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Electing Educated Leaders during Democratization: Evidence from Indonesia

Paul Pelzl and Steven Poelhekke

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JEL Classification: D72, D78, H11, H70, I25, L60

Keywords: democratization, Political Leader Education, Manufacturing, Indonesia

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Electing Educated Leaders during Democratization: Evidence from Indonesia *

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Abstract

Using manufacturing plant-level census data from Indonesia, we show that the effect of democratization on manufacturing performance crucially depends on the education level of the newly elected local leaders. In districts that elect a mayor without college education, employment drops by five percent in the first few years after democratization, while employment stays constant under college-educated mayors. We also identify mechanisms: manufacturing plants in districts with non-college educated mayors face a much larger increase in local taxes, but also worse provision of local infrastructure and no extra spending on other public goods. A novel hand-collected dataset on corruption cases further suggests that democratic mayors without a college degree are more corrupt. Our estimates are plausibly causal since the year of local democratization varies exogenously across districts, and districts with different mayor education levels exhibit parallel trends in manufacturing prior to democratization.

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1 Introduction

A large literature has studied the economic consequences of democratization and has tested which local conditions may determine its success, such as economic development (Rodrik and Wacziarg, 2005; Aghion et al., 2008; Acemoglu et al., 2019) or the average education level of citizens (Fortunato and Panizza, 2015; Acemoglu et al., 2019). Surprisingly, no study has answered how the education level of the newly elected democratic leader shapes the economic success of democracy, even though political leaders' education is shown to matter for growth (Besley et al., 2011). We fill this gap in the context of Indonesia, which became the world's third largest democracy after the fall of President Suharto in 1998 following more than 30 years of autocratic rule. A unique feature of Indonesia's transition to democracy is that at the sub-national district level, the last mayor that had been appointed by Suharto ("Suharto mayor", henceforth) was allowed to finish his or her five-year term before a new mayor was democratically elected. At the moment of Suharto's resignation the remaining time until the end of the term of the Suharto mayor varied by district and is unrelated to district characteristics and trends, as Martinez-Bravo et al. (2017) and additional evidence in this paper show. This implies staggered and exogenous timing of democratization over the period 1999-2003, which we exploit via a difference-in-difference specification at the sub-national level. Thereby we improve identification relative to the existing literature on democracy and growth which has typically analyzed data on multiple countries where democratization is a result of country-specific and potentially unobserved characteristics.

We find robust evidence that manufacturing-sector economic outcomes after democratization are worse in districts where the democratic leader does not have a college degree.

Manufacturing represents 25% of Indonesian GDP and is also the sector that has been targeted as the principal growth engine by the national government, similar to many other developing countries.¹ We are also able to identify increased taxation and less provision of physical infrastructure under non-college educated mayors as the most plausible mechanisms. While it is possible that non-college educated mayors are simply elected for having priorities that are different from supporting local manufacturing, we do not find that they instead raise development expenditure on items such as family welfare, health, housing, environment, religion or education. Moreover, a novel dataset at the mayor level which we hand-collect reveals a negative and statistically significant correlation between democratic mayor education and corruption. Beyond democratization, our study thus also informs the literature on political leaders and economic outcomes by establishing the role of leader education *and* shedding light on underlying channels.

Data on manufacturing comes from the annual census of manufacturing plants with 20 or more employees. These data allow us to analyze the effect of democratization on an individual plant and to identify ‘counterfactual plants’ in the same four-digit industry, province and year in districts that did not yet democratize. This refines identification relative to the existing body of research which has focused on aggregate data such as national GDP. We find that in districts where the democratic mayor has no college degree, employment of incumbent manufacturing plants drops by 5% after the election of the mayor compared to otherwise similar plants located in districts where the last Suharto mayor is still in power. We also

¹ See for example <https://www.thejakartapost.com/news/2019/02/11/manufacturing-sector-to-drive-indonesias-economy-bappenas.html> for a recent declaration of Indonesia’s National Development Planning Agency. The indicated GDP share of manufacturing is an average over our sample period (see Section 3). Data comes from the Statistical Agency of Indonesia (*Badan Pusat Statistik* (BPS)).

show that this effect is not only relative but also absolute, thus reflecting actual lay-offs. When the democratic mayor does have a college degree this negative impact is entirely offset, such that democratization has no impact over our sample period. Since the majority of districts elect college graduates, we also find no impact of democratization when we do not condition on mayor education. We observe similar patterns for plant revenue and total factor productivity. Once democracy is established, leader education appears to lose relevance: the education level of the *second* democratic mayor does not have a statistically significant impact on local manufacturing, no matter the education level of the first democratic mayor. This is consistent with Carnes and Lupu (2016) who present evidence that more educated leaders do not perform better than others, using different samples containing mostly established democracies. We further find that the negative employment effects under non-college educated mayors also hold when the last Suharto mayor also does not have a college degree, such that there is no change in the local mayor education level. These additional findings show that leader education matters particularly as a country democratizes, and perhaps more generally during times of political or institutional change, which is a novel result in the literature.

Although the timing of democratization is exogenous, a potential concern is that democratic leader education is endogenous to district characteristics and developments. In this regard, we show that among a large and comprehensive set of mayor- and district-specific variables that might determine the impact of democratization, the only robust driver of democratic mayor education is the education level of the last Suharto mayor. Controlling for this variable does not alter our results, which are also robust to the inclusion of all other controls. These findings rule out for example that low leader education is simply a result

of democratization paired with low educational attainment of the local population. Our approach further accounts for unobserved and time-invariant local factors that might influence leader education and the local manufacturing sector. Last, but not least, we show that prior to democratization local manufacturing employment exhibited common trends across districts that would later democratize under a mayor with or without a college degree.

We identify several channels through which local manufacturing performs worse under non-college educated leaders. Using plant-level data on annual payments of indirect taxes, fees and levies, we find that the local tax incidence on manufacturing generally increases after democratization, but it increases twice as much under mayors without a college degree. However, we do not find that expenditure increases significantly, suggesting that not all extra revenue benefits the district. We also show that large plants, exporters and capital-intensive plants experience both a larger rise in the tax incidence and a larger drop in employment under non-college educated mayors. The taxation channel thus provides one reason why on average we do not find positive effects of democratization, contrary to recent cross-country level evidence (Acemoglu et al., 2019). The roots of this detrimental channel can be attributed to the design of democratization in Indonesia, which has by no means been unique from a global perspective. Same as in several other developing nations (Kulipossa, 2004), democratization was accompanied by political decentralization, which was implemented nationwide in 2001 but assigned only minimal direct fiscal power to local governments.² The qualitative literature identifies this decision, combined with poor governance across large parts of the country, as the primary reason for a proliferation of effectively unregulated fees and levies at the local

² Our empirical strategy ensures that the effect of democratization is estimated conditional on decentralization being implemented and accounts for direct effects of decentralization starting in 2001 – see Section 4.

level and the resulting constraints to doing business. These observations and our matching plant-level results suggest important lessons for other countries that consider decentralization and local elections, especially those where governance is relatively weak.

Besides taxation, we use longitudinal survey data to highlight another channel: after democratization, the local business community perceives a significant deterioration of the availability and quality of local physical infrastructure. The effect is driven by districts in which the democratic mayor has no college degree, while there is no statistically significant impact in districts with a college-educated mayor. Both channels are highly relevant because taxation and infrastructure have been cited among the most serious constraints to doing business in Indonesia.

Our results suggest that after democratization more educated leaders enact better policies at a lower cost to local manufacturing plants, compared to less educated leaders. Perhaps college graduates also better understand the detrimental impact of certain fees and levies on local business performance. This matches the notion that education is positively correlated with skills, be it due to a causal relationship or because education is simply used as a signaling device (Spence, 1973). In the context of Indonesia, the link between education and skills echoes in a 2003 statement of the minister for Administrative and Bureaucratic Reform that the majority of civil servants are “undereducated” and that less than half “know what they are doing and do their jobs properly” (Webber, 2006). Educated leaders might also be less corrupt, for which we find supporting yet overall not unequivocal evidence: plant-level expenditure on gifts and donations (which has previously been used as a proxy for bribery) does not change with democratization for any level of mayor education, but a novel dataset on

mayor-level corruption cases which we hand-collect and provides more direct evidence reveals a negative and statistically significant correlation between democratic mayor education and corruption. In sum, these results not only confirm the finding of Keefer (2007) that young democracies engage in excessive rent seeking, under-provide public goods and are more corrupt relative to older democracies, but also highlight (insufficient) education as a driver of these issues.

We build on an extensive literature analyzing the impact of democracy on growth. Acemoglu et al. (2019) find that democracy leads to an increase in GDP per capita, especially when the local population is well-educated. Rodrik and Wacziarg (2005) find that poorer countries benefit more from democratization, Aghion et al. (2008) find the opposite and Acemoglu et al. (2019) find that the effect of democracy does not depend on the initial level of economic development. Positive effects of democracy are also found by Rodrik and Wacziarg (2005), Persson and Tabellini (2006), Papaioannou and Siourounis (2008), Bates et al. (2012) and Madsen et al. (2015), while Murin and Wacziarg (2014) find insignificant results and earlier studies (Helliwell, 1994; Barro, 1996; Tavares and Wacziarg, 2001) find negative but generally less robust effects.³ We contribute to this cross-country literature by improving identification via our subnational approach with random timing of democratization and by showing that the success of democratization depends on the education level of the newly elected democratic leader.⁴ By studying the transition from the last Suharto mayor to the first democratic mayor, which results in a sample period of five years, we also contribute

³ Przeworski and Limongi (1993) and Gerring et al. (2005) review other early studies while Doucouliagos and Ulubaşoğlu (2008) provide a meta-analysis.

⁴ Regarding identification, our study relates to Fujiwara (2015) and Burgess et al. (2015) who also exploit within-country variation to analyze the impact of various aspects of democracy on different outcomes.

to a scarce literature on the immediate and short-run effects of democratization (see otherwise Rodrik and Wacziarg, 2005; Acemoglu et al., 2019). Our study further adds to a small quantitative literature analyzing the Indonesian democratization process. Martinez-Bravo et al. (2017) show that the longer the last Suharto mayor stays in power during Indonesia’s transition to democracy, the worse are governance outcomes after democratization, which is attributed to elite capture. Martinez-Bravo (2014) finds that the body of local officials that a district inherits from the Suharto regime determines the extent of fraud and clientelistic spending in the first democratic election.

Beyond democratization, our study contributes to the literature on the effect of political leaders on economic outcomes by highlighting the role of educational attainment *and* identifying underlying mechanisms. Besley et al. (2011) find that educated leaders positively affect economic growth, but the study does not identify underlying mechanisms. Carnes and Lupu (2016) find the contrasting result that leaders with a college degree do not affect growth, based on cross-country data and U.S. and Brazilian subnational data.⁵ Martinez-Bravo (2017) shows that a school construction program in Indonesia led to higher education levels of village heads and better public good provision two decades later, but the paper does not analyze wider economic effects.⁶ More broadly, our paper relates to the literature on leaders and growth that does not focus on education (Jones and Olken, 2005; Yao and Zhang,

⁵ Similarly, Dreher et al. (2009) do not find robust evidence that the level or type of leader education matters for the implementation of market-liberalizing reforms.

⁶ Brown (2020) shows that economies governed by former economics students grow faster than others and present better tax policy as one mechanism. He and Wang (2017) show that ‘College Graduate Village Officials’ in Chinese village governments improve targeting and implementation of central government policies. Pertuze et al. (2019) find that leaders’ unexpected departures lead to an aggregate rise in firm-level patent applications and that the effect is stronger when the departed leader’s education level is low and/or the new leader is more educated than the previous leader. Lahoti and Sahoo (2020) show that college graduate leaders yield better education outcomes in India for their constituents, but only in states with a high initial level of development. François et al. (2020) find that educated dictators attract more foreign direct investment.

2015; Easterly and Pennings, 2020) and to studies analyzing the link between CEO education and firm performance and policies (Chevalier and Ellison, 1999; Bertrand and Schoar, 2003; Beber and Fabbri, 2012; Miller et al., 2015; King et al., 2016). Finally, we add to a literature highlighting the importance of political leader characteristics other than education, such as gender (Chattopadhyay and Duflo, 2004; Clots-Figueras, 2011, 2012; Brollo and Troiano, 2016), nativeness (Hodler and Raschky, 2014), age (Yao and Zhang, 2015; Alesina et al., 2019), previous occupation (Dreher et al., 2009; Beach and Jones, 2016; Neumeier, 2018) and prior experience in office (Freier and Thomasius, 2016).

The remainder of the paper is structured as follows. Section 2 discusses the context of democratization in Indonesia, Section 3 data and key variables and Section 4 our empirical strategy. Section 5 presents results and robustness checks and Section 6 concludes.

2 Background

President Suharto's regime lasted from 1965 to 1998 and was characterised by tight control of Indonesian citizens and opposition parties. Following the Asian financial crisis and the disclosure of several corruption cases, Suharto was forced to step down on 21 May 1998 amid nationwide protests. A transitional government led by Suharto's vice president Habibie subsequently assumed power and set the scene for the first free democratic elections since 1955 on 7 June 1999. The main opposition party PDI-P clearly won these elections. Suharto's party Golkar came in second and continued to represent the autocratic style of his regime and served as a pool for former members of the military and the bureaucracy (Hadiz, 2010). Besides the national parliament and president, also the provincial and district parliaments

were elected.⁷ The local 1999-elected district parliament (DPRD) was in turn responsible for electing a new district mayor.⁸ However, this (indirect) democratic mayor election only took place once the last mayor that had been appointed by the Suharto regime finished his five-year term.⁹ This creates variation in the timing of the first democratic mayor election after Suharto’s fall. For example, in districts where the last Suharto mayor was appointed in the second half of 1994, the local parliament could elect the mayor within months after the 1999-elections, while in other districts the Suharto mayor could stay in office until as late as the beginning of 2003.¹⁰ From 2005 onwards, mayors were directly elected by the district population once the five-year term of the incumbent had expired. Both before and after the fall of Suharto, mayors have been entitled to serve a maximum of two five-year terms.¹¹

The mayor position entails a considerable amount of authority, in particular over local policies, regulations and the district budget (Martinez-Bravo et al., 2017). Although law 22/1999 grants the local parliament the right to disapprove the district budget and regulations proposed by the mayor and to reject the mayor’s annual accountability speech, this has not occurred frequently in practice (Hofman and Kaiser, 2006). Indeed, Von Luebke (2009)

⁷ Indonesia counted 297 districts at the end of 1997: 57 cities (“kota”), 235 rural districts (“kabupaten”) and five districts comprising the capital city of Jakarta. While data on the Jakarta districts are missing, we exclude these districts from our analysis anyway since they form one city and are thus less distinct than the other districts.

⁸ The mayor needed the support of at least 50% of DPRD members to be appointed (jointly with “his” vice-mayor). The appointment occurred directly after the election.

⁹ This decision was taken by Habibie’s transitional government. During Suharto’s regime, district parliaments were already entitled to suggest a short-list of candidates for the mayor position to the Ministry of Home Affairs and Suharto, but the latter could reject the suggested candidates (Mietzner, 2010). Moreover, local parliaments rarely proposed candidates that did not enjoy central support since several tactics ensured that Golkar would comfortably win local elections (see e.g. Haris, 2004; Antlöv, 2004).

¹⁰ In districts where the last Suharto mayor’s term expired while the transitional government was in power, the latter appointed a new mayor. We exclude these districts from our analysis (see Section 3).

¹¹ Some Suharto mayors could therefore be elected as first democratic mayor, which happened in nine districts in our sample. Our results are robust to excluding these districts from our sample; see Table OA4 in the Online Appendix.

finds that mayors rather than citizen groups or local parliaments tend to initiate policy. Mayors have thus been the main driver of local governance outcomes after the fall of Suharto.¹² For these reasons, we adopt the notion of Martinez-Bravo et al. (2017) that the actual implementation of democratization at the local level was triggered by the mayor election rather than the 1999 legislative elections.

The process of democratization was accompanied by Indonesia’s “big bang” decentralization, which was implemented nationwide on 1 January 2001. Indonesia thereby pursued a similar strategy as several other developing countries across Latin America, South Asia and sub-Saharan Africa, particularly during the “third wave” of democratization after the 1980s. The motivation is that decentralization has the potential to promote democracy, participation, and empowerment at the local level (Kulipossa, 2004). The Indonesian decentralization transferred a substantial amount of power from the central government to the districts, largely bypassing the provincial level (see e.g. Jones, 2004).¹³ This empowered local parliaments but also strengthened the mayor position, for example in the field of public goods provision (Hofman and Kaiser, 2006).

In post-decentralization Indonesia, the principal source of revenue for districts are non-earmarked transfers from the central government. The largest transfer (“DAU” = General

¹² The results of Von Luebke (2009) are based on surveying over 1,000 businesses and conducting 120 in-depth interviews in eight districts scattered across Indonesia. The surveys were conducted between April 2005 and March 2006, which implies that the mayor that was elected by the 1999-parliament was still in power or the directly elected mayor had just started his term. Therefore, it is reasonable to assume that the answers of the surveyed individuals mostly refer to the mayor elected by the 1999-parliament and thus the mayors we study in this paper.

¹³ The central government retained control over defence and security, justice, international relations, monetary and fiscal policy and religion. Decentralization was implemented on the basis of law 22/1999 which focused on administrative aspects and law 25/1999 which focused on fiscal aspects. The decision to assign provincial heads a largely representative role reportedly occurred “largely because of fears that giving power to resource-rich provinces such as Aceh, Papua, Riau and East Kalimantan would fuel centrifugal tendencies and weaken Indonesian unity” (Jones, 2004, p.31).

