ARTICLE

OPEN

Check for updates

Does local democratization improve societal outcomes? Effects of mayoral direct elections in Indonesia

Yasmin Lurusati [1✉] & René Torenvlied[1]

Local democratization aims to improve the decentralized capacity of governance regimes to generate meaningful municipal spending geared towards realizing societal outcomes. In the late 1990s, following the Asian financial crisis, Indonesia initiated a significant institutional transition from centralistic and authoritarian rule towards decentralized and more democratic governance through the introduction of direct mayoral elections. Extant research analyzed the effects of the introduction of these elections on local public spending and local societal outcomes separately. This paper offers an integrated analysis of the impact of the introduction of direct mayoral elections on both local public spending and local societal outcomes in 456 Indonesian municipalities between 2002 and 2012. Analyses of growth models, using panel data on three domains (education, health, and infrastructure) provided by Indonesian Ministry of Finance, Indonesian Ministry of Home Affairs, and Statistics Indonesia, show that the introduction of direct mayoral elections in Indonesia resulted in an increased growth in educational expenditures. It also improved outcomes in health and infrastructure domains. However, the introduction of direct mayoral elections reversed a positive association between public spending and the attainment of societal outcomes or worsened a negative association between them. These results would support a view on local democratization in Indonesia asserting that the introduction of direct mayoral elections stimulated local clientelist practices rather than local accountability and policy responsiveness.

[1] Department of Public Administration, University of Twente, Enschede, The Netherlands. ✉email: y.lurusati@utwente.nl

Introduction

The study of democratic transitions analyzes how governments develop pathways of democratization and how these pathways affect public spending and societal outcomes. Ultimately, transitions in developing countries' governance systems aim to foster (stepwise) growth in the attainment of basic human needs, such as lowering infant mortality rates, increasing literacy rates, providing better access to safe sanitation, or increasing school attendance rates. This is a challenging proposition, given weaknesses in the institutional capacities of transitioning countries, materializing in a lack of resources, and poor management. Leadership is often corrupt, pledges for reforms are weakened by political frictions and civil liberties may be disenfranchised (Persson et al., 2013; Grindle, 2004; Filmer et al., 2000).

The democratization of local governance systems is often seen as a key element of reforms in transitioning countries (Alderman, 2002; Faguet, 2004, 2014). Local democratization aims to improve the responsiveness of local decision makers to their constituents (e.g., Besley et al., 2005; Galasso and Ravallion, 2005; Costa-Font and Pons-Novell, 2007). Only few studies reported effects of local democratization in transitioning countries. For example, in Bolivia local public spending on education, health, and sanitation shifted towards smaller and poorer districts (Faguet, 2004). In Albania, poverty rates reduced after local democratization (Alderman, 2002). In Bangladesh nutrition improved (Galasso and Ravallion, 2005).

One key reform is the introduction of local elections. However, empirical evidence on the impact of local elections in transitioning countries is even more scarce. Most empirical studies focus on developed countries, primarily the U.S. (Fry and Winters, 1970; Peterson, 1981; Plotnick and Winters, 1985) and Western Europe (e.g., Denters, 1993; Solé-Ollé, 2006). An exception is the introduction of mayoral elections in Mexican municipalities (Moreno-Jaimes, 2007; Cleary, 2007).

The other exception is a growing body of research examining how the introduction of direct mayoral elections affected local public spending and societal outcomes in Indonesia. Skoufias et al. (2011) report that non-incumbent mayors in municipalities outside Java and Bali increased local public spending in the domains of health and education. Lewis and Hendrawan (2019) report that mayors who were supported by majority coalitions in local houses of representatives reallocated more than 50 percent of healthcare spending in the first and second year of office. Kis-Katos and Sjahrir (2017), however, report that after the introduction of directly elected mayors local public budgets became constrained to such extent that local public spending effectively decreased. Lewis et al. (2020) analyzed differences between the terms of elected mayors. They report that second-term mayors spent less on education and health and more on infrastructure. For societal outcomes, they found no differences between first- and second-term mayors.

Some further studies point at persistent clientelist and patronage-based practices that remained in Indonesia after the introduction of mayoral direct elections (Nordholt and van Klinken, 2007; Simandjuntak, 2012; van Klinken et al., 2009). The new decentralization of powers and the creation of local democratic checks and balances shifted the level playing field of clientelism, transferring rent-seeking behaviors from the era of the authoritarian Soeharto regime into the era of democratic transitions (Rinaldi et al., 2007; Berenschot, 2018). Lewis (2019), for example, reports that elected mayors who were backed by a pre-electoral coalition reimbursed their supporters by raising funds, unlawfully, from local budgets, which they redistributed to their pre-electoral coalition. Such a redistribution materialized in increased spending on infrastructure, especially during their last 2 years in office (Lewis and Hendrawan, 2019).

In the present paper, we study the impact of the introduction of direct (mayoral) elections in the local governance system of Indonesia. Local democratization in Indonesia provides an ideal ground to test whether the introduction of electoral incentives in the governance systems of emergent democracies promotes effective public spending and the attainment of basic human needs. After the collapse of the authoritarian regime of Soeharto, in 1998, Indonesia adopted radical transformations in its political-administrative system of governance. Since 1966, Indonesia had a highly centralized political-administrative system, with mayors appointed by the president. Radical legislation on decentralization, adopted in 2001, transferred this authority to the level of municipalities. An introduction of indirect elections of mayors by municipal house of representatives was replaced, in 2005, with a system of direct mayoral elections by local citizens. These unprecedented reforms of the governance system transformed Indonesia, at least institutionally, from one of the most centralized-authoritarian countries to one of the most decentralized, democratic governance systems.

We aim to contribute to extant research on effects of local democratization, in two important ways. In the first place, while extant research studies the impact of local executive elections on public spending (Kis-Katos and Sjahrir, 2017; Skoufias et al., 2011; Lewis and Hendrawan, 2019) and the attainment of societal outcomes (e.g., Lewis et al., 2020) separately, we aim to provide an integrated analysis of public spending and the attainment of societal outcomes in Indonesian municipalities after the introduction of elected mayors. Such integrated analysis informs us how local democratization impacts the quality of local governance in its capacity to generate municipal spending to realize outputs, such as schooling or public health (Fukuyama, 2013).

In the second place, we study the impact of local executive elections, as a form of local democratization, on local public spending and the attainment of societal outcomes in the transitioning country of Indonesia. Local elections are assumed to act as an important mechanism to mitigate local elite capture (Martinez-Bravo et al., 2011) and discourage patronage practices (Seabright, 1996; Rose-Ackerman, 1999). However, studies report that clientelist and patronage-based practices persisted in Indonesia after the introduction of mayoral direct elections (e.g., Nordholt and van Klinken, 2007; Simandjuntak, 2012; van Klinken, 2009). The design of our analysis allows us to study the impact of direct elections on the association between public spending and societal outcomes. This association can be weakened by persistent practices of clientelism.

Theoretical background

Direct elections, public spending, and societal outcomes. Democratic transitions aim to mark an institutional break with a past governance regime. Most prominent is the introduction of competitive elections between prospective office holders (e.g., Acemoglu and Robinson, 2001; Epstein et al., 2006; Przeworski and Limongi, 1997). Direct elections allow citizens to exercise control over their political leaders. Citizens can shape the societal outcomes of governance systems through a better representation of societal preferences for public spending (e.g., Meltzer and Richard, 1981; Acemoglu and Robinson, 2005).

Direct elections in governance systems are expected to serve two main purposes. In the first place, direct elections are assumed to make political leaders more accountable, which would lead to an increase (of growth) in public expenditures. This hypothesis is supported by considerable empirical evidence. Public expenditures increased during the nineteenth-century democratization processes in Britain and France (Acemoglu and Robinson, 2000),

as well as during democratization in Latin America after 1980 (Brown and Hunter, 2004; Avelino et al., 2005) and during the transitioning of 44 African countries between 1980 and 1996 (Stasavage, 2005).

