintain voter turnout.

The size effects we find are substantial. Amalgamation reduces local turnout by 2.2 percentage points and national turnout by 0.7 percentage points. In 2018, average turnout in local elections was 55 percent. This implies a 4 percent turnout reduction after amalgamation. This effect remains even after five elections. To put this in perspective: voter turnout in municipal elections dropped by 7 percentage points between 1990 and 2018. As 43 percent of all eligible voters have been subjected to municipal amalgamations since 1983, one tenth (0.43 * 2/7) of the drop in turnout may have been caused by increases in municipal size.

The permanent decrease in municipal voter turnout we find is consistent with three possible explanations listed in Table 1: reduced influence of an individual vote, increased political distance and weaker social norms favoring voting (or weaker norm enforcement). To shed more light on the mechanisms at work, we did several additional analyses.

First we tested whether the magnitude of the size increases matters. Because the influence of an individual vote decreases with the population increase of the jurisdiction, we would expect such an effect to be stronger when the size increase caused by an amalgamation is bigger. However, this is not what we find: the magnitude of the size increase does not matter. Thus, we find no evidence for instrumental voting theory.

Secondly, if political distance or social norms would be driving the effect of amalgamation on turnout, we would expect this effect to be stronger if amalgamations concern small jurisdictions. This is indeed what we find. Consequently, we believe that these mechanisms, and not a weakening of the power of a vote, explain why size increase reduces voter turnout in local elections.

In *national* elections, we find that municipal amalgamations have a small but significant negative effect on turnout. The coefficient hardly changes over time, so this effect, about 0.7 percentage points, is also structural. Among those listed in Table 1, the only theory that may explain this finding is that social norms favoring voting are weaker, or weaker enforced, in larger municipalities. The case for this explanation is strengthened by the outcome that turnout in national elections is reduced only in amalgamations of small municipalities.

Our results provide no evidence for theories that predict that jurisdiction scale enlargement has a positive influence on voter turnout, because of greater preference heterogeneity or municipal efficacy. However, we cannot rule out that these mechanisms do play a role and that the negative effect of amalgamation on voter turnout would have been larger in their absence.

Our study confirms the emerging consensus in the literature that increases in jurisdiction size reduce voter turnout. However, most previous work is limited to studying first elections after amalgamation, which makes it difficult to disentangle structural effects of size increase from any transitionary effects that may be caused by the amalgamation process. Future studies might want to take this into account. More studies including several government tiers would also be useful, as would more work on the driving forces behind the effect of jurisdiction size on turnout. Another interesting avenue for future research would be a study of size reductions, i.e., the splitting of jurisdictions in smaller units. This could answer the question of whether the effects of size increases mirror those of size reductions, or whether asymmetries exist in these effects.

Our results have important policy implications. By partly identifying which mechanisms may be responsible, we provide pointers for policy makers who would like to reduce the negative effects of amalgamation on voter turnout. First, social norms supportive of voting should be preserved, as this may protect turnout in both local and national elections. To safeguard turnout in local elections, an increase in the perceived distance between voters and politics as a result from amalgamation should be avoided. Amalgamations should make sense not only economically or administratively, but also from a social perspective. After an amalgamation, efforts should be made to involve inhabitants in local politics.

However, it is uncertain to what extent the negative effects of amalgamation on turnout can be mitigated. Therefore, more fundamental questions should be raised. Municipal amalgamation is often undertaken with the goal of improving the efficiency or efficacy of local governments through scale increases. Even if this goal can be reached through amalgamation, which recent research suggests it does not (Allers and Geertsema 2016; Bel and Warner 2016; Blom-Hansen et al., 2016), is it really worth the cost in terms of democracy? Another reason to amalgamate is to enable municipalities to execute newly decentralized tasks. Decentralization is often motivated by a desire to better tailor public services to local needs and preferences. But if decentralization is followed by size increase, which in turn weakens local democracy, would this policy not backfire? Decisions about both decentralization and amalgamation should take a possible weakening of democracy into account. It seems that, when it comes to local governance, small really is beautiful.

Data availability

Data will be made available on request.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.electstud.2021.102284.

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