Allocation Fund) is allocated based on local population, area, poverty rate and other factors, and is set at 25% of central government domestic revenue in total (Brodjonegoro, 2004; Martinez-Bravo et al., 2017). The larger scope of action for mayors and the discretion over the use of transfers implies that decentralization is a key ingredient in creating a link between democratic mayor characteristics and the local success of democratization. We therefore design our empirical strategy so that our coefficients capture the impact of local democratization conditional on decentralization being in place. Our approach further allows us to isolate the impact of democratization from direct effects of the implementation of decentralization in 2001 (see Section 4).

While allowing discretionary use, the predominance of central government transfers also reflects that the fiscal decentralization law 25/1999 “continues the reluctance to give local governments any meaningful ability to raise local revenue” (Brodjonegoro, 2004, p.129). Indeed, the official locally derived revenue (“PAD”) made up less than 10% of the local budget for 87% of districts in 2002 (Brodjonegoro, 2004). Many local governments have expressed their dissatisfaction about too low funding to promote regional development, especially in relation to new infrastructure provision (Brodjonegoro, 2009).¹⁴ This perceived lack of funding induced local governments led by the powerful democratic mayor to try to increase local revenue through new local taxes and levies, which are often illegal (Brodjonegoro, 2009;

¹⁴ It has been debated whether the DAU and additional transfers provide enough revenue for local governments, but overall the answer has often been yes (see Brodjonegoro, 2009; Hadiz, 2010; Lewis, 2003).

Ray, 2009).¹⁵ This matters for manufacturing since “the easiest targets for these new additional revenues are unfortunately the local businesses that seem to be powerless against this challenge” (Brodjonegoro, 2009, p.207). Similarly, Hofman et al. (2009) highlight the “high relative importance of political factors” for the local business climate and point out that “manufacturing in particular is prone to illegal levies, either by government officials or the surrounding community” (p.110). “Illegal exactions” are in turn the most commonly cited factor that negatively affects the local business climate in a 2002 survey of companies (see Ray, 2009, p.164).¹⁶ The business community has further listed policy uncertainty and “demands by inexperienced local governments empowered by decentralization” as well as corruption as serious constraints (Dhume, 2004, p.66).¹⁷ Our findings suggest that a key local determinant of the presence and relevance of the mentioned issues is the education level of the first democratic mayor.

¹⁵ Brodjonegoro (2009) argues for instance that “since most local governments realized that the amount of transfer is far from enough to fulfil their needs as a result of slow economic recovery, and at the same time did not have an alternative of existing local taxes and charges, they began to look for other sources that are unfortunately illegal and disruptive.” (p.207). Ray (2009) reports that as a consequence of lacking supervision of local regulations, “distorting local taxes and charges are being implemented” (p.151). Law 25/1999 explicitly allows for the introduction of new local taxes and levies to contribute to a district’s own revenues (PAD). The central government must pass these, but it has been accused of being too lax in this process. Moreover, districts only submitted less than half of newly authorised local taxes and charges for review to the central government as required by law, such that the remaining 60% can be regarded as illegal (Lewis, 2003).

¹⁶ 30% of respondents indicated that illegal exactions negatively affect the local business climate, followed by non-tariff barriers/constraints (24%), infrastructure constraints (21%), formal taxes and charges (13%), and lack of security (12%). The survey was conducted by the Regional Economic Development Institute (REDI, 2002) in cooperation with the Partnership for Economic Growth and The Asia Foundation.

¹⁷ Corruption has existed for a long time in Indonesia, but with the distribution of power to the district level it has become decentralized (Basri, 2004). This typically leads to a larger group of people who have to be bribed and thus a higher total bribe payment per transaction compared to a centralised system (Bardhan, 1997). The National Survey of Corruption 2001 found that around 87% of companies regarded corruption in the public sector as ‘common’. 41% of respondents stated that they frequently or always pay bribes in the course of business (Khouw, 2004).

3 Data

Main variables and data sources

Our key data ingredients are information on the district-specific timing of the first democratic mayor election, mayor education level data and plant-level manufacturing data. Table A1 in the Appendix reports descriptive statistics.

We obtain information on election timing and mayor characteristics from the data repository of Martinez-Bravo et al. (2017). The source distinguishes the education categories ‘Less than Bachelor degree’, ‘Bachelor degree’, ‘Master degree’ and ‘PhD degree’. We compute a dummy variable *College Degree* which equals one if the democratic mayor holds at least a bachelor degree and zero otherwise. Law 22/1999 requires mayors to have completed junior high school (*Sekolah Menengah Pertama*), which implies that all democratic mayors in our sample have at least nine years of schooling. We also use the data repository to control for the democratic mayor’s age, birth district, previous occupation, political party affiliation and the education level of the last Suharto mayor, and exploit data on the field of study of college-educated democratic mayors. Selected data points on some variables are missing, but we are mostly able to fill the gaps through other sources.¹⁸ The first democratic mayor has a college degree in 80% of districts in our final sample, while the last Suharto mayor has a college degree in 65% of these districts with available data (95% of districts). These numbers are consistent with the result of Besley and Reynal-Querol (2011) that at the aggregate (country) level, democratization leads to an increase in leader education levels.

The annual census of manufacturing plants (IBS) is collected and compiled by the Statis-

¹⁸ See Section OA4 in the Online Appendix for more details on data sources and the construction of variables.

tical Agency of Indonesia (*Badan Pusat Statistik* (BPS)) and contains repeated observations on manufacturing plants that employ at least 20 employees in the particular year. We use mainly employment but also revenue, total factor productivity and investment to measure performance. For our analysis of mechanisms, we use data on plants' reported payments of indirect taxes, fees and levies as well as a proxy for bribe payments. To study plant heterogeneity we draw upon export share information and use employment and revenue data to measure size and labor intensity. We further use the plant's district location and sector information which we translate into the ISIC Rev. 3.1 classification.¹⁹

To analyze additional mechanisms we use data from the Regional Autonomy Watch *KP-POD*, which has been utilized by several other studies (e.g. Von Luebke, 2009; Wheeler et al., 2013; Martinez-Bravo et al., 2017). KPPOD has conducted annual surveys in slightly varying sub-samples of districts across Indonesia from 2001 onwards. This effort has produced data on the availability and quality of local physical infrastructure such as streets or telephone service and data on local institutional quality such as the consistency of regulations or law enforcement, as perceived by the local business community.²⁰ Data on institutions are collected through surveying local business actors and consulting a panel of experts, while for infrastructure KPPOD complements these sources with actual availability and quality data

¹⁹ For around 4% of plants that operate in the period 1998-2004 the census records two or more districts as location over this time period. We cannot be sure if these events are real or due to measurement error. This is because districts split and proliferated over time in which district codes were reused and reassigned from time to time, and while we track these changes, some errors may remain. We drop these plants from our sample in order to address the mentioned measurement concerns, the potential worry that certain plants self-select into districts that democratize early, and to ensure that plant fixed effects absorb district fixed effects in our empirical specification.

²⁰ Several studies have highlighted that perceptions on the state of a variable may not fully reflect the actual state of the variable, for example Olken (2009) in the context of corruption. This is arguably less of an issue in our setting since we account for time-invariant factors at the district (or a more general) level and time-varying factors at the provincial (or a more general) level that draw a wedge between the perceived and actual state of infrastructure or institutions.

collected by the BPS. Data for the period 2002-2004 constitute a panel, which we exploit in our analysis.

Finally we collect data on additional district-level control variables measured at the beginning of our sample period, specifically GDP per capita, population, population density, education of the working age population, 1999 election outcomes, religious fractionalization and city versus rural district status.

Sample of districts, plants and years

We choose the time interval from 2000-2004 as our sample period. Thereby we analyze the transition from the last Suharto mayor to the first democratic mayor conditional on Suharto and the transitional government being out of power and the local 1999-elected parliament being established, and thus against the background of a constant national political setting. Starting in 2000 also ensures that 1999 election outcomes are predetermined controls rather than outcomes or endogenous variables. Since we focus on the *first* democratic mayor, we drop the year 2004 for those districts in which the second democratic mayor is elected in 2004.

The starting point of our district selection process is the set of 292 districts that existed at the end of 1997, and thus shortly before the fall of Suharto. Following Martinez-Bravo et al. (2017) we then drop districts that may endanger our identification strategy and/or may conceptually not allow the estimation of our effect of interest, which is the impact of the direct transition from the Suharto mayor to the democratic mayor. Both the identification issue and

the conceptual issue apply to districts that split between the fall of Suharto and 2004.²¹ We therefore exclude the 87 districts that were involved in a district split (either as “parent” or “child”) over 1998-2004. In 65 other districts, the timing of the last Suharto mayor’s term end implied that the selection of the following mayor was done by the transitional government. Since we can only speculate about the nature of these appointments, we exclude these districts from our sample. We further exclude eight districts for which we do not know with certainty whether the mayor was selected by the transitional government or the 1999-elected local parliament. In 19 of the remaining districts, an interim mayor was installed to serve for a period of up to about a year between the last Suharto mayor and the first democratic mayor. Since the underlying reasons are unclear but appear district-specific and may represent confounding factors, we drop these districts as well. Based on the same reasoning, we drop five districts in which the last Suharto mayor stepped down before the end of his five-year term and another four districts in which the first democratic mayor stepped down prematurely within our sample period. Missing data on one district brings us to a set of 103 districts, of which 26 are cities and 77 are rural districts.^{22,23}

²¹ Once a district splits, an interim executive is selected who oversees the transition process until the election of a new mayor by a newly established local parliament (see Fitriani et al. (2005) for further details on the sequence of political events in a newly established district). More importantly, the election of a new mayor by the local parliament usually occurs soon after the split rather than only at the end of the five-year term of the Suharto mayor in the “parent” district. This implies that any impact we would attribute to democratization for these districts may actually reflect the effect of the district split itself, or the factors that caused the split (see Pierskalla (2016) and Bazzi and Gudgeon (2021) for an analysis of factors that determine the likelihood of a district to split).

²² Two of these districts do not have medium- or large-scale manufacturing over 2000-2004. For this reason as well as the chosen fixed effects structure in our specifications and slight heterogeneity in data availability across different plant-level variables, the number of districts represented in our plant-level regressions is somewhat below 103 and varies across dependent variables. Including industry-times-year fixed effects (see Section 4) for example implies that if there is only one plant in a given industry and year, then this plant does not enter the estimation. We also adjust the degrees of freedom for such “singletons”, following Correia (2015).

²³ In Table OA8 in the Online Appendix we show that our results are largely representative for the entire population of 1997-districts.

4 Empirical Strategy

We set up a difference-in-difference (DiD) specification with staggered treatment across space, exploiting that local mayor elections occurred in different years across Indonesian districts. Specifically, our empirical model is the following:

$$\begin{aligned} \ln(Y_{ijkpt}) = & \beta_1 PostElec_{kt} + \beta_2 [PostElec_{kt} \times CollegeDegree_k] \\ & + \beta_3 ElecYear_{kt} + \beta_4 [PostElec_{kt} \times X_k] \\ & + \mu_i + \omega_{jt} + \delta_{pt} + \epsilon_{ijkpt} \end{aligned} \tag{1}$$

where Y_{ijkpt} is outcome variable Y of manufacturing plant i in four-digit ISIC Rev. 3.1 industry j in district k in province p at time t ; $ElecYear_{kt}$ equals one in the democratic mayor election year and zero otherwise; and $PostElec_{kt}$ equals one in the years after the election and zero otherwise. $CollegeDegree_k$ is a dummy that takes one if the democratic mayor in district k has a college degree and zero otherwise. X_k is a vector of mayor- and district-specific control variables that are measured at the beginning of our sample period if they vary over time and are described further below. μ_i are plant fixed effects, which also nest district fixed effects since we drop plants for which the census records two or more districts as location over our sample period.²⁴ These fixed effects control for unobserved and time-invariant factors that influence the education level of the first democratic mayor and local manufacturing

²⁴ Controlling for district fixed effects implies that we do not need to include $CollegeDegree_k$ and X_k as separate, non-interacted terms.

characteristics. Plant fixed effects also control for any difference in manufacturing characteristics across the groups of districts that differ in terms of the democratization year.²⁵ ω_{jt} are four-digit industry-times-year fixed effects and δ_{pt} are province-times-year fixed effects. These fixed effects control for example for the fact that Indonesia decentralized in 2001 and the possibility that decentralization had a differential impact across industries or provinces in Indonesia. We cluster standard errors at the district level.

β_1 captures the effect of the democratic election of a mayor without college degree, while β_2 captures the differential impact of democratization when the newly elected mayor does have a college degree. Given our fixed effects structure, the effects captured by β_1 and β_2 are relative to plants in the same four-digit industry, province and year. In the case of β_1 these ‘counterfactual plants’ are located in districts that did not yet democratize, while for β_2 they are located in democratized districts in which the democratic mayor has no college degree. Such that β_1 and β_2 indicate effects conditional on decentralization being in place rather than (weighted) average effects across the pre- and post-decentralization period, we drop the year 2000 for the five districts in which the democratic mayor election occurred in 1999.

There are three identifying assumptions that must hold such that β_1 and β_2 are unbiased estimators of the described effects. The first is that the timing of the democratic mayor election is as good as randomly assigned across the districts in our sample. Athey and Imbens (2018) show that given random treatment timing in a staggered DiD setting, the standard DiD estimator is an unbiased estimator of a weighted average causal effect. Under

²⁵ The plant and nested district fixed effects do not control for any differential impact of democratization depending on the local presence of such time-invariant or other, time-varying factors. This motivates the inclusion of $PostElec_{kt} \times X_k$ into our specification.

the additional assumption of no anticipation effects – which we show to be valid²⁶ – this average effect is conceptually meaningful, as all individual effects involve switching from not being treated to being treated. The random timing assumption is plausible for several reasons. In all districts in our sample, the timing of the first democratic mayor election is determined by the term end of the last Suharto mayor. This term end is a function of the timing of previous mayor terms, which in turn is determined by different accumulations of early term ends since the latter part of the Dutch colonial period, be it for health or other reasons. Based on this setting, Martinez-Bravo et al. (2017) conclude that the appointment timing of the last Suharto mayors – which determines the election timing of the first democratic mayors in our sample – is plausibly as good as randomly assigned. As supporting evidence, the authors show that the appointment timing of the last Suharto mayor is uncorrelated with the level of a wide range of district-specific variables (see their Appendix-B Table 3). In Table OA8 in the Online Appendix we show that there is no correlation between the election year of the first democratic mayor and the level and growth rate of manufacturing outcomes at the district level prior to Suharto’s fall. Furthermore, we corroborate the validity of the first identification assumption by showing that prior to democratization, manufacturing employment exhibited parallel trends across districts with different democratic mayor election years (see Table 7).

The second identification assumption is that conditional on our controls, democratic mayor education is exogenous to time-varying factors that impact local manufacturing. If democratic mayor education is solely determined by the composition of the local parliament elected in 1999, then this assumption is valid because the election results are a time-invariant factor captured by district fixed effects. If there are unobserved variables that affect mayor education

²⁶ See Table OA4 in the Online Appendix.

even conditional on the 1999 election results, then these may be at least partly captured by the included province-times-year fixed effects and/or industry-times-year fixed effects. More importantly, we show that prior to democratization manufacturing employment exhibits parallel trends across districts that later elect a college graduate as first democratic mayor and those that do not (see Table 7), which provides direct empirical support for the validity of the assumption.

The third identification assumption is that conditional on the controls in vector X_k , democratic mayor education is exogenous to variables that determine the impact of democratization on local manufacturing. We therefore include an extensive set of variables into X_k , which are motivated by the existing literature and the Indonesian context. Democratic mayor-specific controls are gender, age, a dummy that equals one if the mayor worked in the private sector pre-election, a dummy that equals one if the mayor was born in the district, and a dummy that equals one if the mayor was member of the Golkar party. We also control for whether the last Suharto mayor had a college degree. District-specific controls are GDP per capita, average education of the local working age population, population, population density, religious fractionalization, a city dummy, political competition in the local 1999-parliament (measured via a Herfindahl-Hirschman index using 1999 election vote shares), and a dummy that equals one if Golkar won the 1999 elections. To avoid simultaneity and to make sure that these controls are predetermined (see “bad control problem”, Angrist and Pischke, 2008), we measure time-varying variables at the beginning of our sample period. Table A2 in the Appendix shows that among the mentioned controls, only Suharto mayor education significantly and consistently correlates with democratic mayor education across different specifications. The

vector X_k therefore includes only this variable in our baseline specification, while in robustness checks we add a separate interaction with all controls (see Section OA1 in the Online Appendix). Given our rich set of controls and the result that most of them do not affect the local success of democratization, we are confident that the third identification assumption holds as well.