As discussed above, a first main effect of democratization can be found in public spending. The budgetary consequences of democratization were already specified by Tocqueville: "In democracies, where the sovereign power belongs to the needy, only an increase of its prosperity will win that master's goodwill; rarely can this be done without money" ([1840] 1969, 211). Meltzer and Richard (1981)—whose work influenced many scholars (e.g., Boix, 2003; Acemoglu and Robinson, 2005)—argue that democratization promotes the re-distribution of income due to prospective office holders' vote maximization (Downs, 1957). Elections make political leaders more accountable for public spending (Mcguire, 2006; Brown and Hunter, 2004; Kaufman and Segura-Ubiergo, 2001). The electoral mechanism in democratic governance systems (Lake and Baum, 2001) leads to the production of more public goods that benefit a larger number of potential electorates than do autocracies (Bueno de Mesquita et al., 2003; Ghobarah et al., 2004).

The first hypothesis specifies the implications of our theoretical arguments for understanding the effects of local democratization in terms of growth in local public spending:

> **Hypothesis 1:** The growth rate in public spending is larger after the introduction of direct elections of mayors than before.

In the second place, the introduction of direct elections in governance systems are assumed to make political leaders more responsive to citizen needs. This responsiveness would lead to an improvement of societal outcomes. Empirical studies on democratization and the attainment of societal outcomes in national governance systems report mixed results. Dasgupta (1993), for example, reports that living standards improved in 51 countries that transitioned into democracies between 1970 and 1980. An example is the drop in infant mortality to five deaths per thousand in the transitioning countries (Lake and Baum, 2001). Studies report that political rights exercised in democratic governance systems are correlated with lower infant mortality (Przeworski et al., 2000; Zweifel and Navia, 2000). Ross (2006), however, reports that infant and child mortality in 44 countries that transitioned into democracies between 1970 and 1999 remained unaffected. Thus, a second main effect of democratization is to be found in the attainment of societal outcomes:

> **Hypothesis 2:** The growth rate in the attainment of societal outcomes in Indonesian municipalities is larger after the introduction of direct elections than before.

Direct-competitive elections and political budget cycle. Rational opportunistic models of political budget cycles (PBC-models) build on the assumption that politicians who run a government office, will use public spending to attract voters in direct-competitive elections (Cukierman and Meltzer, 1986; Rogoff and Sibert, 1988; Rogoff, 1990). Studies in the field of political budget cycles report that in transitioning democracies, such opportunistic behavior is relatively more prevalent (Brender, 2003; Brender and Drazen, 2005; Shi and Svensson, 2006). While transitioning, South Korea increased public expenditure in correspondence with the electoral calendar (Kwon, 2005). In India, electoral competition positively affected education expenditures (Saéz and Sinha, 2009). A study of political budget cycle in Indonesia for the period between 2001 and 2009 concludes that miscellaneous local expenditures increased when incumbent mayors ran for re-election (Sjahrir et al., 2013). For the period between 2011 and 2017, Wiguna and Khoirunurrofik (2021) report that period, local spending increases for all categories when nearing local mayoral elections.

The development of local clientelist practices after mayoral direct elections in Indonesia. Several studies conclude that after the introduction of direct elections of mayors in municipalities clientelist practices emerged (Nordholt and van Klinken, 2007; Simandjuntak, 2012; van Klinken, 2009). The first wave of democratically elected mayors was essentially captured by predatory local elites (Robison and Hadiz, 2004). The various national laws that were adopted since 1998 stated that mayoral candidates must obtain the support from at least 20 percent of the seats in their local house of representatives. The unintended effect of this formal requirement was that many mayoral candidates actually bought themselves into their candidacy, making pledges and debts to local political coalitions. It was very seldom that candidates emerged from the circle of a political party's rising stars (Berenschot, 2018; Aspinall et al., 2017).

During the Soeharto Era, the central government controlled all resources and administrative capacity of local political parties. This condition was passed on to the Reformation Era, maintaining the inability of local political parties to launch professional and transparent election campaigns (Berenschot, 2018). To compensate, mayoral candidates built their political campaign teams by connecting themselves to a network of oligarchs and lobbyists (Berenschot and Aspinall, 2019). An industry of political consultants and media advertisements, supporting and promoting mayoral candidates, had to be funded by the mayoral candidates themselves. The additional "requirements" for party support resulted in further monetary pressures on mayoral candidates from the party system, stimulating a practice of local vote-buying (Berenschot, 2018). The high costs of mayoral campaigns, thus, reinforced oligarchic tendencies in Indonesian local politics, which materialized in intense clientelist relations between mayors and businessmen (Aspinall et al., 2017; Berenschot, 2018; Berenschot and Aspinall, 2019).

Below we specify hypotheses based on the discussion above. The democratization of governance institutions is found to stimulate (economic) growth: either directly (Colagrossi et al., 2020) or indirectly through the provision of public health and education (Baum and Lake, 2003). Democratization also indirectly affects (economic) growth through societal outcomes, such as fertility rates (Przeworski et al., 2000) or levels of education (Gründler and Krieger, 2016). Barro (1996) reports a curvilinear effect of democratization on (economic) growth, being strongest at relatively low levels of democratization. Whereas a common approach is to analyze differences in the level of public spending and societal outcomes before and after the introduction of elections, a growth perspective provides a more appropriate analysis of improvement. This approach informs us about the benefits of "good enough governance" (Grindle, 2004) by revealing impacts of (local) democratization over time (Colagrossi et al., 2020; Gründler and Krieger, 2016; Baum and Lake, 2003).

A third main effect of local democratization is found in the association between public spending and the attainment of societal outcomes. To explain this association, we specify two competing hypotheses. Hypothesis 3a is based on the mechanism that direct mayoral elections increase capacity at the local governance level to generate meaningful outcomes based on public spending. Thus, we expect that under directly elected mayors returns on public investments with regard to societal outcomes are higher than under indirectly elected mayors:

Hypothesis 3a: The positive association between public spending and societal outcomes in Indonesian municipalities is stronger after the introduction of direct elections of mayors than before.

In contrast to hypothesis 3a, we specify a competing hypothesis 3b based on the mechanism of the political budget cycle, driven by competitive elections. Public spending will increase after the introduction of direct mayoral elections in Indonesia because of their need to attract voters (Sjahrir et al., 2013; Wiguna and Khoirunurrofik, 2021). Clientelist practices that emerged after the introduction of mayoral direct elections in Indonesia (e.g., Nordholt and van Klinken, 2007; Simandjuntak, 2012; van Klinken, 2009; Berenschot and Aspinall, 2019) will further weaken the association between public spending and the attainment of societal outcomes:

Hypothesis 3b: The positive association between public spending and societal outcomes in Indonesian municipalities is weaker after the introduction of direct elections of mayors than before that can be due to the likelihood of mayoral clientelist practices.

Data, estimation model, and variables

Data. To empirically test our hypotheses, we use the Regional Finance Information System (*Sistem Informasi Keuangan Daerah* (*SIKD*)) from Indonesian Ministry of Finance and Statistics Indonesia (*Badan Pusat Statistik*) dataset. The dataset includes information about local public spending and societal outcomes in different policy domains by 456 municipalities in Indonesia between 2002 and 2012. We selected the domains of education, health, and infrastructure because these domains: (1) are under municipal government autonomy; (2) have meaningful societal outcomes; (3) rank top-three in terms of public spending; (4) reflect domains that allow for flexibility in public investment rather than a re-allocation of (fixed) budgets—thus capturing real disbursements autonomously spent by municipalities.

We extended *the SIKD* and *BPS* datasets with information, for each municipality, about the introduction year of elected mayors. That information was drawn from a dataset provided by the Indonesian Ministry of Home Affairs. The transition period introducing direct mayoral elections took about five years: many municipal administrations still had to wait for the five-year end-of-term of the mayor when direct elections were introduced in 2005. Hence, there was a period in which some Indonesian municipalities had an appointed mayor and others had a mayor elected by the local council; a period in which some Indonesian municipalities had a mayor elected by the local council and others had a mayor directly elected by citizens; and a period in which all Indonesian municipalities had a directly elected mayor. In our analysis we only distinguish between the period before and after a municipality had a directly elected mayor. According to the data from the Ministry of Home Affairs, in 2005, 187 out of 384 municipalities had a mayor directly elected by citizens (48.7 percent). In 2009, this number grew to 403 out of 418 municipalities (96.4 percent). As of 2011, all municipalities had a directly elected mayor.