5 Results

5.1 Democratization, mayor education & manufacturing outcomes

To analyze real effects of democratization in the manufacturing sector, we estimate equation (1) for the number of employees, revenue, total factor productivity, investment and the wage bill divided by the number of employees as dependent variables. Our main focus is on employment, which we analyze in Table 1. In column 1 we estimate equation (1) without the interaction terms, and find that the average impact of democratization on manufacturing employment is not significantly different from zero. However, column 2 shows very different results depending on the education level of the mayor. The marginal effect at the bottom of column 2 shows that employment is also unaffected in districts with college-educated mayors, while manufacturing employment significantly *drops* by around 5% after the election of mayors that do not have a college degree. The results are highly robust to controlling for any potential effects of Suharto mayor education after democratization (column 3). To enable a comparison of the coefficient on *Post Election Year* across columns 2 and 3, we demean the dummy variable *Suharto mayor has college degree* in column 3 based on the column-specific

sample. We do the same whenever we include $Post \times \textit{Suharto mayor has college degree}$ in Tables 2-6 to enable an unconditional interpretation of the coefficient on $Post Election Year$.²⁷ In column 4 we test whether the effect of democratic mayor education depends on Suharto mayor education. Since in this column we include $\textit{Suharto mayor has college degree}$ without first demeaning the variable, the top row coefficient indicates the effect of democratization when neither the democratic nor the last Suharto mayor have a college degree. The marginal effects on all other mayor education combinations are listed in the bottom row. The results show that the effect of democratic mayor education and democratization does not depend on Suharto mayor education: the election of a mayor without a college degree has negative employment effects of similar magnitude even if the last Suharto mayor is also not college-educated, such that there is no change in the local mayor education level. This shows that our main results do not merely reflect the effect of a change in leader education irrespective of democratization. We explore this finding further by analyzing the effect of the *second* democratic mayor having a college degree on manufacturing employment. We do so over the period 2004-2009, thus after all districts elected their first democratic mayor and before districts elect their third democratic mayor. The results are reported in Table OA5 in the Online Appendix and show no change in manufacturing employment as a college graduate is elected as second democratic mayor, irrespective of the first democratic mayor's education level. Since in 39 out of 76 districts in this sample the first democratic mayor is re-elected for a second term, we cannot rule out that the absence of significant results is due to limited variation in mayor education during this second period. However, taken together with the

²⁷ Without demeaning $\textit{Suharto mayor has college degree}$, for example in column 3 of Table 1, the coefficient on $Post Election Year$ would indicate the effect of democratization under a democratic mayor without college degree when the last Suharto mayor does not have a college degree.

results in column 4 of Table 1 these findings suggest that leader education matters particularly as a country democratizes (and decentralizes), and perhaps more generally during times of political or institutional change. This is a novel result in the literature.

In Table 2 we study other manufacturing outcomes. Manufacturing revenue (columns 1&2) and total factor productivity (3&4) significantly fall after democratization if the democratic mayor has no college degree, while these variables are unaffected if the mayor does have a college degree. The magnitude of the revenue reduction is strikingly high at around 15%. Plant investment (columns 5&6) does not significantly change with democratization, and there is no heterogeneity with respect to democratic mayor education. While speculative, the absence of a significant investment reduction under mayors without college degree might be explained by survey evidence that “uncertainty in doing business locally has been increasing since 1999” (Brodjonegoro, 2004, p.130), thus already before democratization in most districts. The election of the new mayor might have decreased this uncertainty and thereby stimulated investment, while the negative effects underlying our results on employment, revenue or TFP might have offset such a positive impact. In the case of college-educated mayors, the absence of a positive effect may be due to public investment crowding out private investment: Keefer (2007) finds that young democracies spend more on public investment than older democracies, but we are unable to test the crowding out hypothesis directly. Columns 7-8 of Table 2 show no evidence that the wage bill divided by the number of employees rises after democratization.

Relative versus absolute effects

As we discuss in Section 4, β_1 indicates the effect of democratization under a mayor without a college degree *relative* to similar plants in districts that did not yet democratize. Therefore,

the negative point estimate on β_1 is not informative on whether employment actually declines after the election of a non-college educated mayor or if employment growth remains positive but is reduced. To investigate this, we take the sample of column 3 in Table 1, keep districts with democratic mayors without college degree, compute the average log employment at the plant level before and after the mayor's election, take the difference of the two numbers and generate the mean across all 1,297 plants. This mean equals -0.053, which clearly indicates that democratization under a non-college educated mayor has negative effects on manufacturing employment in an absolute rather than merely relative sense.

Time dimension of effects

In Figure 1 we analyze the time dimension of the effects on employment, revenue and TFP. We extend equation (1) with one lead and two lagged dummies relative to the year of democratization: two years before, one year after, and two or more years after, such that the estimated effects are relative to two excluded periods (one and three years before). This is necessary because all our districts are treated eventually, see Borusyak and Jaravel (2017).²⁸ The graphs show clearly that democratization and non-college education of the elected mayor have an immediate impact, and that the effects increase over time and are thus persistent over our sample period.

²⁸ By dropping the earliest possible indicator (three years before treatment, given that our sample period is 2000-2004 and the last districts democratize in 2003) and the indicator of one period prior to treatment we follow Baker et al. (2021).

5.2 Mechanisms

What causes the drop in manufacturing employment under non-college educated democratic mayors, and why does this decrease not occur under college graduates?

An increasing tax incidence

Given the high relevance of local taxes, fees and levies for doing business after democratization and decentralization (see Section 2), we start by analyzing the manufacturing plant census variable “expenditure on indirect taxes”. These include sales taxes, fees for business permits, the building and land tax (*PBB*), road use tax (*SWP3D*), import duties, custom fees and other levies, except income and personal taxes. Given this broad definition the variable likely provides an accurate representation of the overall incidence of local taxes, fees and levies.²⁹ In the following we simply refer to the plant-level variable as “indirect taxes” and use “taxes” or “taxation” to refer to the overall charge that plants face in this context. The results displayed in the fourth panel of Figure 1 and in column 1 of Table 3 show that after democratization manufacturing plants indeed pay significantly more indirect taxes per rupiah of value added. This supports the finding of Von Luebke (2009) that spatial variation in taxation, licensing and corruption is driven by heterogeneity in mayors’ policies rather than local parliaments or other groups. The increase in the local tax incidence occurs irrespective of the democratic mayor’s education level, but column 2 of Table 3 reveals that the increase is

²⁹ Survey evidence (REDI, 2002) reveals that informal levies are most commonly imposed during transport and/or distribution and that most firms prefer to absorb the resulting cost rather than pass it on to buyers or suppliers, which highlights the detrimental nature of such levies for businesses (see Ray, 2009). The fact that the more vaguely formulated categories such as “other levies” are also included in “expenditure on indirect taxes” is particularly relevant from our sub-national perspective because most of the included items (such as sales taxes and the building and land tax) are determined by the central government, just like income and personal taxes.

significantly smaller under college graduates. The magnitude of the effect (a one percentage-point rise under college graduates and a two percentage-point rise under non-college educated mayors) is very large, considering that the average ratio of indirect tax payments to value added in the sample of column 3 equals 2.9 percent (see Table A1 in the Appendix). The results therefore provide a plausible explanation for the decline in employment and other real outcomes.³⁰

Decreasing quality of infrastructure

Mayors can also influence the provision and maintenance of local physical infrastructure, which in turn is important for manufacturing performance. We therefore regress the log of a district-level score of general infrastructure provided by Regional Autonomy Watch *KPPOD* for the years 2002-2004 on democratization in columns 3-4 of Table 3. We adjust equation (1) to the more aggregate nature of the data: we drop industry-times-year fixed effects and replace plant fixed effects by district fixed effects, but continue to include province-times-year fixed effects. Given the relatively small number of observations, the specification is demanding in terms of statistical power, but mitigates endogeneity concerns. Column 3 of Table 3 shows that the combination of availability and quality of local physical infrastructure significantly decreases after the election of the democratic mayor. This matches the numerous Indonesian news reports on deteriorating infrastructure all over the country and a lack of attention by local governments to improve the quality of public service delivery during the democratization process (Brodjonegoro, 2009). Column 4 shows that the negative impact is driven by mayors

³⁰ From a theoretical perspective and assuming that a rise in indirect taxes represents an increase in the marginal cost of production, higher indirect taxes imply that a manufacturing plant sooner reaches the profit-maximising level of production and therefore a lower level of employment.

without a college degree. Since a deterioration of public infrastructure increases the cost of producing and/or transporting goods, this result likely provides an additional explanation for the poor performance of manufacturing plants under non-college educated democratic mayors.

In Table OA6 in the Online Appendix we deepen our analysis by studying the individual sub-components of infrastructure. Our results continue to hold for infrastructure availability and quality separately, and elements that may deteriorate or improve relatively fast such as “quality of telephone service” are affected more by democratization and mayor education. This is intuitive given the relatively short period of analysis.

Total expenditure and spending on other public goods

So far we find that non-college educated mayors tend to tax much more than college educated mayors, while relatively neglecting infrastructure. Perhaps mayors with a college degree are better able to generate funding from higher levels of government, which enables them to spend more on infrastructure and implies a smaller need for local taxes. However, Table A3 in the Appendix does not find evidence for significantly higher expenditure by college-educated mayors.

It is also possible that non-college educated mayors are simply elected for having promised policies that focus on other areas than supporting the local manufacturing sector. However, Table A3 in the Appendix also shows that mayors without a college degree do not spend relatively more on local development.³¹ Furthermore, in Table A4 in the Appendix we analyze

³¹ Development expenditure + Routine expenditure = Total expenditure. Routine expenses are mostly “Expenditure on Employees”, such as the salaries of local public servants.

subcategories of district-specific development expenditure and do not find that non-college educated mayors instead spend more on non-business items such as family welfare, health, housing, environment, religion or education.

College-degree field of study

Finally, in Table OA7 in the Online Appendix we show that our findings on the different manufacturing outcomes are not driven by a particular type of college degree (i.e. field of study) but generally hold across all college degrees. There is some indication that those with a degree in political science, administration or government are better able to promote employment and revenue, but this is less clear for TFP and indirect taxes. This suggests that overall skills are driving the results rather than a specific education.

Local institutions and corruption

We next investigate if having a mayor with lower educational attainment is related to worsening institutions and corruption at the local level and at the level of individual mayors, which may also affect the business environment.

In columns 5-6 of Table 3 we report the district-level effect on institutional quality over the period 2002-2004 as measured by KPPOD. The signs of the coefficients point in the same direction as our real outcome and infrastructure results, but they are insignificant. In Table OA6 in the Online Appendix we also look at the individual sub-components of institutional quality, and find no significant differences between mayors with different educational attainment.

We can also use the more granular plant-level data that is available for more years to investigate whether “gifts, donations and the like” (*hadiah, sumbangan dan sejenisnya*) increase after democratization. This variable has previously been interpreted as a proxy for bribe payments.³² The results in columns 7-8 indicate that neither democratization nor democratic mayor education affect gifts, donation and similar expenses.

Gifts and donations are at best an indirect indicator of corrupt activities by the local democratic mayor because such expenses are also a choice variable of the plant (Fisman and Svensson, 2007; Vial and Hanoteau, 2010), and plants might for example require some time to understand the susceptibility of a new mayor to bribes. Therefore, we hand-collect a novel dataset on corruption charges and convictions at the mayor level from the Corruption Eradication Commission (*KPK*), the watchdog *Indonesia Corruption Watch* (ICW) and additional sources (see Section OA4.3 in the Online Appendix for details). In Table 4 we regress indicators for whether individual mayors were cited in corruption cases and the outcome of the case on mayor-level characteristics, including educational attainment. The results show that mayors without a college degree are significantly more often researched, investigated, declared defendant and convicted of corruption in an official corruption case (see columns 1-6). These results might partly reflect that college graduate mayors are more able to hide corrupt activities, prevent a corruption case or prevent a case from moving forward; however, columns 7 and 8 show that among mayors for which at least research on potential corrup-

³² For example, the academic and previous Indonesian minister of Finance and minister of National Development Planning, Bambang Brodjonegoro, refers to the variable as “information on bribery at the local level that is implicitly recorded (but underestimated) in the annual industrial survey conducted by the Central Statistics Agency (BPS)” (Brodjonegoro, 2004, p.130). The variable has been used in this context also by Behrman and Deolalikar (1989) and Vial and Hanoteau (2010), who point out that the variable should be relatively truthful despite being self-reported given that plants are anonymised in the census. A drawback is that the variable does not include certain types of bribery such as commissions, contract shares and option prices that are below or above market prices.

tion was conducted, college graduate mayor cases are not more likely to be closed early in the process. The mayor-level evidence on corruption is therefore overall consistent with the negative real effects of democratization on local manufacturing under non-college educated democratic mayors.

In sum, we find most support for taxation and infrastructure as the two main channels through which real manufacturing outcomes are adversely affected, which reflects the relevance of the two variables for doing business as discussed in Section 2. This is mostly due to a difference in skills between the two types of mayors, as opposed to having different priorities or their specific education. Additionally, we find suggestive yet overall not unequivocal evidence that non-college educated mayors are more corrupt.

5.3 Which types of plants are affected most and why?

To further explore the impact on the manufacturing sector and to expose our hypotheses regarding the taxation channel to more rigorous tests, we estimate the same specification as column 3 of Table 1 for different sub-samples of manufacturing plants. Table 5 focuses on employment and companion Table 6 on indirect taxes. Columns 2 and 3 of Table 5 show that exporters are more affected by the election of mayors without a college degree than non-exporters, while columns 2 and 3 of Table 6 also show a higher tax incidence for exporters.³³ These findings support more anecdotal and survey evidence that taxing trade has been a comparatively easy and therefore popular method for local governments to raise revenue after

³³ We define exporters as plants that export a positive fraction of output in at least one year over 1990-2009, which is the entire period over which we observe manufacturing plants.

decentralization (Ray, 2009), and our results show that democratization has amplified this. Trade industries have also faced particular discrimination when securing business licenses (Hofman et al., 2009; KPPOD, 2003). Table 5 further shows that only relatively large plants (those larger than the median plant of 38 employees) are adversely affected by the election of mayors without a college degree. They also face a greater increase in indirect tax payments under non-college educated mayors than small plants (see columns 4-5 of Tables 5 and 6). Larger plants may be obvious targets for local governments looking to raise revenue, but college-educated mayors may give more consideration to the employment effects of such a tax policy.³⁴ Finally, columns 6-7 in Tables 5 and 6 show more significant employment effects and also much stronger taxation effects for plants with above-median capital intensity.³⁵ This is again intuitive since it is comparatively easier for revenue-seeking mayors to tax fixed capital rather than labor.

The results reveal that larger, exporting, and capital-intensive plants face greater reductions in employment that are accompanied by higher tax increases, while other plants that face small employment changes also experience small deviations in taxation. This supports our conclusion that taxation is a crucial mechanism behind the impact of democratic leader education on real manufacturing outcomes.

³⁴ Indeed, survey evidence shows that large firms in particular perceived decentralization as detrimental for doing business (World Bank, 2003). Another survey (REDI, 2002) finds that large firms face a greater increase in the burden of informal payments after decentralization, in terms of amount, frequency and the number of exacting agencies or individuals (see Ray, 2009). To the extent that decentralization is a driver of the impact of democratization, these findings are consistent with our plant-level results.

³⁵ We define a plant to be capital-intensive in production if employment divided by revenue is smaller than for the median plant in our sample. We observe employment and revenue for all plants, but capital only for a subset.

5.4 Robustness Checks

Common trends

In Table 7 we analyze whether pre-democratization trends in manufacturing employment differ across districts with different democratic mayor election years and education levels. Only if this is not the case, we can confidently attribute the effects we find to democratization and mayor education. The dependent variable equals the annual change in the log number of employees at the plant level. As explanatory variables, we include dummy variables for the different mayor election years (the baseline is election in 2003) and the dummy variable *Democratic mayor has college degree*, and also include the control variable *Suharto mayor has college degree* (not shown for brevity). We only include observations before elections take place, thus plant-years (which now reflect changes in employment compared to the previous year) for which both $PostElec_{kt}$ and $ElecYear_{kt}$ in equation (1) equal zero. We start with a short pre-democratization period and then gradually extend the period of analysis. In column 1 we focus on pre-democratization trends that occur within our baseline sample period, 2000-2004. This means that for districts that democratize in 1999 or 2000 no pre-trends are included because they occur before 2000; for districts that democratize in 2001 we include employment changes between 1999 and 2000; for districts that democratize in 2002 we include employment changes between 1999-2000 and 2000-2001; and for districts that democratize in 2003 we include employment changes between 1999-2000, 2000-2001 and 2000-2002. This results in a sample period of 2000-2002 in column 1, as indicated in the table. In column 2 we additionally include employment changes between 1998 and 1999 (for all types of districts) to enlarge the sample size and to be able to analyze pre-trends in dis-

tricts that democratize in 2000. In column 3 we also include 1997-1998 changes in order to analyze pre-democratization trends across all districts and mayor election years. Finally, in column 4 we also include 1996-1997 changes to check the sensitivity of the results in columns 3 to adding an extra year. Our results show that pre-democratization employment growth does not vary across districts that democratize in different years and across districts that elect mayors with different education levels. This evidence of common employment trends lends empirical support to identification assumptions 1 and 2 discussed in Section 4. The event study graphs in Figure 2 complement the results of Table 7 by illustrating that both in districts that democratize under a college degree mayor and those that do not, there are no significant trends in employment prior to democratization. This further strengthens the credibility of the parallel trends assumption (Baker et al., 2021).

Additional robustness checks

In Tables OA1 - OA3 in the Online Appendix we show that our employment results are further robust to (i) including interactions with the mayor and district-specific variables from Table A2, while in Table OA4 we show that the results are robust to (ii) dropping districts in which the democratic mayor election was slightly delayed (for reasons that do not appear district-specific); (iii) dropping districts that split in the years preceding our sample period; (iv) dropping districts that do not feature in the KPPOD regressions of Table 3 due to missing data; and (v) dropping districts in which the last Suharto mayor is elected as first democratic mayor. We also rule out that membership in the (former) elite as proxied by Golkar-party membership is driving the results. Moreover, we show that the results are robust to applying

the estimator of De Chaisemartin and d’Haultfoeuille (2020), which is preferred if there are both heterogeneous treatment effects and the timing of the democratic mayor election is not as good as randomly assigned across the districts in our sample (and thus our identification assumption 1 is violated). Finally, we show that it does not matter for manufacturing whether the democratic mayor has only an undergraduate college degree or also a graduate degree.