The panel dataset contains data for 464 municipalities over 10 years (2002-2012) with 5104 observations in total. For our analyses, we have data available for 456 Indonesian municipalities. The dataset is unbalanced due to the fact that municipalities split during the transition period. From the dataset we excluded the national capital city, Jakarta, because its governance structure is much different from all other Indonesian municipalities. We included as many data points as possible and used a method of analysis that corrects for imbalanced data (see below).

Models and robustness checks. We employed a two-step regression approach following Baum and Lake (2003). In a first step we focused on public spending as the dependent variable. In a second step we took societal outcomes as our dependent variable. The approach is recursive in the sense that the dependent variable public spending from the first step is used as an independent variable in the second step to explain societal outcomes. We have nested the cases within municipalities over time, to retain as many observations as possible over time and allow for estimating growth in the dependent variables within municipalities.

To estimate growth in public spending and societal outcomes we used a standard compound interest formula. The equations below generally describe the underlying growth model, where Y is the dependent variable, t stands for time, i stands for municipality, α is the intercept, β is the slope, r is the rate of growth, and u_{it} is the error term.[1] We created a variable TIME, with values between 1 and 11 for each year observed for the growth models.

$$Y_{it} = Y_{it0}(1 + r)^t \Leftrightarrow \ln Y_{it} = \ln Y_{it0} + t \ln(1 + r) \qquad (1)$$

$$\text{When } \alpha = \ln Y_{it0}; \beta = \ln(1 + r) \qquad (2)$$

$$\text{Then } \ln Y_{it} = \alpha + \beta t + u_{it} \qquad (3)$$

For the rate of growth over time, we anti-log the estimator:

$$\beta = \ln(1 + r) \Leftrightarrow e^{\beta} = e^{\ln(1+r)} \Leftrightarrow r = \left(e^{\beta} - 1\right) \qquad (4)$$

In the estimation we applied a municipality fixed-effects models with Driscoll–Kraay standard errors (we used the Stata routine "xtscc" with the option "fe" to include dummy variables for all municipalities). We chose for this model after conducting Chow tests and Hausman tests which consistently indicated that a fixed-effects model outperformed ordinary least squares and random-effects models.

The use of fixed effects allows us to explore the relationship between the independent and dependent variables within each municipality. The underlying assumption is that each municipality possesses unique characteristics that may influence or bias the dependent variables. By incorporating municipality fixed effects, we are able to control for these time-invariant characteristics. An additional assumption is that municipality-specific, time-invariant characteristics should not be correlated with other municipality characteristics. This assumption is the rationale behind conducting the Hausman test. We should bear in mind that fixed effect models may underestimate the significance of variables that do not change much or change only slowly. Hence, the reported significance of estimates for slowly changing variables is on the conservative side.[2]

We checked for heteroskedasticity, potential autocorrelation and cross-sectional dependences. The Driscoll-Kraay standard errors, employed in the Stata routine using the option "xtscc", are suitable for both balanced and unbalanced panels and can handle missing values (Hoechle, 2007, p. 286). The reason is that in "xtscc" the number of cases is allowed to vary with time. They are robust for cross-sectional and temporal dependence, heteroskedasticity, and auto-correlation, up to some lag (Driscoll and Kraay, 1998; Hoechle, 2007). We checked for alternative growth models (quadratic or cubic effects of TIME), which generally produced qualitatively similar results. We should be cautious about estimation problems in nonlinear models because when the variable TIME is included often this may result in an inflation of variances and an increase in standard errors. We also checked whether relative expenditures (as a fraction of total expenditures) made a difference. Although the estimates differ, qualitatively we observe quite similar effects.

Dependent variables. In the first step, we analyzed dependent variables on public spending in three local domains: education, health, and infrastructure. We used real per capita municipal expenditures on education (EDU), on health (HEALTH), and on infrastructure (INFRA). The three municipal public spending variables in the original dataset are in nominal value (rupiah). We transformed these nominal values into real (future value) expenditures per capita by indexing the value according to the consumer price index base year 2010 and dividing it by the municipal population for the respective year. The real per capita expenditures were log-transformed for the growth model analysis.

In the second step, we analyzed several dependent variables on societal outcomes within the three local domains. For the local domain of education, we made use of three dependent variables: "Literacy rates" (LITERACY), "Primary school attendance rates" (PRIMARY), and "Junior high school attendance rates" (JUNIOR). For the local domain of health, we included two dependent variables: "Morbidity rates" (MORBIDITY) and "Birth attended by skilled health workers in percentage of total birth" (BIRTH). For the domain of infrastructure, we included one interpretable dependent variable: "Household access to safe water in percentage of total household" (WATER). All the societal outcome variables were log-transformed for the growth model analysis.

Independent variables. We include two independent variables in the analyses: the introduction of direct-competitive mayoral elections, and the variable time. The variable direct elections of mayors (ELECTTYPE) was measured by a dummy variable for each year-municipality combination. A "1" indicates that during that particular year a directly elected mayor by the citizens held office in the municipality. A "0" indicates that during that particular year an appointed mayor by the president or indirectly elected mayor by the local council held office in the municipality. In a transitioning year, the municipality was coded as "1" if at any moment the elected mayor was introduced. As mentioned above, the variable TIME captures the years observed in the dataset for the growth models. In the growth model we interact ELECTTYPE with TIME to obtain an estimate for the *growth* effect of the introduction of elected mayors on the dependent variables.

Control variables. Three variables control for possibly confounding characteristics of the municipalities. These variables are area in square kilometers (AREA), population in number of people (POP) and poverty rate in percentage (POV). We follow Ladd ([1992](#)), Cleary ([2007](#)), and Ross ([2006](#)) who argue that the intensity of land use and the growth and composition of the population could influence government spending and the provision of public services. We checked for collinearity among these three variables and found that these variables are not highly correlated to each other. All control variables are log-transformed to control for skewness in their distribution. Although our models make use of municipalities fixed effects, there is still variation within each municipality over time, some of which is tapped by the control variables.[3]

Results
Introduction of direct mayoral elections and municipal public spending.
The first step of our analysis is to analyze the effects of the introduction of competitive-direct election of mayors on municipal expenditures in three domains: (a) Education, (b) Health, and (c) Infrastructure. Figure [1](#)a–c shows the linear growth in municipal expenditures by 456 Indonesian municipalities for three domains between 2002 and 2012. The horizontal axis represents time (2002–2012). The vertical axis represents real
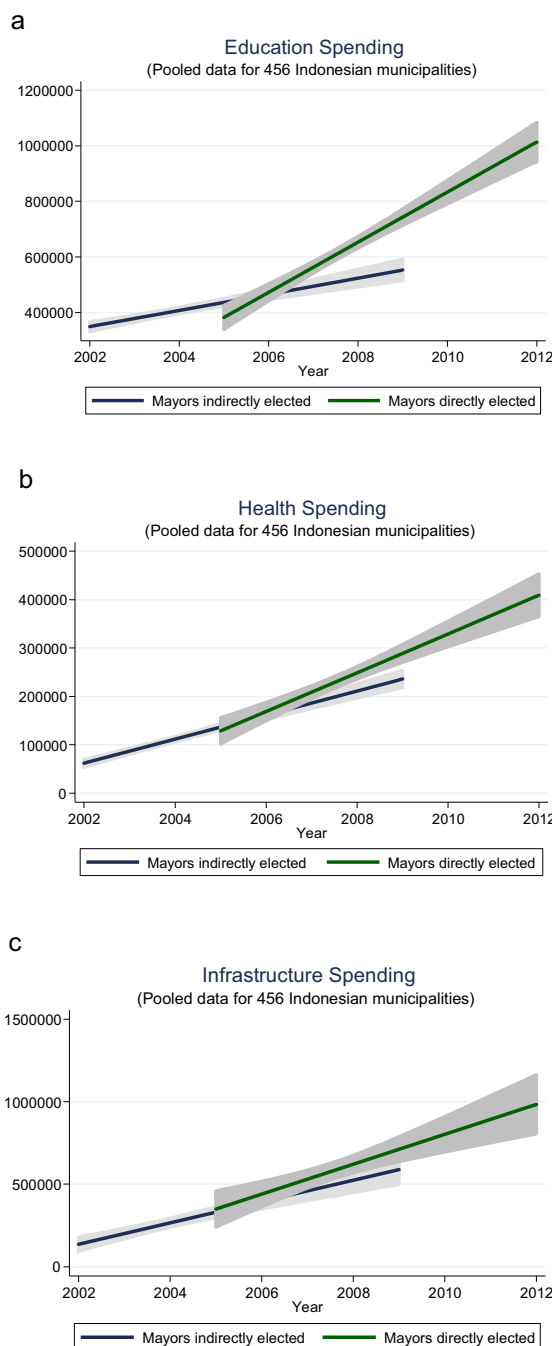
Fig. 1 Real per capita municipal spending in Indonesia: linear growth trends for 2002–2012. a Linear growth of education spending in real per capita (IDR). The blue line represents municipal spending on education under appointed or indirectly elected mayors, while the green line represents education spending under directly elected mayors. A steep trend line of municipal education spending was associated with directly elected mayors. **b** Linear growth of health spending in real per capita (IDR). The blue line represents municipal health spending under appointed or indirectly elected mayors, while the green line represents health spending under directly elected mayors. A slight increase in health spending was associated with directly elected mayors. **c** Linear growth of infrastructure spending in real per capita (IDR). The blue line represents municipal spending on infrastructure under appoined or indirectly elected mayors while the green line represents infrastructure spending under directly elected mayors. A slight increase in infrastructure spending was associated with directly elected mayors.

Table 1 Local expenditures on education, health, and infrastructure in Indonesia: linear growth regression models.

	Education spending		Health spending		Infrastructure spending	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Growth model						
TIME	0.059***	0.052***	0.149***	0.142***	0.108**	0.103**
	(0.004)	(0.004)	(0.013)	(0.016)	(0.043)	(0.046)
ELECTTYPE	−0.546***	−0.558***	−0.293	−0.312	−0.691*	−0.784*
	(0.036)	(0.036)	(0.180)	(0.192)	(0.371)	(0.379)
ELECTTIME	0.100***	0.104***	0.048	0.053	0.124	0.143*
	(0.006)	(0.006)	(0.036)	(0.039)	(0.077)	(0.078)
Controls						
AREA		−0.067		−0.033		−0.211
		(0.088)		(0.044)		(0.137)
POP		−0.381***		−0.527***		−0.378**
		(0.110)		(0.076)		(0.157)
POV		−0.053		−0.060		0.245
		(0.052)		(0.066)		(0.136)
Constant	12.614***	18.109***	10.940***	18.058***	11.577***	17.276***
	(0.019)	(1.238)	(0.029)	(0.808)	(0.123)	(1.589)
N (total)	3000	3000	2995	2995	2995	2995
N (municipality)	456	456	456	456	456	456
Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	0.259	0.275	0.630	0.653	0.207	0.220

Standard errors are in parenthesis.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

per capita municipal expenditures in the domains of Education, Health, and Infrastructure for the years under study.[4] As discussed in the methods section, we distinguish between two conditions: (1) municipalities under appointed or indirectly elected mayors, labelled as mayors indirectly elected and (2) municipalities under mayors, directly elected by citizens, labelled as mayors directly elected, applied to all figures. According to hypothesis 1 we expect under directly elected mayors an increase in the growth rate of public spending compared to the growth rate under appointed or indirectly elected mayors.

Figure 1a shows that a steeper trend line can only be observed for education spending. Education spending more than doubles under directly elected mayors in the period between 2005 and 2012. For health spending and infrastructure spending we observe only slightly increasing trends in the years under directly elected mayors; not as striking as for education spending (Fig. 1b, c).

The visual inspection of Fig. 1a–c does not inform us about the significance of the effect of the introduction of directly elected mayors on public spending. To statistically test hypothesis on public spending, we regressed the log of real per capita expenditures on the independent variables and control variables. We use the *log* of real per capita municipal expenditures in the statistical test because this is required in the growth model we specified above. Table 1 presents the results of the regression analyses for growth models without control variables (models a) and with control variables (models b) for the domains of education (EDU), health (HEALTH), and infrastructure (INFRA).

Table 1 shows the results of the regression analyses. In the model we include the variable TIME, which taps the linear growth rate in (the log of real per capita) municipal spending over the period of study (2002–2012). The coefficient for interaction variable ELECTTYPE is an estimator in our growth model for the *marginal* effect of the introduction of elected mayors on municipal spending at the year of introduction. Because our modifying variable ELECTTYPE is dichotomous, we cannot provide a marginal effects plot (Brambor et al., 2006). The stages of the model (from Model a to Model b to Model c) provide information about the effects of adding control variables and expenditure variables. Our main coefficient of interest is related to the variable ELECTTIME, which taps the change in growth rate of (the log of real per capita municipal) spending due to the introduction of competitive-elected mayors. According to hypothesis 1 this estimator should be positive and significant.

Models 1a and 1b in Table 1 show the results for spending in the domain of education. The significant positive effect of ELECTTIME implies that: the growth rate of municipal spending on education is significantly larger in the period of directly elected mayors than in the period before. This confirms hypothesis 1 in the domain of education.

Models 2a and 2b show the results for spending in the domain of health. For this domain, variable ELECTTIME has no significant effect. Hence, there is no significant change in municipal spending on health after the introduction of directly elected mayors in Indonesia. Finally, models 3a and 3b show the results for spending in the domain of infrastructure. For this domain the coefficient of ELECTTIME is only slightly significant ($p < 0.1$), indicating that the growth rate of infrastructure spending increased under directly elected mayors, but we cannot rule out the probability that this increase is due to chance. In conclusion, hypothesis 1 is firmly corroborated for public spending in the domain of education.

Introduction of direct mayoral elections and local societal outcomes. In the second step of our analysis, we test the second hypothesis about the direct effect of the introduction of elected mayors on growth in societal outcomes in the local domains of education, health, and infrastructure domains. In addition, the analyses also test the third hypotheses about the indirect effect of the introduction of mayors elected by citizens, through public spending. For each of the domains we first present a graphical representation of the development of societal outcomes over time. Subsequently, we present the results of the regression analyses.

Societal outcomes in the education domain. We start our analysis by presenting the development of societal outcomes in the
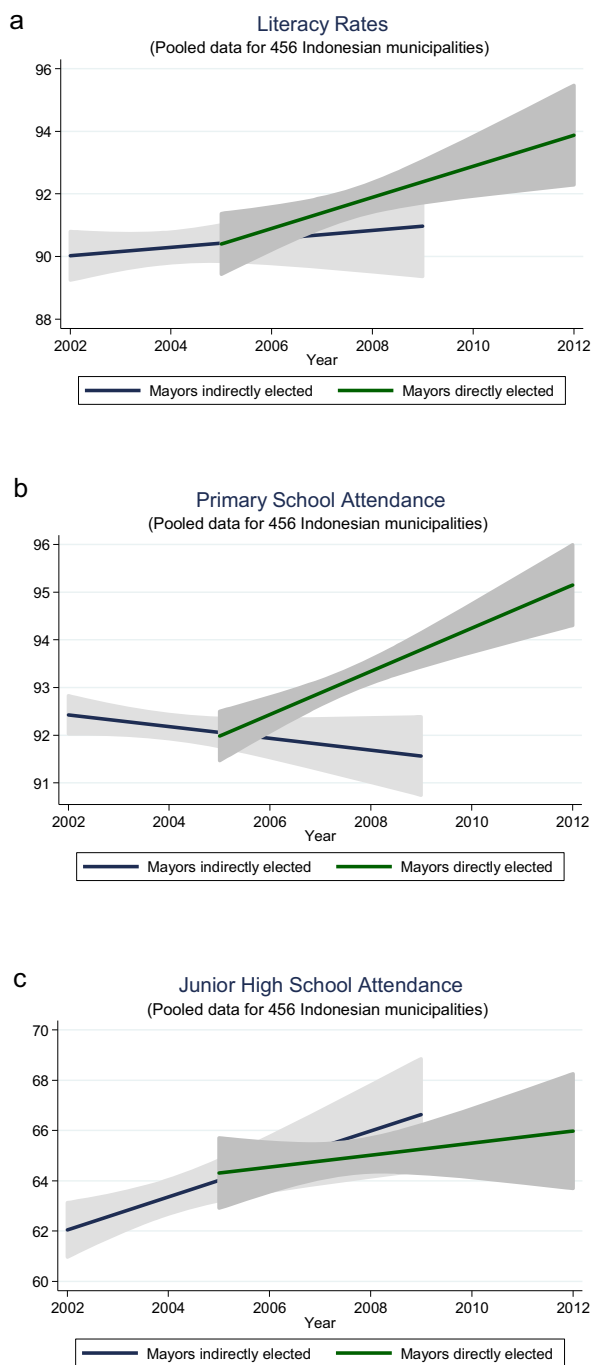
a Literacy Rates
(Pooled data for 456 Indonesian municipalities)

b Primary School Attendance
(Pooled data for 456 Indonesian municipalities)

c Junior High School Attendance
(Pooled data for 456 Indonesian municipalities)