6 Conclusion

We provide novel evidence that the education level of newly elected democratic leaders crucially affects the success of democratization at the local level. In districts where the democratic mayor has a college degree democratization has no effect on manufacturing employment, while the impact is significantly *negative* under mayors without a college degree. For identification, we exploit the unique feature that in Indonesia democratization exogenously occurred at different times at the sub-national district level over the period 1999-2003. Thereby we also improve identification relative to a large literature on the effects of democracy that uses cross-country data. We focus on the manufacturing sector, which has played a crucial role in Indonesia’s economy and for which we have highly granular plant-level panel data. We also highlight mechanisms: non-college educated mayors increase local taxes and fees much more than mayors with a college degree, and also invest less in infrastructure. While it could be that mayors without a college degree have different priorities than supporting manufacturing, we find no evidence that they instead choose to support items such as family welfare, health, housing, environment, religion or education. Instead, we find evidence that non-college educated mayors are more likely to be involved in corruption cases. The level of education of the

local leader is thus closely related to good governance. Indonesia requires candidate mayors to have completed at least junior high school, but our results do not necessarily suggest that a higher bar should be established. The reason is that our results are concentrated in a period of democratization and decentralization, and that mayor education matters less during subsequent democratic elections. More education of democratic leaders is thus most beneficial in relatively turbulent times such as during a democratic transition and when a national government decides to decentralize powers to local governments, a step that many countries have made or may consider. If democratizations under more educated leaders lead to better economic outcomes such as relatively more employment, then leader education may also be a key determinant of the durability of democratic transitions. Our study thereby makes an important contribution to both the literature on democracy and growth and the literature on the effect of political leaders on economic outcomes. Our findings may contain important lessons for other countries that have or will transition to democracy, particularly for developing countries where weak governance and infrastructure constraints are more prevalent.

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Tables and Figures

Table 1: Democratization, mayor education and manufacturing employment

Dependent Variable →	ln(# Employees)			
	(1)	(2)	(3)	(4)
Post Election Year	-0.013 (0.010)	-0.052*** (0.013)	-0.054*** (0.014)	-0.046*** (0.015)
Post × Democratic mayor has college degree		0.048*** (0.013)	0.051*** (0.014)	0.042*** (0.015)
Post × Suharto mayor has college degree			-0.003 (0.014)	-0.025 (0.019)
Post × Suharto mayor has c-degr. × Dem. mayor has c-degr.				0.027 (0.024)
Election Year	-0.009 (0.012)	-0.011 (0.012)	-0.011 (0.012)	-0.011 (0.012)
Plant FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04
Observations	29,994	29,994	29,283	29,283
#Districts	96	96	93	93
#Plants	6,914	6,914	6,745	6,745
Marginal Effects:				
<i>Democratic mayor has no college degree</i>		-0.052*** (0.013)	-0.054*** (0.014)	
<i>Democratic mayor has college degree</i>		-0.005 (0.011)	-0.003 (0.012)	
<i>Dem. mayor has no c-degree and Suharto mayor has none</i>				-0.046*** (0.015)
<i>Dem. mayor has no c-degree and Suharto mayor has one</i>				-0.071
<i>Dem. mayor has c-degree and Suharto mayor has none</i>				-0.004 (0.017)
<i>Dem. mayor has c-degree and Suharto mayor has one</i>				-0.002

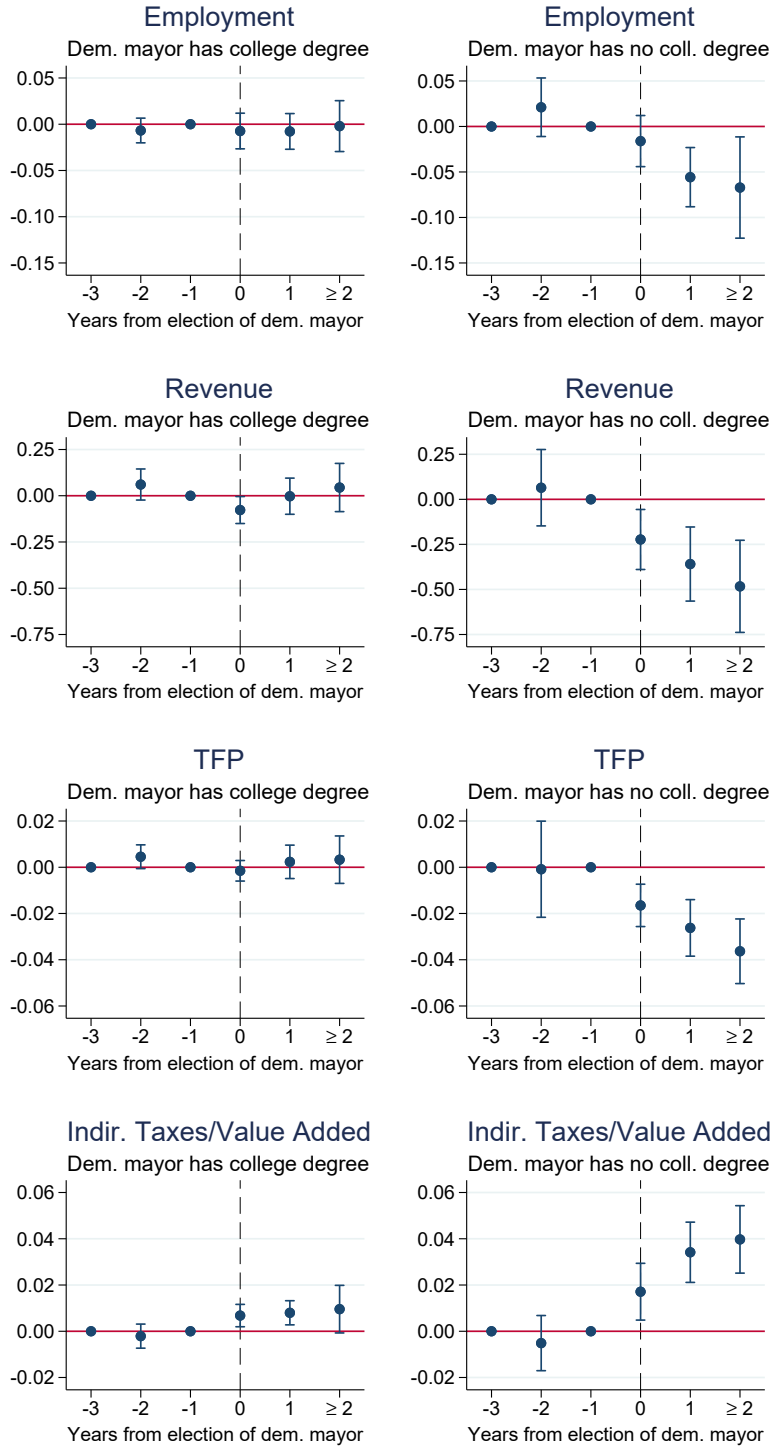
Notes: In this table we study the impact of local democratization and democratic mayor education on manufacturing plants with at least 20 employees. See Section 3 for a description of our sample selection. The dependent variable is the log number of employees at the plant level. *Post Election Year* takes one in the years after the democratic mayor election and zero otherwise; the remaining variables are self-explanatory dummy variables. At the bottom of the table we display marginal effects. The first marginal effect in column 2 is equal to the coefficient in the top row, the second equals the sum of the coefficients in the first two rows. In column 3 we demean *Suharto mayor has college degree* based on the column-specific sample to enable a comparison of the coefficient on *Post Election Year* across columns 2 and 3. The marginal effects in column 4 (in which we do not demean any variable) equal the sum of the relevant coefficients. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 2: Democratization, mayor education and additional manufacturing outcomes

Dependent Variable →	ln(Revenue)	ln(TFP)	ln(1+Investment)	ln(Wage bill/# Empl.)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post Election Year	-0.040 (0.049)	-0.147** (0.070)	-0.002 (0.003)	-0.008** (0.004)	-0.377 (0.231)	-0.163 (0.380)	-0.040 (0.037)	-0.095* (0.053)
Post × Democratic mayor has college degree		0.172** (0.074)		0.008*** (0.003)		-0.206 (0.379)		0.082 (0.062)
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04	00-04	00-04	00-04	00-04
Observations	29,994	29,283	22,865	22,230	26,046	25,416	29,993	29,282
#Districts	96	93	95	92	92	89	96	93
Marginal Effects:								
<i>Democratic mayor has no college degree</i>		-0.147** (0.070)		-0.008** (0.004)		-0.163		-0.095* (0.053)
<i>Democratic mayor has college degree</i>		0.024 (0.049)		0.000 (0.003)		-0.370		-0.014

Notes: In this table we study the impact of local democratization on additional manufacturing outcomes. See Section 3 for a description of our sample selection. *Total Factor Productivity (TFP)* is obtained from Javorcik and Poelhekke (2017). To prevent losing a fair share of plant-years, we measure investment as $\ln(1+Investment)$. See Table 1 for a description of the explanatory variables. The variable *Post × Suharto mayor has college degree* is included in the even columns but not shown. We demean *Suharto mayor has college degree* based on the column-specific sample before computing the interaction with *Post Election Year* so that the coefficient on *Post Election Year* has an unconditional interpretation (rather than indicating the effect of democratization under a non-college educated mayor when the last Suharto mayor does *not* have a college degree). *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Figure 1: Timing of effects



Notes: The graphs are based on event study regressions. We estimate the following specification for the sample of districts with a college-educated democratic mayor (left panel) and the sample of districts without (right): $\ln(Y_{ijkpt}) = \beta_0 + \beta_1 ElecYear_{k,-2} + \beta_2 ElecYear_{k,0} + \beta_3 ElecYear_{k,1} + \beta_4 ElecYear_{k,\geq 2} + \mu_i + \omega_{jt} + \delta_{pt} + \epsilon_{ijkpt}$, where e.g. $ElecYear_{k,-2}$ is a dummy that equals one if in district k the democratic mayor election occurs two years later. Dots indicate point estimates and lines indicate 90% confidence intervals based on standard errors clustered at the district level. The sample period is 2000-2004.

Table 3: Mechanisms

Dependent Variable →	Indirect Taxes / Value Added	ln(Infrastructure)	ln(Institutions)	Gifts, Donations etc. / Value Added				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post Election Year	0.009*** (0.003)	0.020*** (0.004)	-0.220* (0.119)	-0.401*** (0.131)	-0.263 (0.247)	-0.439 (0.299)	0.001 (0.001)	0.001 (0.001)
Post × Democratic mayor has college degree		-0.010** (0.004)		0.232*** (0.086)		0.161 (0.198)		0.001 (0.001)
District FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Plant FE	Yes	Yes	–	–	–	–	Yes	Yes
Industry-Year FE	Yes	Yes	–	–	–	–	Yes	Yes
Sample Period	00-04	00-04	02-04	02-04	02-04	02-04	00-04	00-04
Observations	23,873	23,220	129	125	129	125	21,702	21,172
#Districts	94	91	50	48	50	48	96	93
Marginal Effects:								
<i>Democratic mayor has no college degree</i>		0.020*** (0.004)		-0.401*** (0.131)		-0.439		0.001
<i>Democratic mayor has college degree</i>		0.010*** (0.003)		-0.169 (0.109)		-0.278		0.001

Notes: In this table we analyze potential mechanisms through which the first democratic mayor may affect the performance of manufacturing plants. See Section 3 for a description of our sample selection and Table 1 for a description of the explanatory variables. In columns 1-2 we use data from the manufacturing plant census variable “expenditure on *indirect taxes*”. The dependent variable in columns 3-4 is the log of an annual district-specific score of physical *infrastructure*, while in columns 5-6 we focus on the log score of the quality of *institutions*. Data on these variables are obtained from the Regional Autonomy Watch *KPPOD*. The sample period in columns 3-6 is 2002-2004 due to data availability. In columns 3-6 we drop the two districts in which there is no medium- to large-scale manufacturing over our sample period to make the sample more consistent with our manufacturing samples. In columns 7-8 we use data on the plant-level variable “expenditure on *gifts, donations and the like*”. The dependent variables in columns 1-2 and 7-8 are winsorized from above at the 1% level. The variable *Post × Suharto mayor has college degree* is included in the even columns but not shown. We demean *Suharto mayor has college degree* based on the column-specific sample before computing the interaction with *Post Election Year* so that the coefficient on *Post Election Year* has an unconditional interpretation (see also the Notes of Table 2). *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 4: Mechanisms (continued): Mayor-level corruption and other characteristics

Dependent Variable (Corruption Indicator) →	=1 if at least research on corruption, no matter if acquitted later	=1 if at least research and not acquitted later	=1 if at least investigation and not acquitted later	=1 if at least declared defendant and not acquitted later	=1 if convicted of corruption	0=only research 1=only investigation 2=only defendant 3=convicted		
Sample →	All districts				Only mayors with corruption case			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Democratic mayor has college degree	-0.325*** (0.110)	-0.388*** (0.131)	-0.335*** (0.146)	-0.357*** (0.154)	-0.354*** (0.154)	-0.251* (0.142)	-0.114 (0.323)	-0.433 (0.425)
Female democratic mayor		-0.183 (0.255)	-0.168 (0.247)	-0.101 (0.278)	-0.098 (0.277)	-0.030 (0.230)		0.904 (0.615)
Democratic mayor age in election year		0.008 (0.011)	0.007 (0.011)	0.002 (0.012)	0.003 (0.012)	0.009 (0.009)		-0.025 (0.032)
Democratic mayor born in district		-0.051 (0.134)	-0.027 (0.131)	-0.043 (0.135)	-0.041 (0.135)	0.179 (0.114)		0.499 (0.349)
Dem. m. worked in private sector pre-elec.		0.069 (0.144)	0.104 (0.144)	0.090 (0.156)	0.095 (0.157)	-0.107 (0.139)		-0.375 (0.595)
Province FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations (mayors, districts)	96	75	75	75	75	75	45	33

Notes: In this table we study the correlation between a mayor's corruption status and his education level as well as other mayor-specific characteristics, on the basis of the districts in the sample of Table 1, column 1. See Section OA4.3 in the Online Appendix for details on this novel dataset and relevant background information. In columns 1 and 2 the dependent variable equals one if at least one of the relevant bodies (prosecution service, KPK, official courts, police) conducted research on possible corruption by the mayor, no matter if the mayor was later acquitted of all charges or not. In columns 3-6 we define acquitted mayors as not corrupt, thus the dependent variables take the value zero for such mayors. Therefore, unless the mayor was later acquitted, in column 3 the dependent variable equals one if at least research was conducted; in column 4 if at least official investigations were initiated; in column 5 if the mayor was declared an official suspect and thus became a defendant at court; and in column 6 if the mayor was convicted of corruption. In columns 7 and 8 we exclude districts where there is no known corruption case regarding the democratic mayor, thus we restrict the sample to districts in which the dependent variable in columns 1 and 2 equals one. The dependent variable in columns 7-8 equals zero for research only, one for investigation only, two for defendant status only, and three for a conviction. Acquitted mayors were defendants prior to the acquittal, thus for these mayors we define the dependent variable to take the value two in columns 7-8. Robust standard errors are in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 5: Which types of plants are affected most?

Dependent Variable →	ln(# Employees)						
	All (1)	Non-Exporters (2)	Exporters (3)	Small (4)	Large (5)	Labor-Intensive (6)	Capital-Intensive (7)
Post Election Year	-0.054*** (0.014)	-0.043*** (0.016)	-0.076*** (0.027)	-0.006 (0.010)	-0.091*** (0.021)	-0.033* (0.019)	-0.045*** (0.014)
Post × Democratic mayor has college degree	0.051*** (0.014)	0.037*** (0.013)	0.065** (0.026)	0.007 (0.008)	0.086*** (0.021)	0.028* (0.016)	0.042** (0.017)
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04	00-04	00-04	00-04
Observations	29,283	19,089	10,074	14,487	14,037	13,605	13,875
#Districts	93	92	86	89	87	86	90
Marginal Effects:							
<i>Democratic mayor has no college degree</i>	-0.054*** (0.014)	-0.043*** (0.016)	-0.076*** (0.027)	-0.006	-0.091*** (0.021)	-0.033* (0.019)	-0.045*** (0.014)
<i>Democratic mayor has college degree</i>	-0.003 (0.012)	-0.005 (0.012)	-0.011 (0.023)	0.001	-0.005 (0.020)	-0.004 (0.014)	-0.002 (0.017)

Notes: In this table we analyze the impact of democratization and democratic mayor education on employment on different types of manufacturing plants. See Section 3 for a description of our sample selection and Table 1 for a description of the explanatory variables. *Non-Exporters* are plants that never export a part of their output over 1990-2009, which is the entire period over which we observe manufacturing plants. *Exporters* are plants that export a positive fraction of output in at least one year over 1990-2009. *Small Plants* have 38 or less employees, which equals the median across the plant-years in the sample of column 1; *Large Plants* thus have more than 38 employees. *Labor-Intensive* are plants for which employment divided by revenue is larger than for the median plant, based on the sample underlying column 1. *Capital-Intensive* are those plants for which the ratio is below or equal to the median. The variables *Post × Suharto mayor has college degree* (where *Suharto mayor has college degree* is demeaned based on the column-specific sample) and *Election Year* are always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 6: Indirect tax incidence by plant type