Fig. 2 Local educational outcomes in Indonesia: linear growth trends for 2002–2012. a Linear growth of literacy rates. The blue line represents literacy rates under appointed or indirectly elected mayors, while the green line represents literacy rates under directly elected mayors. A steeper increase in literacy rates was associated with directly elected mayors. **b** Linear growth of primary school attendance rates. The blue line represents primary school attendance rates under appointed or indirectly elected mayors, while the green line represents primary school attendance rates under directly elected mayors. A reverted trend line and a steep increase in primary school attendance rates was associated with directly elected mayors. **c** Linear growth of junior high school attendance rates. The blue line represents junior high school attendance rates under appointed or indirectly elected mayors, while the green line represents junior high school attendance rates under directly elected mayors. A steeper increase in junior high school attendance rates was associated with appointed or indirectly elected mayors.

domain of education. Figure 2a–c show the linear growth trends for three indicators of local educational outcomes in the 456 Indonesian municipalities between the years 2002 and 2012: literacy rates (LITERACY), primary school attendance rates (PRIMARY), and junior high school attendance rates (JUNIOR).

The plots in Fig. 2a, b show that the growth of *literacy rates* has increased under elected mayors, and that a negative trend in *primary school attendance rates* is reverted after the introduction of mayors directly elected by citizens. These trends were predicted in hypothesis 2: a better attainment of societal outcomes is achieved under directly elected mayors. Figure 2c, however, shows a different pattern for *junior high school attendance*. For this outcome indicator in the domain of education the growth rate is lower under the directly elected mayors than under the appointed/indirectly elected mayors.

To statistically test hypotheses 2 and 3 on local educational outcomes, we regressed the log of local educational outcomes on the independent variables and control variables. The results are presented in Table 2. In the Table 2 we first present a simple model, replicating the growth curves without control variables (model a). Subsequently, we present a model that includes the control variables (model b). Finally, we test the indirect effect of local expenditures on outcomes (model c). We include the log-real per capita municipal expenditures as a variable, as well as its interaction with the introduction of elected mayors.

Model 1a in Table 2 shows no significant effect of ELECTTIME. This indicates that the introduction of directly elected mayors has had no significant impact on the growth of *literacy rates* (even though Fig. 2a suggests otherwise). The inclusion of control variables in model 1b does not change results. Model 1c presents the impact of educational expenditures (EDU) on the growth of literacy rates. The results of this model test show that educational spending has a significant positive effect on literacy rates. However, this positive effect turns significant and negative under directly elected mayors, refuting hypothesis 3a and corroborating hypothesis 3b. We infer that although the political budget cycle, motivated by the introduction of directly elected mayors may have had a positive impact on the growth in education spending, there is a negative association between education spending and literacy rates under directly elected mayors. This negative association might be driven by clientelist practices.

Models 2a through 2c in Table 2 show the results of our analyses of *primary school attendance rates*. Figure 2b showed already that after a steady decrease in attendance rates under appointed or indirectly elected mayors, primary school attendance increased under directly elected mayors. The statistical test in models 2a, 2b, and 2c show no significant impact of the introduction of directly elected mayors on the growth of primary school attendance rates. The expenditures models in model 2c shows that the effect of educational spending on primary school attendance is negative. This negative effect is not reversed or significant under directly elected mayors. Hence, hypotheses 2, 3a and 3b are neither confirmed nor rejected by the data.

The third and final indicator for societal outcomes in the education domain we studied is *junior high school attendance rates*. Figure 2c showed a decreasing slope for these rates under directly elected mayors. Our statistical analyses show that this decrease is, statistically, highly significant (model 3a). Thus, hypothesis 2 is clearly rejected by the data on junior high school attendance rates. When we inspect the results of our model analyses on the effects of local educational expenditures, in model 3c, we observe similar results as for literacy rates. We observe that education spending is significantly and positively associated with junior high school attendance rates, as expected. However, this positive association turns negative under directly elected mayors,

Table 2 Local educational outcomes in Indonesia: linear growth regression models.

	Literacy rates			Primary school attendance			Junior high school attendance		
	Model 1a	Model 1b	Model 1c	Model 2a	Model 2b	Model 2c	Model 3a	Model 3b	Model 3c
Growth model									
TIME	0.006***	0.006***	0.005***	0.002**	0.002**	0.002**	0.024***	0.023***	0.022***
	(0.001)	(0.000)	(0.000)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)
ELECTTYPE	−0.001	0.000	0.101**	−0.021	−0.021	−0.026	0.037	0.039	0.353**
	(0.004)	(0.003)	(0.040)	(0.013)	(0.013)	(0.027)	(0.037)	(0.039)	(0.118)
ELECTTIME	−0.001	−0.001	−0.000	0.004	0.004	0.004	−0.013**	−0.013*	−0.011*
	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.002)	(0.006)	(0.006)	(0.006)
Controls									
AREA		−0.003	−0.003		0.003	0.002		0.006	0.005
		(0.007)	(0.007)		(0.003)	(0.003)		(0.018)	(0.018)
POP		−0.008	−0.006		−0.003	−0.004		−0.098***	−0.093***
		(0.006)	(0.006)		(0.004)	(0.004)		(0.020)	(0.018)
POV		−0.005*	−0.005**		−0.002	−0.002		−0.027	−0.030
		(0.002)	(0.002)		(0.005)	(0.005)		(0.026)	(0.027)
Expenditures									
EDU			0.006**			−0.002**			0.016**
			(0.002)			(0.001)			(0.007)
ELECTEDU			−0.008**			0.000			−0.025**
			(0.003)			(0.002)			(0.008)
Constant	4.468***	4.604***	4.496***	4.505***	4.535***	4.565***	4.035***	5.315***	5.051***
	(0.002)	(0.025)	(0.052)	(0.002)	(0.067)	(0.069)	(0.007)	(0.218)	(0.169)
N (total)	2928	2928	2928	2928	2928	2928	2928	2928	2928
N (Municipality)	456	456	456	456	456	456	456	456	456
Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	0.094	0.096	0.101	0.066	0.067	0.067	0.055	0.063	0.065

Standard errors are in parenthesis.
***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

a
Morbidity Rates
(Pooled data for 456 Indonesian municipalities)

— Mayors indirectly elected   — Mayors directly elected

b
Birth Attendance by Skilled Health Workers
(Pooled data for 456 Indonesian municipalities)

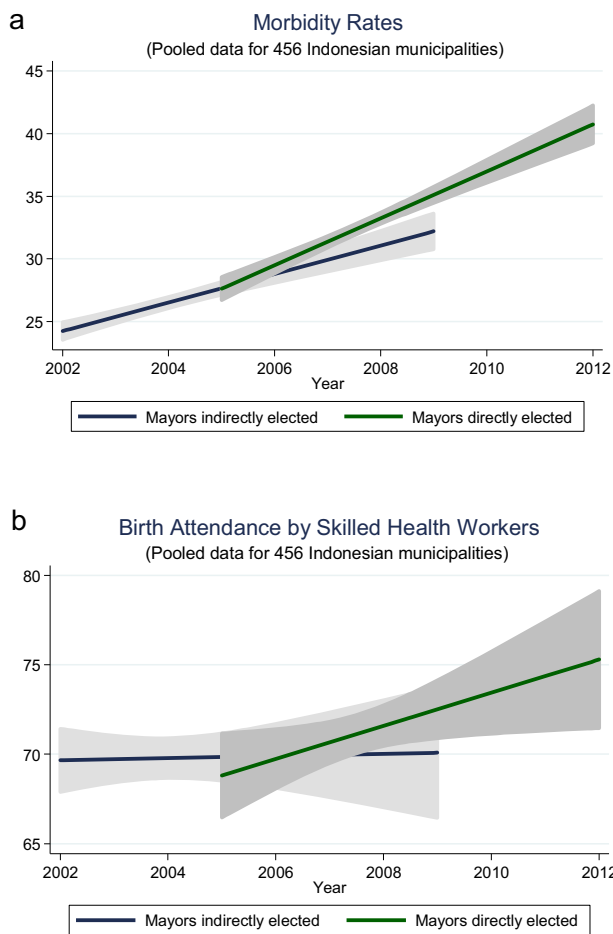
— Mayors indirectly elected   — Mayors directly elected