Dependent Variable →	Indirect Taxes / Value Added						
	All	Non-Exporters	Exporters	Small	Large	Labor-Intensive	Capital-Intensive
Sample →	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post Election Year	0.020*** (0.004)	0.018*** (0.006)	0.027*** (0.009)	0.012*** (0.004)	0.026*** (0.009)	0.006 (0.004)	0.028*** (0.008)
Post × Democratic mayor has college degree	-0.010** (0.004)	-0.009 (0.006)	-0.017** (0.007)	-0.003 (0.004)	-0.018** (0.008)	0.001 (0.004)	-0.015** (0.006)
Plant FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04	00-04	00-04	00-04
Observations	23,220	15,483	7,632	12,179	10,315	11,464	10,189
#Districts	91	89	83	85	84	83	86
Marginal Effects:							
<i>Democratic mayor has no college degree</i>	0.020*** (0.004)	0.018*** (0.006)	0.027*** (0.009)	0.012*** (0.004)	0.026*** (0.009)	0.006 (0.004)	0.028*** (0.008)
<i>Democratic mayor has college degree</i>	0.010*** (0.003)	0.009 (0.005)	0.010** (0.005)	0.009 (0.004)	0.008 (0.005)	0.007 (0.004)	0.013*** (0.004)

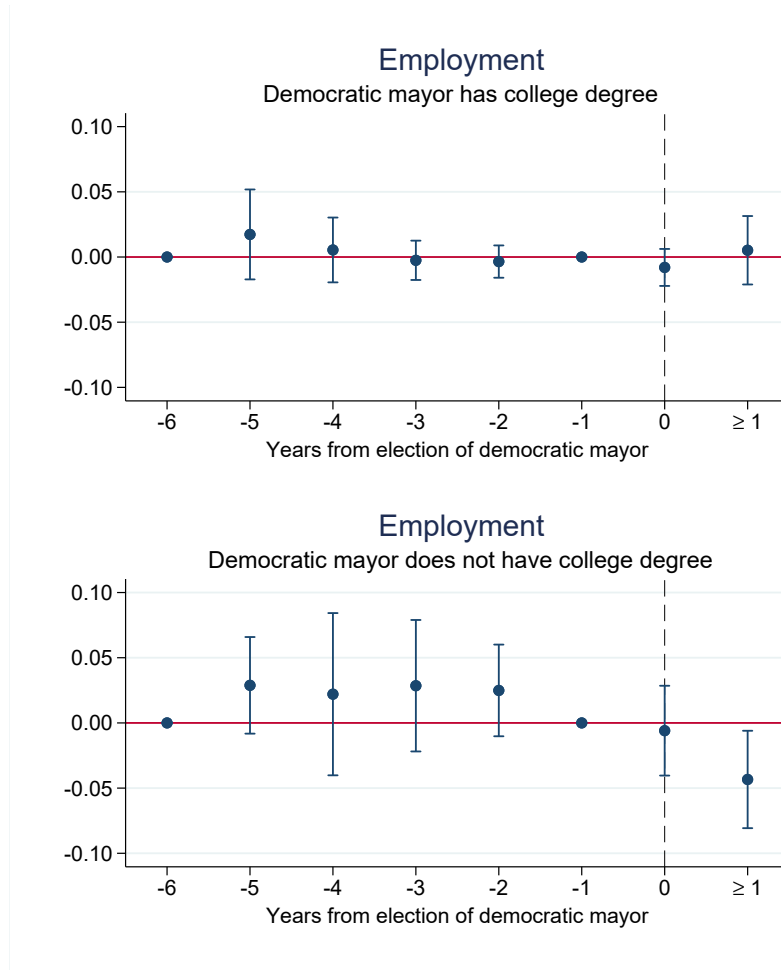
Notes: In this table we analyze the impact of democratization and democratic mayor education on the expenditure on indirect taxes across different types of manufacturing plants. See Section 3 for a description of our sample selection, Table 1 for a description of the explanatory variables and Table 5 for a description of the plant types. The distinction in small versus large plants and labor-intensive versus capital-intensive plants is based on the samples in Table 5 to ensure comparability. The variables *Post* × *Suharto mayor has college degree* (where *Suharto mayor has college degree* is demeaned based on the column-specific sample) and *Election Year* are always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table 7: Pre-democratization trends in manufacturing across different types of districts

Dependent Variable →	$\Delta \ln(\# \text{ Employees})$			
Sample is observations <i>before</i> elections. Sample years → (baseline is Election will take place in 2003)	00-02	99-02	98-02	97-02
	(1)	(2)	(3)	(4)
Democratic mayor has college degree	-0.008 (0.014)	0.001 (0.008)	-0.002 (0.007)	0.002 (0.006)
Election will take place in 2002	-0.008 (0.021)	0.003 (0.016)	-0.011 (0.012)	0.003 (0.009)
Election will take place in 2001	-0.003 (0.025)	0.000 (0.016)	-0.008 (0.009)	-0.004 (0.009)
Election will take place in 2000		0.003 (0.014)	0.005 (0.008)	-0.002 (0.007)
Election will take place in 1999			0.001 (0.027)	-0.007 (0.015)
Industry-Year FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes
P-value of F-Statistic (excluding FE)	0.916	0.993	0.244	0.968
Observations	4,561	10,554	14,704	19,536
#Districts	38	88	90	89

Notes: In this table we analyze whether pre-democratization trends in manufacturing employment differ across districts with different democratization timing and democratic mayor education. The dependent variable equals the annual change in the log number of employees at the plant level. We include a dummy for each year of democratization, with *Election will take place in 2003* as omitted baseline. We only include observations before elections take place, thus plant-years (which now reflect changes in employment compared to the previous year) for which both $PostElec_{kt}$ and $ElecYear_{kt}$ in equation (1) equal zero. We start with a short pre-democratization period and then gradually extend the period of analysis. In column 1 we focus on pre-democratization trends that occur within our baseline sample period, 2000-2004. This means that for districts that democratize in 1999 or 2000 no pre-trends are included because they occur prior to 2000; for districts that democratize in 2001 we include employment changes between 1999 and 2000; for districts that democratize in 2002 we include employment changes between 1999-2000 and 2000-2001; and for districts that democratize in 2003 we include employment changes between 1999-2000, 2000-2001 and 2000-2002. This results in a sample period of 2000-2002 for column 1. In column 2 we additionally include employment changes between 1998 and 1999 (for all types of districts); in column 3 we also include 1997-1998 employment changes; and in column 4 we also include 1996-1997 changes. In column 3 we restrict the sample to districts that do not split over 1997-2004 rather than 1998-2004 (as in our baseline analysis), and in column 4 to districts that do not split between 1996-2004. The dummy variable *Suharto mayor has college degree* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Figure 2: Pre-democratization trends



Notes: The graphs are based on event study regressions. We estimate the following specification for the sample of districts with a college-educated mayor (top graph) and the sample of districts without (bottom graph): $\ln(Y_{ijkpt}) = \beta_0 + \beta_1 ElecYear_{k,-5} + \beta_2 ElecYear_{k,-4} + \beta_3 ElecYear_{k,-3} + \beta_4 ElecYear_{k,-2} + \beta_5 ElecYear_{k,0} + \beta_6 ElecYear_{k,\geq 1} + \mu_i + \omega_{jt} + \delta_{pt} + \epsilon_{ijkpt}$, where e.g. $ElecYear_{k,-5}$ is a dummy that equals one if in district k the democratic mayor election occurs five years later. Dots indicate point estimates and lines indicate 90% confidence intervals based on standard errors clustered at the district level. The sample period starts in 1997 (paralleling column 4 of Table 7) and ends in 2004, as in our baseline analysis. Since there are no never-treated units in the sample, we need to drop *two* relative time indicators to avoid multicollinearity (Borusyak and Jaravel, 2017). We follow Baker et al. (2021) and drop the earliest possible indicator (*Election in 6 years*) and the indicator of one period prior to treatment (*Election in 1 year*).

Appendix

Table A1: Summary Statistics

	Mean	Median	Min	Max	sdev	N
<i>Panel I: Plant-year-specific variables</i>						
# Employees	157.067	38	20	15,836	465.658	29,283
ln(# Employees)	4.063	3.638	2.996	9.670	1.138	29,283
ln(Revenue)	14.215	13.858	7.601	22.844	2.044	29,283
ln(TFP)	2.245	2.251	1.281	2.974	0.120	22,230
ln(1+Investment)	6.221	8.294	0	23.660	6.229	25,416
ln(Wage bill / # Employees)	8.172	8.258	0.573	15.749	0.940	29,282
Percentage of production exported	12.673	0	0	100	31.155	29,283
Indirect tax payments / Value added	0.029	0.005	0.000	0.565	0.081	23,220
Gifts, donations, etc. / Value added	0.008	0.004	0.000	0.097	0.015	21,172
<i>Panel II: District-specific variables</i>						
Democratic mayor has college degree	0.796	1	0	1	0.405	103
Democratic mayor has undergraduate degree	0.544	1	0	1	0.501	103
Democratic mayor has graduate degree	0.252	0	0	1	0.437	103
Democratic mayor is female	0.049	0	0	1	0.216	103
Democratic mayor born in district	0.567	1	0	1	0.498	90
Democratic mayor age at time of election	48.885	50	26	61	6.735	87
D. m. worked in private sector pre-election	0.241	0	0	1	0.430	87
Democratic mayor is member of Golkar	0.468	0	0	1	0.502	77
Suharto mayor has college degree	0.653	1	0	1	0.478	98
Golkar wins 1999 elections	0.272	0	0	1	0.447	103
City	0.252	0	0	1	0.437	103
1999-election vote share HHI	0.301	0.268	0.162	0.764	0.127	101
ln(GDP per capita 2000)	1.364	1.314	0.331	3.177	0.550	102
Education of working age population 2000	1.051	0.967	0.469	1.638	0.275	102
Population 2000	695,798	626,620	47,970	2,780,820	529,007	102
ln(Population 2000)	13.150	13.348	10.778	14.838	0.826	102
Population density (=pop per sq mile) 2000	3,721	1,651	14.387	32,400	6,127	102
ln(Population density 2000)	7.352	7.409	2.666	10.386	1.417	102
Religious fractionalization 2000 (HHI)	0.880	0.958	0.439	0.998	0.150	102
Dem. mayor election year = 1999	0.049	0	0	1	0.216	103
Dem. mayor election year = 2000	0.524	1	0	1	0.502	103
Dem. mayor election year = 2001	0.175	0	0	1	0.382	103
Dem. mayor election year = 2002	0.078	0	0	1	0.269	103
Dem. mayor election year = 2003	0.175	0	0	1	0.382	103
# Post Election Years	3.194	4	1	5	1.213	103
<i>Panel III: District-year-specific variables</i>						
Post Election Year	0.639	1	0	1	0.481	515
Election Year	0.190	0	0	1	0.393	515

Table continues on following page.

Summary Statistics (continued)

	Mean	Median	Min	Max	sdev	N
<i>Panel III: District-year-specific variables (continued)</i>						
ln(Infrastructure)	5.655	5.677	4.745	6.201	0.318	125
ln(Institutional quality)	6.269	6.280	5.333	7.069	0.356	125
ln(Total expenditure)	12.036	12.155	4.685	13.934	0.867	285
Development expenditure / Total expenditure	0.284	0.278	0.034	0.672	0.107	285
<i>ln(1+Expenditure on...)</i>						
Industry	4.926	5.170	0	10.114	1.782	285
Agriculture	7.085	7.359	0	9.490	1.625	285
Water	5.835	6.839	0	10.130	2.956	285
Labor	4.103	4.679	0	8.858	2.200	285
Transport	9.218	9.330	0	11.108	1.201	285
Mining & Energy	3.689	4.614	0	8.658	2.688	285
Tourism & Telecom	5.366	5.792	0	11.247	1.942	285
Regional development & settlement	7.844	8.114	0	11.292	1.926	285
Environment	6.814	6.938	0	10.392	1.514	285
Education, Culture etc.	8.176	8.333	0	10.683	1.586	285
Population & Family welfare	3.897	4.452	0	8.294	2.291	285
Health & Social welfare	7.650	7.829	0	10.294	1.525	285
Housing	7.335	7.668	0	11.395	2.109	285
Religion	5.687	6.141	0	10.260	2.147	285
Science & Technology	5.944	6.219	0	9.303	1.689	285
Legal sector	4.584	4.829	0	7.633	1.639	285
Government apparatus & supervision	8.450	8.672	0	10.882	1.631	285
Politics, Information, Communication & Mass media	4.992	5.268	0	9.175	1.852	285
Security	4.386	4.864	0	11.334	2.368	285
Trade, Business development & Finance	7.498	7.657	0	11.289	1.671	285
<i>Panel IV: Democratic mayor-specific variables</i>						
<i>Corruption cases</i>						
At least research, no matter if acquitted later (full smpl)	0.500	0.500	0	1	0.503	96
At least research, no matter if acquitted later	0.493	0	0	1	0.503	75
At least research and not acquitted later	0.453	0	0	1	0.501	75
At least investigation and not acquitted later	0.413	0	0	1	0.496	75
At least declared defendant and not acquitted later	0.400	0	0	1	0.493	75
Convicted	0.267	0	0	1	0.445	75

Notes: This table provides summary statistics on the variables used in our analysis and additional variables of interest. Values that are larger than 1,000 are rounded to the nearest integer. *Education of working age population* is the district average across the entire population with age 15-65 and ranges from 0 (less than primary education) to 3 (college degree) at the individual level. The variables *Indirect tax payments / Value added*; *Gifts, donations, etc. / Value added*; and *Development expenditure / Total expenditure* are winsorized from above at the 1% level. For illustrative purposes, the raw scores of *Infrastructure* and *Institutional quality* are multiplied by 10,000 before taking the log such that all numbers are larger one and the log is thus non-negative. See Section OA4 in the Online Appendix for a detailed description of variables and data sources. The sample underlying the district-specific variables in Panel II is the set of 103 districts that meet our sample selection criteria. Note that not all of these districts enter the samples in our empirical analysis: for example, only 93 districts are included in column 3 of Table 1 because of lack of medium- or large-scale manufacturing (two districts), our fixed effects structure (five districts) and lack of data on the education level of the Suharto mayor (three districts).

Determinants of democratic mayor education level

In Table A2 we study potential determinants of whether the first democratic mayor has a college degree, in order to guide the choice of control variables in our baseline analysis. The dependent variable is a dummy variable that takes one if the democratic mayor has a college degree and zero otherwise. As explanatory variables, we include the mayor- and district-specific variables discussed in Section 4. In all columns we use Linear Probability Models (LPM), but the results are robust to a Logit specification.³⁶ While the coefficients in column 1 derive from separate regressions that feature only the indicated variable on the right-hand side (besides province fixed effects, which we include in all specifications), in columns 2-4 we include all variables displayed in the column in one regression. The results indicate that the first democratic mayor is significantly more likely to have a college degree if the last Suharto mayor had a college degree, even when controlling for all other variables.³⁷ The coefficients on the other controls are not significant across all specifications.

Total and development expenditure patterns

In Table A3 we analyze data from Indonesia's Ministry of Finance on total expenditure (columns 1-2) and development expenditure (3-4) at the district level. The results show that neither democratization nor democratic mayor education has a significant impact on these items.

³⁶ We choose the LPM models mostly for ease of interpretation. Horrace and Oaxaca (2006) show that the potential bias of an LPM increases with the relative proportion of LPM-predicted probabilities that fall outside the unit interval. Since this is not the case for any of our coefficients except for population (in two out of three specifications), this is not a major concern.

³⁷ In regressions that include *Suharto mayor has college degree* we exclude districts in which the Suharto mayor was elected as democratic mayor, to avoid a mechanical correlation between the two variables.

Do non-college educated mayors focus on other sectors? A more detailed expenditure analysis

In Table A4 we analyze the individual sub-components that jointly make up a district's total development expenditure. We do not find that non-college educated mayors spend significantly more on items such as family welfare, health, housing, environment, religion or education. This speaks against the hypothesis that these mayors have simply been elected for having priorities that are different from supporting the local manufacturing sector.

Table A2: Determinants of democratic mayor education level

Dependent Variable →	Democratic mayor has college degree			
	(1) (univar.)	(2)	(3)	(4)
Female democratic mayor	0.322*** (0.087)	0.191** (0.093)		0.163 (0.152)
Democratic mayor age in election year	-0.014* (0.008)	-0.010 (0.009)		-0.010 (0.009)
Democratic mayor born in district	0.007 (0.098)	-0.034 (0.120)		-0.096 (0.100)
Democratic mayor worked in private sector pre-election	-0.172 (0.137)	-0.174 (0.145)		-0.292* (0.147)
Suharto mayor has college degree	0.199* (0.117)	0.224* (0.122)		0.344** (0.147)
Democratic mayor is member of Golkar	0.064 (0.116)			
Golkar wins elections	-0.021 (0.151)		-0.062 (0.227)	0.068 (0.261)
1999-election vote share HHI	-0.073 (0.096)		-0.076 (0.104)	-0.164 (0.137)
ln(GDP per capita 2000)	-0.122 (0.117)		-0.003 (0.143)	-0.080 (0.142)
Education of working age population 2000	-0.295 (0.225)		0.001 (0.453)	0.166 (0.499)
ln(Population 2000)	0.094 (0.075)		0.063 (0.103)	0.355*** (0.125)
ln(Population density 2000)	-0.050 (0.038)		-0.007 (0.146)	-0.055 (0.147)
City	-0.163 (0.121)		-0.065 (0.399)	0.694 (0.438)
Religious fractionalization 2000	0.153** (0.076)		0.103 (0.097)	0.262* (0.149)
Province FE	Yes	Yes	Yes	Yes
Observations (Districts)	{72,96}	63	88	58

Notes: In this table we analyze potential determinants of whether the first democratic mayor has a college degree. The dependent variable takes one if this is the case and zero otherwise. The unit of observation is a district; see Section 3 for a description of our sample selection. In all columns we estimate Linear Probability Models. *1999-election vote share HHI* equals the Herfindahl-Hirschmann Index (HHI) based on vote shares in the 1999 local legislative elections, and is scaled by its standard deviation. *Education of working age population* is the district average across the entire population with age 15-65 and ranges from 0 (less than primary education) to 3 (college degree) at the individual level. *Religious Fractionalization* is the HHI based on religion membership shares (Muslim, Hindu, Buddhist, Christian, Other), scaled by its standard deviation. See Section OA4 in the Online Appendix for details on these and the other controls. Whenever an explanatory variable that is measured in the year 2000 enters the specification, we exclude districts in which the first democratic mayor is elected in 1999 to avoid potential reverse causality. The coefficients in column 1 derive from separate univariate regressions with the indicated variable as sole regressor. In regressions that include *Suharto mayor has college degree* we exclude districts in which the Suharto mayor was elected as democratic mayor, to avoid a mechanical correlation between the two variables. We do not include *Democratic mayor is member of Golkar* in columns 2 and 4 due to comparatively low data availability and quality; see Sections OA1 and OA4.3 in the Online Appendix. Robust standard errors are in parentheses. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table A3: District-level expenditure

Dependent Variable →	ln(Total Expenditure)		Development Expenditure / Total Expenditure	
	(1)	(2)	(3)	(4)
Post Election Year	0.156 (0.158)	0.079 (0.175)	0.009 (0.024)	-0.028 (0.036)
Post × Democratic mayor has college degree		0.096 (0.113)		0.043 (0.030)
District FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04
Observations	296	285	296	285
#Districts	91	87	91	87
Marginal Effects:				
<i>Democratic mayor has no college degree</i>		0.079		-0.028
<i>Democratic mayor has college degree</i>		0.175		0.015

Notes: In this table we use public expenditure data from Indonesia's Ministry of Finance. See Section 3 for a description of our sample selection and Table 1 for a description of the explanatory variables. *Development Expenditure / Total Expenditure* is winsorized from above at the 1% level. We drop the two districts in which there is no medium- to large-scale manufacturing over our sample period to make the sample more consistent with our manufacturing samples. The variable *Post × Suharto mayor has college degree* is included in the even columns but not shown. We demean *Suharto mayor has college degree* based on the column-specific sample before computing the interaction with *Post Election Year* so that the coefficient on *Post Election Year* has an unconditional interpretation (see also the Notes of Table 2). *Election Year* is always included but not shown. Data availability decreases with time over the sample period 2000-2004; the reason is that a new reporting scheme became mandatory in 2006 but could be voluntarily used by the districts already earlier. The reporting period for all expenditure items is January 1 – December 31. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table A4: Sub-categories of district-level development expenditure

Panel I										
Dependent Variable: Expenditure on... →	Industry	Agriculture	Water	Labor	Transport	Mining & Energy	Tourism & Telecom	Regional development & settlement	Environment	Education, Culture etc.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post Election Year	-0.358 (1.017)	0.778 (0.871)	-0.503 (1.452)	-1.306 (0.894)	0.764 (1.037)	1.562 (1.106)	0.062 (0.904)	-0.190 (1.025)	0.345 (0.911)	0.505 (1.003)
Post × Democratic mayor has college degree	1.187* (0.668)	-0.007 (0.542)	0.399 (0.890)	1.510*** (0.536)	-0.106 (0.603)	-0.565 (0.886)	0.106 (0.673)	-0.212 (0.663)	0.206 (0.617)	-0.087 (0.692)
Observations	285	285	285	285	285	285	285	285	285	285
#Districts	87	87	87	87	87	87	87	87	87	87
Marginal Effects:										
<i>Democratic mayor has no college degree</i>	-0.358	0.778	-0.503	-1.306	0.764	1.562	0.062	-0.190	0.345	0.505
<i>Democratic mayor has college degree</i>	0.829 (0.712)	0.771	-0.105	0.204 (0.710)	0.658	0.997	0.169	-0.402	0.551	0.419
Panel II										
Dependent Variable: Expenditure on... →	Population & Family welfare	Health & Social welfare	Housing	Religion	Science & Tech.	Legal Sector	Government apparatus & supervision	Politics, Information, Commun. & Mass media	Security	Trade, Business & Finance
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post Election Year	-1.229 (0.765)	0.309 (0.971)	-1.028 (1.246)	0.320 (0.785)	-0.338 (0.849)	0.174 (0.809)	0.745 (0.986)	-0.115 (0.884)	-0.195 (1.059)	0.963 (0.764)
Post × Democratic mayor has college degree	0.556 (0.734)	0.503 (0.701)	1.050 (0.785)	0.510 (0.642)	0.515 (0.621)	-0.030 (0.548)	0.276 (0.690)	-0.101 (0.664)	0.513 (0.728)	-0.869* (0.507)
Observations	285	285	285	285	285	285	285	285	285	285
#Districts	87	87	87	87	87	87	87	87	87	87
Marginal Effects:										
<i>Democratic mayor has no college degree</i>	-1.229	0.309	-1.028	0.320	-0.338	0.174	0.745	-0.115	-0.195	0.963
<i>Democratic mayor has college degree</i>	-0.673	0.811	0.023	0.829	0.177	0.144	1.022	-0.216	0.318	0.094 (0.628)

Notes: In this table we study all sub-categories of total development expenditure. Each dependent variable Y is measured as $\ln(1 + Y)$. We exclude district-years in which total development expenditure equals zero; see the Notes of Table A3 for further information on the sample. All specifications contain district and province-times-year fixed effects. The variables *Election Year* and *Post × Suharto mayor has college degree* are always included but not shown. We demean *Suharto mayor has college degree* based on the column-specific sample before computing the interaction with *Post Election Year*. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Online Appendix

“Electing Educated Leaders during Democratization: Evidence from Indonesia”

Paul Pelzl and Steven Poelhekke

August 25, 2021

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OA1 Additional Robustness Checks (Tables OA1 - OA4)

Additional control variables

In Tables OA1-OA3, we add control variables that do not feature in our baseline analysis. The set of mayor-specific controls consists of the democratic mayor's age in the election year, a female mayor dummy, a dummy that equals one if the mayor was born in the district and a dummy that takes one if the mayor worked in the private sector before being elected. Due to comparatively lower quality and availability of data on political party membership, we feature the control variable *Democratic mayor is member of Golkar* only in Table OA4.¹ The mayor-specific variables in Tables OA1-OA3 are complemented by a set of district controls. These are a dummy that equals one if Golkar won the district's legislative elections in 1999 and a Herfindahl-Hirschmann Index (HHI) based on the vote share of participating parties, initial GDP per capita, population, population density, education of the working age population, religious fractionalization (again measured via a HHI) and a dummy that takes one if the district is a city. With the exception of *Democratic mayor has college degree*, in all three tables we demean all variables that are interacted with *Post Election Year* based on the column-specific sample before computing the interaction. This implies that we can compare

¹ The information we have on party membership does not always correspond to the period in which the person served as first democratic mayor. Party membership data from Martinez-Bravo et al. (2017) are as of 2009, while additional data we retrieve via online search mostly correspond to the first democratic mayorship period. This timing issue likely matters because "local politics are so fluid (...) and allow individuals and groups to regularly switch their allegiances with little or no concern for ideology, policy or programme" (Hadiz, 2010, p.71). Furthermore, data on party membership is missing for relatively many districts.

the coefficient estimate in the top row across all columns.² In Table OA1, we include the control variables separately. Since column 3 of Table 1 shows that conditional on democratic mayor education, Suharto mayor education has no effect, we do not include the interaction $Post \times$ *Suharto mayor has college degree* in any column of Table OA1. The results thus provide a robustness check on the findings of column 2 of Table 1. In Table OA2, we show that adding all mayor-specific variables sequentially does not change our main conclusions.³ The results also show that *native* mayors positively impact manufacturing growth compared to non-natives (which is consistent with the results of Hodler and Raschky (2014)) and that older democratic mayors benefit manufacturing. Table OA3 shows that the results in column 2 of Table 1 are also robust to the sequential inclusion of all *district*-specific controls (columns 2-9) as well as the inclusion of *all* (both mayor- and district-specific) controls in one regression (column 10).⁴

Dropping districts in which the democratic mayor election was delayed

In Table OA4 we show the results of additional robustness checks. In 20 of the 103 districts that meet our sample selection criteria, the first democratic mayor was elected six instead of five calendar years after the appointment of the last Suharto mayor. While the underlying reasons were likely not district-specific (see Section OA4.6 for details), we re-estimate our

² Without demeaning, the estimate on *Post Election Year* for example in column 3 of Table OA1 would indicate the effect of democratization under a mayor without college degree *and was not born in the district*. This implies that without demeaning, the coefficients on *Post Election Year* in columns 1 and 3 of Table OA1 are estimated for different scenarios, which makes them uncomparable. In contrast, demeaning ensures that the coefficient on *Post Election Year* in column 3 of Table OA1 indicates the average effect of democratization under a mayor without college degree across all districts in terms of nativeness, same as in column 1.

³ We choose the order of variables based on the number of districts for which data on the variable is available, except for *Suharto mayor has college degree* which we include first due to its higher relevance.

⁴ In column 10 we do not show any of the many control variables due to limited space.

main specification without these 20 districts. As column 2 of Table OA4 (in which we always control for Suharto mayor education since most samples in Table OA4 differ substantially from the samples in Table 1) shows, the results are highly robust to this modification.

Dropping districts that split over 1990-1997

In column 3 of Table OA4 we drop the nine districts among our baseline sample of 103 districts that were involved in a district split (i.e. either split itself or “lost” a part of its territory) between 1990-1997. We do so because these districts might have exhibited different trends in the years after the split. The results are again very robust to this change.

Dropping districts which are not included in the KPPOD regressions

One potential concern is that the districts for which KPPOD survey data exists for multiple years over 2002-2004 (and thus enter our KPPOD regressions) are not representative for the entire population of districts. One way to test the validity of this concern is to restrict the sample underlying our manufacturing results to those districts for which KPPOD data exists, and compare the results. We do this in column 4 of Table OA4: the coefficient estimates are very similar, which speaks against this potential worry.

Heterogeneous effects across mayors with undergraduate versus graduate degree

In column 5 of Table OA4 we allow for heterogeneous effects across democratic mayors with an undergraduate degree (which were elected in 56 of 103 districts in our baseline sample) and mayors with a graduate degree (Master or PhD; 26/103 districts). To do so, we add the interaction term $Post \times College Degree \times Graduate Degree$ (which is de-facto equivalent

to *Post × Graduate Degree*) into our specification. The results reveal that mayors with a graduate degree have no significantly different effect on manufacturing employment relative to mayors with only an undergraduate degree.

Dropping districts with Suharto mayor as first democratic mayor

In column 6 of Table OA4 we drop the nine districts in which the last Suharto mayor was elected as first democratic mayor. The results are highly robust to this modification.

Is college education a proxy for being a member of the local elite?

A potential concern is that democratic mayors with a college degree are more likely to be member of a historical local elite that was close to Suharto and his party, Golkar. If this is true then the average college-educated mayor may be more inclined to continue the authoritarian status quo, which could explain that manufacturing outcomes are unaffected by democratization under college-educated mayors. The average democratic mayor *without* college degree may be less of a stakeholder in the local economy (because he is not member of the local elite) and may therefore be more willing to tax local businesses and disregard local infrastructure for his own benefit. This could explain the dip in manufacturing performance under such mayors. To the extent that proximity of the democratic mayor to a local Suharto-Golkar-related elite is captured by the strength of Golkar in the local legislative elections, the described hypothesis is invalidated by the fact that our results are highly robust to controlling for whether Golkar won these elections (see Tables OA1 and OA3). As an additional test, in column 7 of Table OA4 we control for party membership of the democratic mayor, by including the interaction of *Post Election Year* and a dummy which equals one if the democratic

mayor is member of the Golkar party (see footnote 1 for details on the underlying data). The results are highly robust to this specification as well.

Lead variables

Under the assumption that as long as democratization has not yet been adopted, “the exact future date of the adoption has no causal effect on potential outcomes for the current period” (Athey and Imbens, 2018, p.9), the (weighted) average causal effect we estimate is conceptually meaningful. This is because under this assumption, all individual effects that jointly constitute the average effect involve switching from not being treated to being treated.⁵ We test this assumption by first including a dummy variable that equals one if the democratic mayor election happens in the following year and another that equals one if it happens two years later, and then testing whether the coefficients on these dummies significantly differ. We then do the same for these two variables interacted with the college degree dummy. The results (see column 8 of Table OA4) indicate that being one year or two years away from democratization has no impact on manufacturing employment, neither for districts that later elect a mayor with college degree nor those that do not.⁶

Alternative estimator

In column 9 of Table OA4 we use the estimator of De Chaisemartin and d’Haultfoeuille

⁵ Examples of individual effects which jointly constitute the (weighted) average effect are the impact of democratization in 2000 for the year 2001 or the impact of democratization in 1999 for the year 2003 – see Athey and Imbens (2018) for details.

⁶ Note that the coefficient on *Election in 1 year* \times *College degree* is marginally significant, which provides weak evidence of a different effect of democratization being one year as opposed to three years away. However, this effect is not robust to dropping *Post* \times *Suharto mayor has college degree*, which would be our preferred specification for this particular sample including all 29,283 observations because the coefficient on *Post* \times *Suharto mayor has college degree* is virtually zero and insignificant (see Table 1).

(2020). This estimator is preferred if there are both heterogeneous treatment effects and the timing of the democratic mayor election is not as good as randomly assigned across the districts in our sample (see also Section 4 and Athey and Imbens (2018)). The results are highly robust to this modification.⁷

⁷ The STATA command for this estimator (*did_multiplygt*) only displays the coefficient on the chosen main treatment variable (rather than other included variables), which we choose to be *Post × Democratic mayor has college degree*. It is not possible to re-run the regression with the same sample size while choosing *Post Election Year* as main treatment variable. This is because given that no district democratizes in 1999 with a mayor without college degree, the estimator does not allow to choose the same number of dynamic treatment effects in this specification, resulting in a smaller sample size. We therefore choose *Post × Democratic mayor has college degree* as main treatment variable (*Post Election Year* is included but not displayed by construction) in order to estimate a specification based on the same sample that we use for our baseline analysis and thereby ensure comparability across the results in column 1 and column 9 of Table OA4. The potential concern that contrary to our baseline findings, the coefficient on *Post × Democratic mayor has college degree* in column 9 reflects an actual increase in employment while employment falls less or not at all under non-college educated mayors is invalidated by our analysis of relative versus absolute effects: in Section 5.1 we show that there is a clear drop in employment in absolute terms under democratic mayors without college degree.

Table OA1: Robustness Checks I

Dependent Variable →	ln(# Employees)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Post Election Year	-0.052*** (0.013)	-0.052*** (0.014)	-0.061*** (0.014)	-0.057*** (0.015)	-0.064*** (0.018)	-0.052*** (0.014)	-0.051*** (0.014)	-0.054*** (0.013)	-0.050*** (0.015)	-0.048*** (0.014)	-0.052*** (0.014)	-0.051*** (0.014)	-0.051*** (0.014)
Post × Democratic mayor has college degree	0.048*** (0.013)	0.051*** (0.014)	0.051*** (0.015)	0.052*** (0.015)	0.053*** (0.016)	0.047*** (0.013)	0.048*** (0.013)	0.047*** (0.013)	0.047*** (0.014)	0.050*** (0.014)	0.046*** (0.013)	0.051*** (0.014)	0.049*** (0.013)
Post × Democratic mayor is female	-0.021 (0.025)												
Post × Democratic mayor born in district			0.026** (0.012)										
Post × Democratic mayor age in election year				0.002 (0.001)									
Post × D. m. worked in private sector pre-elec.					-0.017 (0.019)								
Post × Golkar wins 1999-elections						0.006 (0.024)							
Post × City							0.009 (0.016)						
Post × 1999-election vote share HHI (sd)								0.000 (0.012)					
Post × GDP per capita 2000									0.009 (0.011)				
Post × Work-age population education 2000										0.043* (0.023)			
Post × ln(Population 2000)											0.004 (0.010)		
Post × ln(Population density 2000)												0.011 (0.008)	
Post × Religious fractionalization 2000 (sd)													-0.005 (0.009)
Observations	29,994	29,994	26,644	26,456	25,952	29,994	29,994	29,728	29,067	29,067	29,067	29,067	29,067
#Districts	96	96	83	81	81	96	96	94	91	91	91	91	91
Marginal Effects:													
<i>Democratic mayor has no college degree</i>	-0.052*** (0.013)	-0.052*** (0.014)	-0.061*** (0.014)	-0.057*** (0.015)	-0.064*** (0.018)	-0.052*** (0.014)	-0.051*** (0.014)	-0.054*** (0.013)	-0.050*** (0.015)	-0.048*** (0.014)	-0.052*** (0.014)	-0.051*** (0.014)	-0.051*** (0.014)
<i>Democratic mayor has college degree</i>	-0.005 (0.011)	-0.001 (0.011)	-0.010 (0.012)	-0.005 (0.012)	-0.011 (0.013)	-0.005 (0.011)	-0.003 (0.011)	-0.007 (0.011)	-0.003 (0.012)	0.002 (0.012)	-0.005 (0.011)	-0.001 (0.011)	-0.003 (0.012)

Notes: This table presents robustness checks on the specification and results displayed in column 2 of Table 1, which are shown again in column 1 of this table for comparison. We separately introduce the control variables, none of which appears (very) relevant based on the results of Table A2. (sd) indicates that the variable that is interacted with *Post Election Year* is scaled by its standard deviation. See Section 3 for a description of our sample selection and Section OA4 for detailed information on the included control variables. With the exception of *Democratic mayor has college degree*, we demean all variables that are interacted with *Post Election Year* based on the column-specific sample before computing the interaction. This implies that we can compare the coefficient estimate in the top row across all columns. In columns 9-13 we drop the districts in which the first democratic mayor election occurred in 1999 to avoid the potential problem that the included variables are influenced by the democratic mayor's education level and are thus "bad controls" (see Angrist and Pischke, 2008). All specifications contain plant, industry-times-year and province-times-year fixed effects, same as our main specification. The variable *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OA2: Robustness Checks II