Fig. 3 Local health outcomes in Indonesia: linear growth trends for 2002–2012. a Linear growth of morbidity rates. The blue line represents morbidity rates under appointed or indirectly elected mayors, while the green line represents morbidity rates under directly elected mayors. A steeper increase in morbidity rates was associated with directly elected mayors. **b** Linear growth of birth attended by skilled health workers (in percentage of total births). An increase in birth attended by skilled health workers was associated with directly elected mayors.

refuting hypothesis 3a and corroborating hypothesis 3b. Although the introduction of competitive mayoral elections has a positive impact on education spending (hypothesis 1), and public spending has a positive impact on junior high school attendance rates over time, this impact is weaker after the introduction of competitive direct elections of mayors. We interpret this weakened association as an indication of the presence of clientelist practices and confirmation of the refutation of hypothesis 2.

Societal outcomes in the health domain. For the second domain of analysis, local health, we analyzed two indicators for societal outcomes: morbidity rates (MORBIDITY) as an indicator for illness, and rate of births attended by skilled health workers (BIRTH) as an indicator for professional health care provision. Figure 3a, b show the linear growth trends for these two indicators for the 456 Indonesian municipalities between 2002 and 2012.

Figure 3a shows that there is an increase in linear growth of *morbidity rates*, as an undesirable local health outcome, after the introduction of directly elected mayors. This finding runs against our expectations. Figure 3b also shows that the rate of *births*
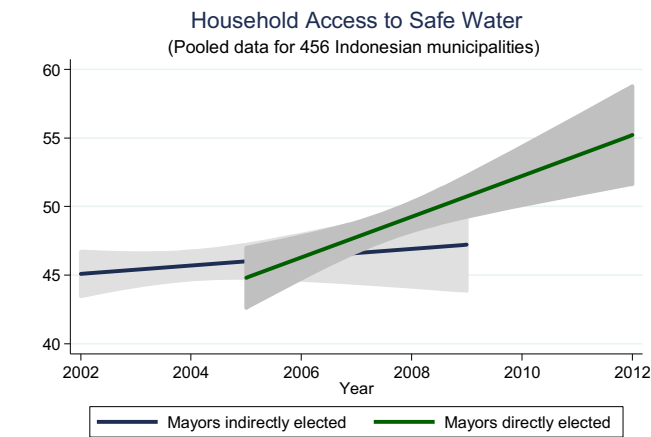
Household Access to Safe Water
(Pooled data for 456 Indonesian municipalities)

— Mayors indirectly elected   — Mayors directly elected

Fig. 4 Linear growth of household access to safe water (in percentage of the total households). The blue line represents household access to safe water under appointed or indirectly elected mayors, while the green line represents household access to safe water under directly elected mayors. A steep increase in household access to safe water was associated with directly elected mayors.

attended by skilled health workers much increased after the introduction of directly elected mayors. To statistically test our hypotheses on these indicators for local health outcomes, we regressed the log of local health outcomes on the independent variables and control variables. The results are presented in Table 3.

Models 4a, 4b, and 4c in Table 3 show no significant impact of the introduction of directly elected mayors on the growth in *morbidity rates*. Thus, hypothesis 2 is neither confirmed nor rejected. Model 4c indicates that local health expenditures are maybe generally associated with higher morbidity rates under directly elected mayors, thus worsening this societal outcome. This refutes hypothesis 3a and corroborates hypothesis 3b because morbidity rates are an undesirable societal outcome.

The analyses for the indicator of *rate of births attended by skilled health workers* are presented in model 5a through 5c. While models 5a and 5b show no significant effects of ELECTTIME—indicating that the growth in the rate would increase after the introduction of elected mayors—model 5c does when including health expenditures in the analysis. Thus, model 5c corroborates hypothesis 2 with a strong and significant positive effect of ELECTTIME. Inspection of the effect of local health expenditures in model 5c shows that the local health expenditures on births attended by skilled health workers is negative and highly significant under elected mayors (ELECTHEALTH). This clearly refutes hypothesis 3a—derived from political budget cycles theory—while corroborates hypothesis 3b—derived from the clientelist perspective.

Societal outcomes in the infrastructure domain. The third domain we analyzed concerned infrastructure. For this domain, only one meaningful indicator was available: *household access to safe water in percentage of the total households* (WATER). The plot in Fig. 4 shows the growth pattern of this indicator for the 455 municipalities between 2002 and 2012. The pattern reflects a steep increase in growth after the introduction of directly elected mayors.

Our statistical analyses in Table 4 confirm that the increase in growth in *household access to safe water* under directly elected mayors is strongly significant, thus corroborating hypothesis 2. With respect to the effect of local expenditures on infrastructure in model 6c we observe a negative significant effect of INFRA.

Table 3 Local health outcomes in Indonesia: linear growth regression models.

	Morbidity rates			Birth attended by skilled health workers		
	Model 4a	Model 4b	Model 4c	Model 5a	Model 5b	Model 5c
Growth model						
TIME	0.046***	0.045***	0.043***	0.023***	0.021***	0.020***
	(0.012)	(0.012)	(0.011)	(0.005)	(0.004)	(0.004)
ELECTTYPE	−0.056	−0.068	−0.802**	−0.041	−0.034	0.437***
	(0.067)	(0.066)	(0.261)	(0.029)	(0.023)	(0.064)
ELECTTIME	0.015	0.018	0.001	0.003	0.002	0.012***
	(0.014)	(0.014)	(0.011)	(0.007)	(0.006)	(0.004)
Controls						
AREA		−0.069**	−0.052**		−0.023	−0.033
		(0.028)	(0.020)		(0.026)	(0.026)
POP		−0.014	0.004		−0.083***	−0.089***
		(0.019)	(0.019)		(0.024)	(0.024)
POV		0.039*	0.043		−0.044***	−0.047***
		(0.021)	(0.025)		(0.011)	(0.011)
Expenditures						
HEALTH			0.025			−0.006
			(0.020)			(0.004)
ELECTHEALTH			0.071***			−0.045***
			(0.022)			(0.005)
Constant	3.081***	3.666***	3.020***	4.083***	5.435***	5.672***
	(0.044)	(0.170)	(0.433)	(0.014)	(0.315)	(0.364)
N (total)	2925	2925	2925	2924	2924	2924
N (Municipality)	456	456	456	456	456	456
Fixed effect	Yes	Yes	Yes	Yes	Yes	Yes
Within R^2	0.293	0.298	0.312	0.097	0.106	0.119

Standard errors are in parenthesis.
***p < 0.01, **p < 0.05, *p < 0.1.

Table 4 Local infrastructure outcomes in Indonesia: linear growth regression models.

	Household access to safe water		
	Model 6a	Model 6b	Model 6c
Growth model			
TIME	0.032***	0.029***	0.032***
	(0.004)	(0.004)	(0.003)
ELECTTYPE	−0.129***	−0.108***	−0.404**
	(0.018)	(0.013)	(0.161)
ELECTTIME	0.023***	0.020***	0.016***
	(0.004)	(0.004)	(0.005)
Controls			
AREA		−0.056*	−0.051*
		(0.028)	(0.025)
POP		0.036	0.024
		(0.034)	(0.030)
POV		−0.076***	−0.068***
		(0.018)	(0.014)
Expenditures			
INFRA			−0.016**
			(0.007)
ELECTINFRA			0.026*
			(0.014)
Constant	3.553***	3.731***	4.000***
	(0.012)	(0.359)	(0.315)
N (total)	2937	2937	2937
N (Municipality)	455	455	455
Fixed Effect	Yes	Yes	Yes
Within R^2	0.154	0.158	0.162

Standard errors are in parenthesis.
***p < 0.01, **p < 0.05, *p < 0.1.

This negative effect is slightly mitigated under directly elected mayors, but we cannot rule out the probability of it due to chance. Hence, hypothesis 3a and 3b are neither confirmed nor rejected by the data on this indicator.