Dependent Variable →	ln(# Employees)					
	(1)	(2)	(3)	(4)	(5)	(6)
Post Election Year	-0.052*** (0.013)	-0.054*** (0.014)	-0.054*** (0.014)	-0.063*** (0.014)	-0.064*** (0.013)	-0.073*** (0.016)
Post × Democratic mayor has college degree	0.048*** (0.013)	0.051*** (0.014)	0.055*** (0.014)	0.061*** (0.017)	0.068*** (0.016)	0.071*** (0.018)
Post × Suharto mayor has college degree		-0.003 (0.014)	-0.003 (0.014)	-0.005 (0.015)	-0.017 (0.015)	-0.019 (0.017)
Post × Female democratic mayor			-0.022 (0.025)	-0.035 (0.032)	-0.026 (0.024)	-0.025 (0.025)
Post × Democratic mayor born in district				0.032** (0.013)	0.038*** (0.013)	0.037** (0.014)
Post × Democratic mayor age in election year					0.003** (0.001)	0.003** (0.001)
Post × Dem. m. worked in private sector pre-elec.						-0.016 (0.021)
Observations	29,994	29,283	29,283	25,933	25,607	24,214
#Districts	96	93	93	80	77	71
Marginal Effects:						
<i>Democratic mayor has no college degree</i>	-0.052*** (0.013)	-0.054*** (0.014)	-0.054*** (0.014)	-0.063*** (0.014)	-0.064*** (0.013)	-0.073*** (0.016)
<i>Democratic mayor has college degree</i>	-0.005 (0.011)	-0.003 (0.012)	0.001 (0.012)	-0.002 (0.014)	0.004 (0.014)	-0.002 (0.014)

Notes: This table presents the results of additional robustness checks, in which we add mayor-specific controls sequentially. We choose the order of variables based on the number of districts for which data on the variable is available. In column 1 we repeat the results of column 2 of Table 1. See Section 3 for a description of our sample selection and Section OA4 for detailed information on the included control variables. All specifications contain plant, industry-times-year and province-times-year fixed effects, as our main specification. With the exception of *Democratic mayor has college degree*, we demean all variables that are interacted with *Post Election Year* based on the column-specific sample before computing the interaction. This implies that we can compare the coefficient estimate in the top row across all columns. The variable *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OA3: Robustness Checks III

Dependent Variable →	ln(# Employees)									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Post Election Year	-0.052*** (0.013)	-0.052*** (0.014)	-0.051*** (0.014)	-0.052*** (0.014)	-0.052*** (0.015)	-0.050*** (0.015)	-0.050*** (0.015)	-0.056*** (0.016)	-0.056*** (0.016)	-0.074*** (0.017)
Post × Democratic mayor has college degree	0.048*** (0.013)	0.047*** (0.013)	0.048*** (0.013)	0.047*** (0.014)	0.047*** (0.014)	0.050*** (0.014)	0.050*** (0.014)	0.054*** (0.014)	0.052*** (0.014)	0.063*** (0.017)
Post × Golkar wins 1999-elections		0.006 (0.024)	0.010 (0.024)	0.019 (0.025)	0.019 (0.026)	0.021 (0.024)	0.021 (0.024)	0.040 (0.026)	0.039 (0.026)	
Post × City			0.011 (0.016)	0.012 (0.017)	0.009 (0.022)	-0.011 (0.024)	-0.009 (0.027)	-0.036 (0.023)	-0.024 (0.029)	
Post × 1999-election vote share HHI (sd)				0.002 (0.012)	0.001 (0.012)	0.001 (0.011)	0.002 (0.011)	0.005 (0.011)	0.006 (0.011)	
Post × ln(GDP per capita 2000)					0.004 (0.015)	-0.013 (0.013)	-0.013 (0.013)	-0.016 (0.013)	-0.016 (0.013)	
Post × Work-age population education 2000						0.076** (0.035)	0.074** (0.036)	0.021 (0.043)	0.041 (0.041)	
Post × ln(Population 2000)							0.003 (0.010)	0.001 (0.009)	0.001 (0.009)	
Post × ln(Population density 2000)								0.029* (0.016)	0.026* (0.014)	
Post × Religious fractionalization 2000 (sd)									0.013 (0.019)	
Observations	29,994	29,994	29,994	29,728	28,801	28,801	28,801	28,801	28,801	23,102
#Districts	96	96	96	94	89	89	89	89	89	65

Marginal Effects:

<i>Democratic mayor has no college degree</i>	-0.052*** (0.013)	-0.052*** (0.014)	-0.051*** (0.014)	-0.052*** (0.014)	-0.052*** (0.015)	-0.050*** (0.015)	-0.050*** (0.015)	-0.056*** (0.016)	-0.056*** (0.016)	-0.074*** (0.017)
<i>Democratic mayor has college degree</i>	-0.005 (0.011)	-0.005 (0.011)	-0.003 (0.011)	-0.005 (0.011)	-0.005 (0.011)	0.000 (0.012)	0.000 (0.012)	-0.002 (0.012)	-0.004 (0.012)	-0.011 (0.013)

Notes: This table presents the results of additional robustness checks, in which we first add district-specific controls sequentially (columns 2-9) and then include *all* (both mayor- and district-specific) controls in one regression (column 10; controls are not reported due to lack of space). In column 1 we repeat the results of column 2 of Table 1 for comparison. (*sd*) indicates that the variable that is interacted with *Post Election Year* is scaled by its standard deviation. See Section 3 for a description of our sample selection and Section OA4 for detailed information on the included control variables. In columns 5-10 we drop the districts in which the first democratic mayor election occurred in 1999 to avoid the potential problem that the included variables are affected by democratic mayor education and are thus “bad controls” (see Angrist and Pischke, 2008). All specifications contain plant, industry-times-year and province-times-year fixed effects, as our main specification. With the exception of *Democratic mayor has college degree*, we demean all variables that are interacted with *Post Election Year* based on the column-specific sample before computing the interaction. This implies that we can compare the coefficient estimate in the top row across all columns. The variable *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OA4: Robustness Checks IV

Dependent Variable →	ln(# Employees)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Sample / Specification →	Baseline	Drop if mayor elec delay	Drop if split 1990-97	Drop if not in KPPOD sample	Undergrad vs grad degree	Drop if Suh. mayor elected	Control for party membership	Incl. leads	Alternative estimator
Post Election Year	-0.054*** (0.014)	-0.043*** (0.014)	-0.062*** (0.015)	-0.056*** (0.016)	-0.055*** (0.014)	-0.054*** (0.014)	-0.028** (0.012)	-0.070* (0.038)	
Post × Democratic mayor has college degree	0.051*** (0.014)	0.040*** (0.012)	0.053*** (0.015)	0.057*** (0.016)	0.049*** (0.014)	0.047*** (0.014)	0.043*** (0.013)	0.054*** (0.014)	0.054*** (0.027)
Post × Democratic mayor has master or PhD					0.009 (0.016)				
Post × Democratic mayor is member of Golkar							-0.017 (0.017)		
Election in 1 year								-0.025 (0.028)	
Election in 2 years								-0.017 (0.030)	
Election in 1 year × Coll. degree								0.019* (0.011)	
Election in 2 years × Coll. degree								0.002 (0.020)	
Observations	29,283	24,935	27,831	22,425	29,283	27,797	23,942	29,283	29,472
#Districts	93	76	86	48	93	84	70	93	93
p-value F-Stat									
p-v F-St. $Elec\ 1y \times c-d = Elec\ 2y \times c-d$									
Marginal Effects:									
<i>Democratic Mayor has no college degree</i>	-0.054*** (0.014)	-0.043*** (0.014)	-0.062*** (0.015)	-0.056*** (0.016)	-0.055*** (0.014)	-0.054*** (0.014)	-0.028** (0.012)	-0.070* (0.038)	
<i>Democratic Mayor has college degree</i>	-0.003 (0.012)	-0.003 (0.013)	-0.010 (0.013)	0.001 (0.015)	-0.007 (0.014)	-0.007 (0.012)	0.015 (0.014)	-0.016 (0.037)	

Notes: This table presents the results of further robustness checks. In column 1 we show the results of column 3 of Table 1 for comparison. We show the results of column 2 rather than column 3 of Table 1 since in some columns of Table OA4 the sample differs substantially from Table 1, so that we choose to always include *Post* × *Subarto mayor has college degree* as control in Table OA4. In column 2 we drop districts in which it took six rather than five calendar years to elect the first democratic mayor after the appointment of the last Subarto mayor. In column 3 we drop districts that were involved in a district split over 1990-1997. In column 4 we restrict the sample to the set of districts that feature in our KPPOD regressions (see e.g. columns 3-6 of Table 3). In column 5 we allow for differential effects across mayors with an undergraduate versus graduate college degree, while in column 6 we drop districts in which the last Subarto mayor was elected as the first democratic mayor. In column 7 we control for party membership of the first democratic mayor. In column 8 we include lead variables. In column 9 we apply the estimator proposed by De Chaisemartin and d'Haultfoeuille (2020). The variables *Post* × *Subarto mayor has college degree* (where *Subarto mayor has college degree* is demeaned based on the column-specific sample) and *Election Year* are always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

OA2 Additional Results (Tables OA5 - OA8)

Second democratic mayor education and manufacturing employment

In Table OA5 we study the effect of the transition from the first to the second democratic mayor on local manufacturing employment. We include all 103 districts that meet our baseline sample selection criteria (see Section 3) minus two districts in which the first democratic mayor steps down prematurely after 2004 (pre-2004 cases are already excluded in our baseline sample), 12 districts in which the second democratic mayor is prematurely replaced before 2010 (our sample period ends in 2009 due to data availability), and 10 districts in which an interim mayor serves between the first and the second democratic mayor. The results show no change in manufacturing employment as a college graduate is elected as second democratic mayor, irrespective of the first democratic mayor's education level.

More detailed results on infrastructure and institutional quality

In Table OA6 we study the effect of democratization and democratic mayor education on sub-components of infrastructure and institutional quality in the KPPOD data. See Section OA4 for a detailed description of each sub-component.

Does the type of college degree matter?

In Table OA7 we study whether the specific degree of a democratic mayor matters. We determine three study areas that might be relevant: Economics/Management/Finance (36% of democratic mayors with college degree for which the degree type is known have such a degree), Political science/Administration/Government studies (20%) and Law (22%). The (omitted)

baseline category (25%)⁸ includes the following degrees: Engineering (14%), Medicine (5%), Education Studies (2%), Biology (2%), Mathematics (2%) and Islamic Studies (2%). The results show that our baseline findings are overall not driven by a particular degree area, but generally hold across all defined degree areas. However, we do find that the positive effect of a college degree is particularly strong for the area of Political science/Administration/Government studies. One potential explanation is that democratization (paired with decentralization) is a period of substantial political and institutional change and uncertainty, in which local economies benefit from a mayor with administrative and governing skills who understands and manages these complex changes.

Mayor election timing and characteristics of the local manufacturing sector

In Table OA8 we correlate manufacturing employment in the year prior to the fall of Suharto, 1997, with various district characteristics. In columns 1-2 we focus on the election timing of the first democratic mayor. The results show that there is no correlation between the year in which the democratic mayor is elected and a) the *average* manufacturing employment across plants in the district (column 1) and b) *total* manufacturing employment (column 2). These findings complement the results displayed in Appendix-B Table 3 of Martinez-Bravo et al. (2017) (see the discussion of our first identification assumption in Section 4), bearing in mind the slightly different focus of that table. Specifically, Appendix-B Table 3 studies correlations with the year of appointment of the last *Suharto mayor* rather than the year of election of the first *democratic mayor*. However, in practice this is a small concern because in our chosen sample the democratic mayor election year is highly correlated with the variable

⁸ The percentages do not add up to one because some democratic mayors have multiple degrees.

“Last Suharto mayor appointment year + 5”, i.e. the scheduled democratic mayor election year. Note that despite dropping districts in which the Suharto mayor resigns before the end of his five-year term the correlation is not equal to one because in our baseline sample we keep those districts in which the democratic mayor election was delayed by one year. We do so because the reason for this is likely not district-specific; see Section OA4.6 for details. Our results are robust to restricting our sample to those districts in which the democratic mayor election occurred exactly five calendar years after the last Suharto mayor appointment (see column 2 of Table OA4).

How representative is our sample of districts?

As we discuss in Section 3, in our main specifications we exclude districts that may endanger our identification strategy and/or may conceptually not allow the estimation of our effect of interest: the impact of the direct transition from the non-democratic Suharto mayor to the democratic mayor. In this section we analyze whether and to what extent the resulting sample is representative for the entire population of 1997-districts. We start by studying correlations between local manufacturing employment before the fall of Suharto and the sample selection criteria mentioned in Section 3; see columns 3-6 of Table OA8 for the results. Columns 3 and 4 show that the size of a district’s manufacturing sector in 1997 is uncorrelated with the sample selection criteria. Columns 5 and 6 show that the growth rate of manufacturing employment over 1990-1997 is also broadly similar across the selection criteria.⁹ These results provide evidence in favor of the hypothesis that our main results are representative for the districts

⁹ We only compute these growth rates for districts that did not split over 1990-1997, which results in dropping 21 of the 292 districts.

we exclude. That said, one may be concerned about the fact that the coefficient on *District split in 1998-2004* is marginally significant in both columns 5 and 6. One interpretation of this result is that there are factors that determine whether a district splits which also have an effect on manufacturing trends. If these factors also determine the impact of democratization on manufacturing, i.e. if there are heterogeneous treatment effects across “non-splitters” and “splitters”, then our main results are not representative for the splitters. The previous literature (see e.g. Pierskalla, 2016; Bazzi and Gudgeon, 2021) has found that districts that split indeed differ along several characteristics from “non-splitters”. Most notably, the likelihood of a district split decreases with population density and increases with religious fractionalization and the local strength of the Golkar party. We therefore test whether the local success of democratization depends on one or more of these factors. The results are displayed in columns 5 (strength of Golkar), 11 (population density) and 12 (religious fractionalization) of Table OA1 and in columns 2 (strength of Golkar), 8 (pop. density) and 9 (relig. frac.) of Table OA3. We do not obtain robust evidence that the success of democratization is different in districts that split over our sample period, which suggests that our results are representative for all districts.

Table OA5: Second democratic mayor education and manufacturing employment

Dependent Variable →	ln(# Employees)		
	(1)	(2)	(3)
Post Election of 2 nd democratic mayor	-0.009 (0.010)	-0.019 (0.024)	-0.019 (0.023)
Post 2 nd × 2 nd democratic mayor has college degree		0.012 (0.023)	0.030 (0.030)
Post 2 nd × 1 st democratic mayor has college degree			-0.138 (0.157)
Post 2 nd × 1 st has c-degree × 2 nd has c-degree			-0.020 (0.021)
Election year of 2 nd democratic mayor	-0.007 (0.008)	-0.007 (0.008)	-0.007 (0.008)
Plant FE	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes
Sample Period	04-09	04-09	04-09
Observations	41,129	41,129	41,129
#Districts	76	76	76
#Plants	9,599	9,599	9,599

Notes: In this table we analyze the effect of the transition from the first to the second democratic mayor on local manufacturing employment. We include all 103 districts that meet our baseline sample selection criteria (see Section 3) minus two districts in which the first democratic mayor steps down prematurely after 2004 (pre-2004 cases are already excluded in our baseline sample), 12 districts in which the second democratic mayor is prematurely replaced before 2010 (our sample period ends in 2009 due to data availability), and 10 districts in which an interim mayor serves between the first and the second democratic mayor. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OA6: The effect of democratization and democratic mayor education on infrastructure and institutional quality

Panel I:
Infrastructure

Dependent Variable →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Avail- ability Streets	Avail- ability Seaport	Avail- ability Airport	Avail- ability Telephone service	Avail- ability Electricity service	Subtotal Avail- ability Infrastr.	Quality Streets	Quality Seaport	Quality Airport	Quality Telephone service	Quality Electricity service	Subtotal Quality Infrastr.
Post Election Year	-0.255 (0.262)	0.033 (0.137)	-0.521* (0.282)	-0.639** (0.242)	-0.247 (0.315)	-0.379*** (0.141)	0.025 (0.399)	-0.341 (0.411)	-0.336 (0.220)	-0.823* (0.437)	-0.517 (0.574)	-0.526* (0.275)
Post × Dem. mayor has college degree	0.036 (0.260)	0.043 (0.175)	0.398 (0.299)	0.424 (0.276)	0.397 (0.283)	0.265* (0.145)	-0.679 (0.456)	0.247 (0.325)	0.164 (0.258)	0.631*** (0.224)	0.250 (0.285)	0.249* (0.127)
Observations	125	125	125	125	125	125	125	125	125	125	125	125
#Districts	48	48	48	48	48	48	48	48	48	48	48	48
Marginal Effects:												
<i>Dem. mayor has no college degree</i>	-0.255	0.033	-0.521*	-0.639**	-0.247	-0.379***	0.025	-0.341	-0.336	-0.823*	-0.517	-0.526*
			(0.282)	(0.242)		(0.141)				(0.437)		(0.275)
<i>Dem. mayor has college degree</i>	-0.219	0.076	-0.123	-0.216	0.149	-0.114	-0.654	-0.094	-0.172	-0.192	-0.268	-0.277
						(0.103)				(0.381)		(0.244)

Panel II:
Institutional Quality

Dependent Variable →	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	Service proc- edure	Absence of abuse of auth- ority	Subtotal Apparatus & Service	Consist. of regu- lations	Law enforce- ment	Absence of illegal levies outside bureaucr.	Executive- Legislative relations	Subtotal Law certainty	Retri- bution / Taxes	Dev- Budget / Budget	Subtotal Regional finance	Regional policy & regul.
Post Election Year	-0.486 (0.553)	-0.906* (0.478)	-0.759* (0.435)	-0.066 (0.563)	-0.252 (0.610)	-0.613 (0.422)	-0.550 (0.349)	-0.409 (0.390)	0.039 (0.054)	-0.203** (0.100)	-0.028 (0.048)	-0.374 (0.406)
Post × Dem. mayor has college degree	0.208 (0.386)	0.008 (0.275)	0.191 (0.299)	0.212 (0.387)	0.099 (0.536)	0.205 (0.363)	0.160 (0.395)	0.241 (0.332)	0.030 (0.023)	0.120 (0.089)	0.059* (0.031)	-0.228 (0.444)
Observations	125	125	125	125	125	125	125	125	125	125	125	125
#Districts	48	48	48	48	48	48	48	48	48	48	48	48
Marginal Effects:												
<i>Dem. mayor has no college degree</i>	-0.486	-0.906*	-0.759*	-0.066	-0.252	-0.613	-0.550	-0.409	0.039	-0.203**	-0.028	-0.374
		(0.478)								(0.100)		(0.406)
<i>Dem. mayor has college degree</i>	-0.278	-0.898	-0.568	0.146	-0.153	-0.408	-0.389	-0.168	0.069	-0.083	0.031	-0.601
										(0.049)		(0.444)

Notes: In this table we study the individual components of the variables *Infrastructure* (Panel I) and *Institutional Quality* (Panel II) from Table 3. See Section 3 and the Notes of Table 3 for a description of our sample selection. *Subtotal Apparatus & Service* equals the sum of the scores on the indicators in columns 1-2; *Subtotal Law certainty* equals the sum of the scores on the indicators in columns 4-7; and *Subtotal Regional finance* equals the sum of the scores on the indicators in columns 9-10. All specifications contain district and province-times-year fixed effects. We drop the two districts in which there is no medium- to large-scale manufacturing over our sample period to make the sample more consistent with our manufacturing samples. Data are obtained from the Regional Autonomy Watch *KPPOD*; see Section OA4.5 for details. The variable *Post × Suharto mayor has college degree* is included in the even columns but not shown. We demean *Suharto mayor has college degree* based on the column-specific sample before computing the interaction with *Post Election Year*. *Election Year* is always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OA7: Does the type of college degree matter?