Conclusion

In the present paper, we analyzed to what extent the introduction of directly elected mayors in Indonesia affected the growth in municipal public spending and the attainment of municipal societal outcomes. We employed an integrated analysis of the impact on both public spending and societal outcomes in 456 Indonesian municipalities between 2002 and 2012 in three domains: education, health, and infrastructure. We found that the growth in education spending significantly increased under directly elected mayors. No such effect was detectable about public spending in the other two domains. Thus, our analysis reveals at least a positive and significant effect of local democratization on education expenditures.

Furthermore, our analyses show that growth in indicators for health outcome (births attended by skilled health workers) and infrastructure outcome (household access to safe water) significantly increased after the introduction of directly elected mayors. We found no such significant effect on the growth of two indicators for the attainment of educational outcomes (literacy rates and primary school attendance rates). We even found a decrease in the growth of junior high school attendance rates after the introduction of directly elected mayors. The latter results are remarkable, because after the introduction of directly elected mayors, growth in education expenditures significantly increased.

In our analyses, we tested hypotheses based on the clientelist perspective and political budget cycle theory against each other. We observed that the introduction of directly elected mayors reversed the positive impact of public spending on literacy rates and junior high school attendance rates while not reversing a negative effect of public spending on primary school attendance rates. In the health domain, a negative effect of public health spending on health outcomes was reinforced by the introduction of directly elected mayors. Finally, a negative effect of infra-structure spending on household access to safe water remained unaffected by the introduction of directly elected mayors. In all, we conclude that the introduction of directly elected mayors did not counter but worsened/introduced a problematic association between public spending and the attainment of societal outcomes in Indonesian municipalities.

Our results would thus resonate a clientelist perspective on the attainment of societal outcomes in Indonesia. They support, on a macro-scale, the results of studies revealing the persistence of clientelist and patronage-based practices in Indonesia after the introduction of mayoral direct elections. We may conclude that the introduction of mayoral elections did not necessarily act as a mechanism to mitigate local elite capture and discourage patronage practices. Our study shows its consequences on a macro-level, in terms of public spending and the attainment of societal outcomes. These macro-consequences challenge the premises of democratization theory and serve as a warning that institutional change may only affect the level playing field of clientelism: transferring rent-seeking behaviors from a centralized authoritarian regime (Soeharto) into decentralized democratic institutions. However, our results also show that the elected mayors did improve the attainment of some societal outcomes in the condition when the local budget was not in support of this. The dual nature of these findings requires a deeper explanation, tapping into the more complex relation between public expen-ditures and the attainment of societal outcomes in Indonesia after the introduction of mayoral elections.

To further study the complex association between public spend-ing and the attainment of societal outcomes, several routes for future research exist. First, we would need to tease out more specifically the conditions under which this association is positive or negative. More in-depth conditions could include, for example, anti-corruption policies, policy pledges by mayors, or the local political-administrative culture. In-depth studies will shed more light on context-specific mechanisms that drive public spending and societal outcomes after the introduction of directly elected mayors.

Second, we should be cautious when interpreting the results of our analyses in terms of causality. The negative association between public spending and the attainment of societal outcomes could be driven by mayors' motivation to spend local budgets on problematic domains. Such an explanation is, for example, plausible in the case of high morbidity rates driving a growth in local health expenditures by mayors. In the present study we made specific assumptions about the direction of such effects. These assumptions could be relaxed in further research.

Third, we could also study the presence of budgetary ceiling effects in the data. Before Indonesia initiated its local democratic transition, the Soeharto regime invested in the improvement of societal outcomes. The centralized pre-reform initiatives may have decreased the marginal returns on local public investment, resulting in the growth patterns of societal outcomes as exhibited by the data.

Notes

1 We follow Gujarati (2011) in using the compound interest formula describing the growth models.
2 If we compare the regression results using Driscoll-Kraay standard errors with other types of standard errors, such as clustered or vce(robust) using the Stata routine, the Driscoll-Kraay produced the smallest R-square—thus being most conservative regarding model estimation. We estimated a model with time-fixed effects. The use of dummy variables for each value of TIME resulted in estimation issues in the growth model (inflating the significance of effects). Therefore, we relied on an estimation model without time fixed effects, obtaining more conservative estimates of standard errors.
3 The control variable AREA is not necessarily constant over time, due to municipality splits or mergers.
4 The statistical analyses require the use of log-real per capita expenditures, however for the ease of interpretation of the figures, we plotted these on real per capita municipal expenditures. The similar treatment was also applied for societal outcome figures.

References

Acemoglu D, Robinson JA (2000) Why did the West extend the franchise? Democracy, inequality, and growth in historical perspective. Q J Econ 115(4):1167–1199

Acemoglu D, Robinson JA (2001) A theory of political transitions. Am Econ Rev 91(4):938–963

Acemoglu D, Robinson JA (2005) Economic origins of dictatorship and democracy. Cambridge University Press, Cambridge

Alderman H (2002) Do local officials know something we don't? Decentralization of targeted transfers in Albania. J Public Econ 83:375–404. https://www.elsevier.com/locate/econbase

Aspinall E, Rohman N, Hamdi AZ, Rubaidi, Triantini ZE (2017) Vote buying in Indonesia: candidate strategies, market logic and effectiveness. J East Asian Stud 17(1):1–27. https://doi.org/10.1017/jea.2016.31

Avelino G, Brown DS, Hunter W (2005) The effects of capital mobility, trade openness, and democracy on social spending in Latin America, 1980-1999. Am J Pol Sci 49(3):625–641

Barro RJ (1996) Determinants of economic growth: a cross-country empirical study. NBER Working Paper 5698

Baum MA, Lake DA (2003) The political economy of growth: democracy and human capital. Am J Pol Sci 47(2):333–347

Berenschot W (2018) The political economy of clientelism: a comparative study of Indonesia's patronage democracy. Comp Polit Stud 51(12):1563–1593. https://doi.org/10.1177/0010414018758756

Berenschot W, Aspinall E (2019) How clientelism varies: comparing patronage democracies. Democratization 27(1):1–19. https://doi.org/10.1080/13510347.2019.1645129

Besley T, Pande R, Rao V (2005) Participatory democracy in action: survey evidence from south india. J Eur Econ Assoc 3(2-3):648–657. https://doi.org/10.1162/jeea.2005.3.2-3.648

Boix C (2003) Democracy and redistribution, 1st edn. Cambridge University Press, New York

Brambor T, Clark WR, Golder M (2006) Understanding interaction models: improving empirical analyses. Polit Anal 14(1):63–82

Brender A (2003) The effect of fiscal performance on local government election results in Israel: 1989-1998. J Public Econ 87(9-10):2187–2205. https://doi.org/10.1016/S0047-2727(02)00045-2

Brender A, Drazen A (2005) Political budget cycles in new versus established democracies. J Monet Econ 52(7):1271–1295. https://doi.org/10.1016/j.jmoneco.2005.04.004

Brown DS, Hunter W (2004) Democracy and human capital formation: education spending in Latin America, 1980 to 1997. Comp Polit Stud 37(7):842–864

Bueno de Mesquita B, Smith A, Siverson RM, Morrow JD (2003) The logic of political survival. MIT Press, Cambridge, Massachusetts

Cleary MR (2007) Electoral competition, participation, and government responsiveness in Mexico. Am J Pol Sci 51(2):283–299

Colagrossi M, Rossignoli D, Maggioni MA (2020) Does democracy cause growth? A meta-analysis (of 2000 regressions). Eur J Polit Econ 61:101824. https://doi.org/10.1016/j.ejpoleco.2019.101824

Costa-Font J, Pons-Novell J (2007) Public health expenditure and spatial interactions in a decentralized national health system. Health Econ 16:291–306. https://doi.org/10.1002/hec

Nordholt HS, van Klinken G (eds) (2007) Renegotiating boundaries: local politics in post-Suharto Indonesia. KITLV Press, Leiden

Cukierman A, Meltzer AH (1986) A theory of ambiguity, credibility, and inflation under discretion and asymmetric information. Econometrica 54(5):1099–1128

Dasgupta P (1993) An inquiry into well-being and destitution. Oxford University Press, New York

de Tocqueville A (1969) Democracy in America. Everyman's library, trans. H. Reeve, London, p. 1835–1840

Denters B (1993) The politics of redistribution in local government. Eur J Polit Res 23:323–342

Downs A (1957) An economic theory of political action in a democracy. J Polit Econ 65(2):135–150

Driscoll JC, Kraay AC (1998) Consistent covariance matrix estimation with spatially dependent panel data. Rev Econ Stat 80(4):549–560

Epstein DL, Bates R, Goldstone J, Kristensen I, O'Halloran S (2006) Democratic transitions. Am J Pol Sci 50(3):551–569

Faguet J-P (2004) Does decentralization increase government responsiveness to local needs? Evidence from Bolivia. J Public Econ 88:867–893. https://doi.org/10.1016/S0047-2727(02)00185-8

Faguet J-P (2014) Decentralization and governance. World Dev 53:2–13. https://doi.org/10.1016/j.worlddev.2013.01.002

Filmer D, Hammer JS, Pritchett LH (2000) Weak links in the chain: a diagnosis of health policy in poor countries. World Bank Res Obs 15(2):199–224. https://academic.oup.com/wbro/article-abstract/15/2/199/1709056

Fry BR, Winters RF (1970) The politics of redistribution. Am Polit Sci Rev 64(2):508–522

Fukuyama F (2013) Commentary: What is governance? Governance 26(3):347–368. https://doi.org/10.1111/gove.12035

Galasso E, Ravallion M (2005) Decentralized targeting of an antipoverty program. J Public Econ 89(4 SPEC. ISS.):705–727. https://doi.org/10.1016/j.jpubeco.2003.01.002

Ghobarah HA, Huth P, Russett B (2004) Comparative public health: the political economy of human misery and well-being. Int Stud Q 48:73–94. https://doi.org/10.1111/j.0020-8833.2004.00292.x

Grindle MS (2004) Good enough governance: poverty reduction and reform in developing countries. Governance 17(4):525–548. https://doi.org/10.1111/J.0952-1895.2004.00256.X

Gründler K, Krieger T (2016) Democracy and growth: evidence from a machine learning indicator. Eur J Polit Econ 45:85–107. https://doi.org/10.1016/j.ejpoleco.2016.05.005

Gujarati DN (2011) ECONOMETRICS by example. Palgrave Macmillan, New York

Hoechle D (2007) Robust standard errors for panel regressions with cross-sectional dependence. Stata J 7(3):281–312

Kaufman RR, Segura-Ubiergo A (2001) Globalization, domestic politics, and social spending in Latin America: a time-series cross-section analysis, 1973-97. World Polit 53(4):553–587. https://about.jstor.org/terms

Kis-Katos K, Sjahrir BS (2017) The impact of fiscal and political decentralization on local public investment in Indonesia. J Comp Econ 45(2):344–365

van Klinken G (2009) Patronage democracy in provincial Indonesia. In: Tornquist O, Webster N, Stokke K (eds) Rethinking popular representation. Palgrave Macmillan, New York

Kwon HY (2005) Targeting public spending in a new democracy: evidence from South Korea. J Polit Sci 35(2):321–341. https://doi.org/10.1017/S0007123405000177

Ladd HF (1992) Population growth, density and the costs of providing public services. Urban Stud 29(2):273–295

Lake DA, Baum MA (2001) The invisible hand of democracy: political control and the provision of public services. Comp Polit Stud 34(6):587–621

Lewis BD, Hendrawan A (2019) The impact of majority coalitions on local government spending, service delivery, and corruption in Indonesia. Eur J Polit Econ 58:178–191

Lewis BD, Nguyen HTM, Hendrawan A(2020) Political accountability and public service delivery in decentralized Indonesia: incumbency advantage and the performance of second term mayors. Eur J Polit Econ 64:101910

Lewis BD (2019) How do mayors get elected? The causal effects of pre-electoral coalitions on mayoral election outcomes in Indonesia. Local Gov Stud. https://doi.org/10.1080/03003930.2019.1627334

Martinez-Bravo M, Miquel GP, Qian N, Yao Y (2011) Do local elections in non-democracies increase accountability? Evidence from rural CHINA. http://www.nber.org/papers/w16948

Mcguire JW (2006) Basic health care provision and under-5 mortality: a cross-national study of developing countries. World Dev 34(3):405–425

Meltzer AH, Richard SF (1981) A rational theory of the size of government. J Polit Econ 89(5):914–927

Moreno-Jaimes C (2007) Do competitive elections produce better-quality governments?: evidence from Mexican municipalities, 1990-2000. Lat Am Res Rev 42(2):136–153

Persson A, Rothstein B, Teorell J (2013) Why anticorruption reforms fail-systemic corruption as a collective action problem. Governance 26(3):449–471. https://doi.org/10.1111/J.1468-0491.2012.01604.X

Peterson PE (1981) City limits. University of Chicago Press, Chicago

Plotnick RD, Winters RF (1985) A politico-economic theory of income redistribution. Am Polit Sci Rev 79(2):458–473

Przeworski A, Limongi F (1997) Modernization: theories and facts. World Polit 49(2):155–183

Przeworski A, Alvarez ME, Cheibub F, Limongi JA (2000) Democracy and development: political institutions and well-being in the world, 1950-1990. Cambridge University Press, Cambridge

Rinaldi T, Purnomo M, Damayanti D (2007) Fighting corruption in decentralized Indonesia: case studies on handling local government corruption. World Bank Policy Research Working Paper No.43641

Robison R, Hadiz VR (2004) Reorganising power in Indonesia. The politics of oligarchy in an age of markets. RoutledgeCurzon, London

Rogoff K (1990) Equilibrium political budget cycles. Am Econ Rev 80:21–36

Rogoff K, Sibert A (1988) Elections and macroeconomic policy cycles. Rev Econ Stud 55(1):1–16. https://www.jstor.org/stable/2297526

Rose-Ackerman S (1999) Corruption and government: causes, consequences, and reform. The Press Syndicate of the University of Cambridge, Cambridge

Ross M (2006) Is democracy good for the poor? Am J Pol Sci 50(4):860–874

Saéz L, Sinha A (2009) Political cycles, political institutions and public expenditure in India, 1980–2000. Am Polit Sci Rev 40:91–113. https://doi.org/10.1017/S0007123409990226

Seabright P (1996) Accountability and decentralisation in government: an incomplete contracts model. Eur Econ Rev 40:61–89

Shi M, Svensson J (2006) Political budget cycles: do they differ across countries and why? J Public Econ. 90:1367–1389. https://doi.org/10.1016/j.jpubeco.2005.09.009

Simandjuntak D (2012) Gifts and promises: patronage democracy in a decentralised Indonesia. Eur J East Asian Stud 11:99–126

Sjahrir BS, Kis-Katos K, Schulze GG (2013) Political budget cycles in Indonesia at the district level. Econ Lett 120(2):342–345

Skoufias E, Narayan A, Dasgupta B, Kaiser K (2011) Electoral accountability, fiscal decentralization and service delivery in Indonesia. World Bank Policy Research Working Paper No. 5614. https://ssrn.com/abstract=1799161

Solé-Ollé A (2006) Expenditure spillovers and fiscal interactions: empirical evidence from local governments in Spain. J Urban Econ 59:32–53. https://doi.org/10.1016/j.jue.2005.08.007

Stasavage D (2005) Democracy and education spending in Africa. Am J Pol Sci 49(2):343–358

Wiguna GE, Khoirunurrofik K (2021) Political budget cycle patterns and the role of coalition parties in shaping Indonesian local government spending. Asia-Pacific J Reg Sci 5:41–64. https://doi.org/10.1007/s41685-020-00186-0

Zweifel TD, Navia P (2000) Democracy, dictatorship, and infant mortality. J Democr 11(2):99–114

Acknowledgements

Author contributions

All authors have contributed equally.

Competing interests

The authors declare no competing interests.

Ethical approval

This paper makes use of secondary data provided by Indonesian Ministry of Home Affairs, Indonesian Ministry of Finance, and Statistics Indonesia. No ethical approval was required.

Informed consent

This article does not contain any studies with human participants performed by any of the authors. Informed consent was not relevant.

Additional information

Correspondence and requests for materials should be addressed to Yasmin Lurusati.

Reprints and permission information is available at http://www.nature.com/reprints

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.