Dependent Variable →	ln(# Employees)	ln(Revenue)	ln(TFP)	Ind. Taxes/VA
	(1)	(2)	(3)	(4)
Post Election Year	-0.054*** (0.013)	-0.120* (0.067)	-0.009** (0.003)	0.021*** (0.005)
Post × Democratic mayor has college degree	0.033 (0.029)	0.083 (0.082)	0.008** (0.004)	-0.024** (0.011)
Post × Democratic mayor has Economics/Management/Finance degree	-0.010 (0.024)	-0.014 (0.049)	-0.002 (0.003)	0.007 (0.009)
Post × D. m. has Political science/Administration/Government studies degree	0.039* (0.020)	0.134** (0.056)	0.001 (0.003)	0.014* (0.008)
Post × Democratic mayor has Law degree	0.020 (0.031)	0.126 (0.083)	0.001 (0.004)	0.011 (0.011)
Plant FE	Yes	Yes	Yes	Yes
Industry-Year FE	Yes	Yes	Yes	Yes
Province-Year FE	Yes	Yes	Yes	Yes
Sample Period	00-04	00-04	00-04	00-04
Observations	24,723	24,723	18,721	19,602
#Districts	71	71	71	70

Notes: In this table we study whether the specific degree of a democratic mayor matters. The (omitted) baseline category includes the following degrees: Engineering, Medicine, Education Studies, Biology, Mathematics and Islamic Studies. We drop districts from the sample for which we do not have information on the type of the college degree. The variables *Post* × *Suharto mayor has college degree* (where *Suharto mayor has college degree* is demeaned based on the column-specific sample) and *Election Year* are always included but not shown. Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

Table OAS: The manufacturing sector across different types of districts

Dependent Variable →	Average Employment 1997		Total Employment 1997		Employment Growth 1990-1997	
	(1)	(2)	(3)	(4)	(5)	(6)
Democratic mayor was elected in 2000	-0.724 (0.489)	-0.692 (0.668)				
Democratic mayor was elected in 2001	-0.660 (0.525)	-1.161 (0.754)				
Democratic mayor was elected in 2002	0.316 (0.654)	0.395 (0.773)				
Democratic mayor was elected in 2003	-0.567 (0.495)	-0.711 (0.729)				
District split in 1998-2004			0.268* (0.158)	0.098 (0.310)	-0.176* (0.096)	-0.285* (0.162)
Transitional government appointed first post-Suharto mayor			-0.106 (0.149)	-0.237 (0.278)	-0.066 (0.076)	-0.227 (0.155)
Unknown if trans-gov or 1999-parl. appointed 1st post-Suh. m.			0.154 (0.321)	0.886 (0.704)	0.110 (0.114)	0.133 (0.291)
Interim mayor installed between last Suh. m. and first dem. m.			0.303 (0.215)	0.297 (0.398)	0.110 (0.069)	0.211 (0.260)
Last Suharto mayor stepped down before end of 5-year term			0.305 (0.187)	0.600* (0.353)	0.120 (0.095)	-0.017 (0.267)
Democratic mayor stepped down before end of 5-year term			0.183 (0.210)	0.187 (0.513)	-0.039 (0.206)	0.241 (0.218)
Province FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations (Districts)	87	87	265	265	219	231
P-value of F-Statistic (excluding Province FE)	0.263	0.172	0.075	0.086	0.003	0.059

Notes: In this table we analyze correlations between a district's manufacturing sector and other characteristics. In columns 1-2 the included characteristics are dummies for the election years of the first democratic mayor, with election in 1999 as omitted baseline. We allow all districts that existed in 1997 and feature in our baseline sample to be included (some are dropped due to the fixed effect structure). In columns 3-6 we include all districts that existed in 1997 and distinguish them based on our sample selection criteria that we describe in Section 3. The dependent variable in columns 1 and 3 is the average log employment across plants in the district. The dependent variable in columns 2 and 4 is the log of total manufacturing employment in the district. In columns 5-6 the dependent variable is the growth rate of employment between 1990 and 1997. In column 5 this is computed as the average across all available plant-level differences between log employment 1997 and log employment 1990 in a given district. In column 6 we compute the growth rate as the change in log total district-specific employment between 1990 and 1997. We only compute and include the growth rates for districts that did not split over 1990-1997, which results in dropping 21 of the 292 districts. The actual sample sizes in columns 3-6 are reduced by the fact that not all 1997-districts host manufacturing plants with 20 or more employees in 1997 (columns 3-4) or both in 1990 and 1997 for the same plant (column 5) or both in 1990 and 1997 in general (column 6). Standard errors in parentheses are clustered at the district level. ***Significant at 1% level; **Significant at 5% level; *Significant at 10% level.

OA3 Additional Summary Statistics

	Mean	Median	Min	Max	sdev	N
<i>Panel I: District-specific variables</i>						
Democratic mayor has Economics/Management/Finance degree	0.356	0	0	1	0.483	59
D. m. has Political science/Administration/Government studies degree	0.203	0	0	1	0.406	59
Democratic mayor has Law degree	0.220	0	0	1	0.418	59
Democratic mayor has other degree	0.254	0	0	1	0.439	59
Second democratic mayor has college degree	0.861	1	0	1	0.348	79
ln(Average employment across plants 1997) (districts in sample)	4.669	4.501	3.207	7.005	0.885	87
ln(Total employment 1997) (districts in sample)	8.016	8.266	3.497	11.827	1.682	87
ln(Average employment across plants 1997) (all districts)	4.728	4.656	2.996	7.005	0.948	265
ln(Total employment 1997) (all districts)	7.553	7.668	2.996	12.240	2.022	265
Average across plants of: ln(Empl. 1997) – ln(Empl. 1990) (all distr.)	0.071	0.094	-2.147	1.709	0.392	219
ln(Total employment 1997) – ln(Total employment 1990) (all distr.)	-0.010	0.035	-3.116	4.769	0.956	231
<i>Panel II: District-year-specific variables</i>						
<i>Infrastructure</i>						
ln(Availability: Streets)	3.439	3.689	1.609	4.190	0.707	125
ln(Availability: Seaport)	3.372	3.497	1.792	3.932	0.507	125
ln(Availability: Airport)	2.556	2.833	1.099	2.833	0.540	125
ln(Availability: Telephone Service)	3.566	3.784	1.609	4.263	0.702	125
ln(Availability: Electricity Service)	3.320	3.367	1.609	4.263	0.731	125
ln(Subtotal Availability of Infrastructure)	5.026	5.069	3.829	5.617	0.353	125
ln(Quality: Streets)	3.083	3.555	1.099	3.555	0.644	125
ln(Quality: Seaport)	2.801	2.639	1.099	3.555	0.610	125
ln(Quality: Airport)	2.900	3.091	1.099	3.258	0.430	125
ln(Quality: Telephone Service)	3.482	3.497	1.386	4.304	0.620	125
ln(Quality: Electricity Service)	3.371	3.497	1.386	4.304	0.700	125
ln(Subtotal Quality of Infrastructure)	4.871	4.868	3.784	5.403	0.352	125
<i>Institutional quality</i>						
ln(Service procedure)	4.030	4.127	2.773	5.513	0.697	125
ln(Absence of abuse of authority)	3.366	3.401	2.079	4.787	0.795	125
ln(Subtotal Apparatus & Service)	4.504	4.522	3.178	5.908	0.652	125
ln(Consistency of regulations)	3.949	3.989	2.485	5.106	0.729	125
ln(Law enforcement)	4.166	4.248	2.890	5.525	0.693	125
ln(Absence of illegal levies outside bureaucracy)	3.054	3.219	1.792	4.595	0.761	125
ln(Executive-Legislative relations)	3.441	3.401	1.946	4.277	0.286	125
ln(Subtotal Law certainty)	5.219	5.187	4.190	6.209	0.482	125
ln(Retribution / Taxes)	4.083	3.932	2.996	4.883	0.439	125
ln(Development budget / Total budget)	3.059	3.135	2.197	4.078	0.578	125
ln(Subtotal Regional finance)	4.424	4.477	3.367	5.252	0.398	125
ln(Regional policy & regulations)	4.755	4.990	3.829	5.380	0.537	125

Notes: This table provides summary statistics on the variables that are only used in the Online Appendix, with the exception of the variables that constitute the vector X_k which are reported in Table A1 for illustrative purposes. Descriptive statistics on specific college degree types are based on the sample of districts that meet our baseline sample selection criteria, in which the democratic mayor has a college degree, and for which we have degree-specific information. “Other degree” includes the following degrees: Engineering, Medicine, Education Studies, Biology, Mathematics and Islamic Studies. Note that some democratic mayors have multiple degrees: for such mayors more than one of the four indicated degree dummies equals one. Descriptive statistics on *Second democratic mayor has college degree* are based on the sample of districts that both meet our baseline sample selection criteria and the additional criteria described in Section OA2. For illustrative purposes, the raw scores of all Infrastructure and Institutional quality scores are multiplied by 10,000 before taking the log such that all numbers are larger one and the log is thus non-negative.

OA4 Online Data Appendix

OA4.1 Manufacturing plant-level data

Data cleaning

We drop plant-years in which production worker employment is larger than total employment, as well as plant-years in which the reported number of employees is below 20.¹⁰ Furthermore, we drop the few plants that have a district ID that does not correspond to any district ID we observe in our BPS list of district IDs. As mentioned in footnote 19 of our paper, around 4% of plants that operate in the period 1998-2004 report two or more districts as their location over this time period. We cannot be sure if these events are real or due to measurement error. This is because districts split and proliferated over time in which district codes were reused and reassigned from time to time, and while we track these changes, some errors may remain. We drop these plants from our sample in order to address the mentioned measurement concerns, the potential worry that certain plants self-selected into districts that democratize early, and to ensure that plant fixed effects absorb district fixed effects in our empirical specification.

Variables used in the analysis

We use the following variables from the manufacturing plant census in our analysis: number of employees; revenue; total factor productivity (TFP); total investment; total wage bill divided by number of employees; share of revenue generated through exports; district lo-

¹⁰ The fact that only few plants had less than 20 employees made clear to us that indeed, if a plant that had been registered the year before went below the threshold of 20 employees, it was not registered in the following year. We conclude that realizations of employees below 20 must be typos.

cation; four-digit ISIC Rev.3.1 sector¹¹; expenditure on indirect taxes (“for example: sales tax, establishment license, building and land tax (PBB), road user tax (SWP3D), import duty, custom fee, etc. except income tax and personal taxes”)¹²; and expenditure on “gifts, donations and the like” to non-employees, which is a proxy for bribe payments. We scale expenditure on indirect taxes and the bribe proxy by value added following Vial and Hanoteau (2010) and winsorize the resulting ratios at the 1% level. The calculation of TFP is based on the method by De Loecker and Warzynski (2012) and Akerberg et al. (2006). First, a separate translog production function for each two-digit ISIC sector is estimated, relating the log value added to (the log of) capital, labor, and materials (including squared terms and all interactions) and year and four-digit-ISIC-industry fixed effects. Input coefficients are allowed to vary by exporter and foreign ownership status. Demand for materials proxies for unobservable productivity shocks. This yields expected industry-level output, which then results in plant-year level deviations from expected output. In the second step, these are regressed using GMM on its lag, capital and labor input where current labor is instrumented with lagged labor as suggested by Akerberg et al. (2006). Finally, the innovations of this regression capture TFP. Value added equals output net of inputs of material and energy. Capital is proxied with fixed assets, labor with the number of employees. All variables are expressed in Indonesian rupiahs, deflated using five-digit industry producer price indices.

¹¹ The census reports the four-digit sector in terms of an Indonesian classification: the 2000 version of the *Klasifikasi Baku Lapangan Usaha* (KBLI 2000). This nearly corresponds to Revision 3.1 of the *International Standard Industry Classification* (ISIC Rev.3.1) but not one-to-one. Therefore, we first use KBLI 2000 and ISIC Rev.3.1 documentation files to assign to each KBLI 2000 industry code its corresponding ISIC Rev.3.1 code.

¹² See <https://mikrodata.bps.go.id/mikrodata/index.php/catalog/465/download/1696>

OA4.2 Data on mayor selection timing

We infer information on the election timing of the first democratic mayor of all districts in our sample from the data repository of Martinez-Bravo et al. (2017).¹³ Further, we need information on the year in which the last Suharto mayor was appointed, in order to understand whether the last Suharto mayor stepped down prematurely or stayed in power for longer than five calendar years without actually being elected by the local 1999-parliament to stay in power (we exclude districts with premature Suharto mayor resignation to arrive at our baseline sample and further exclude districts with delayed Suharto mayor resignation in a robustness check, see column 2 of Table OA4). For around 40% of districts, information on the last Suharto mayor appointment year is missing in the Martinez-Bravo et al. (2017) data.¹⁴ We are able to fill these data for all districts in our sample using the district-specific *Wikipedia* page. If the *Wikipedia* page and the data of Martinez-Bravo et al. (2017) indicate the same election year of the first democratic mayor and the difference between the last Suharto and first democratic mayor selection is five years, or *Wikipedia* indicates five calendar years between the two events, then we conclude that the last Suharto mayor adhered to his

¹³ This repository does not indicate the election timing of the first democratic mayor, but of the last mayor before the first directly elected mayor (recall that direct mayor elections were introduced starting from 2005). For a few districts in which the democratic mayor election occurred in 1999, the mayor in the data repository therefore does not correspond to the first but instead the second democratic mayor, such that we do not have data on the first democratic mayor and have to omit the district from the sample. This does not apply to *all* districts in which the first democratic mayor was elected in 1999 because for some, the next election was delayed to early 2005.

¹⁴ Note that the Martinez-Bravo et al. (2017) data does not indicate the appointment date or year of the last Suharto mayor, but of the last mayor appointed before 1999. For all districts in which the pre-1999 mayor was appointed in 1997 or earlier, the two are equivalent. For the 1998-appointments, for some districts we are able to determine whether the appointment was done by Suharto or the transitional government through consulting the district-specific *Wikipedia* page, while the other few we have to omit from our sample, as mentioned in Section 3.

term.¹⁵

OA4.3 Mayor-specific variables

Democratic mayor education

Data on democratic mayor education is obtained from the data repository of Martinez-Bravo et al. (2017), and is available for all districts included in our baseline sample. The data distinguishes between “Less than Bachelor Degree”, “Bachelor Degree”, “Master Degree” and “PhD Degree”.

Democratic mayor gender

Data on the gender of the democratic mayor is obtained from the same data repository of Martinez-Bravo et al. (2017), and is available for all districts included in our baseline sample.

Democratic mayor age at time of election

We compute democratic mayor age as the difference in calendar years between the election year and the birth year. We do so because we do not know the exact date of birth and/or date of election for some mayors. We have information on mayor age for 87 of the 103 districts in our baseline sample; for 36 mayors, we obtain the mayor’s birth year from the data repository of Martinez-Bravo et al. (2017), while for the remaining 51, we were able to identify the birth year via online search using the name of the mayor.

Birth district of democratic mayor

¹⁵ In practice it turns out that there are no districts in which data are missing in the Martinez-Bravo et al. (2017) data and the Wikipedia page indicates that the time difference between the last Suharto and first democratic mayor selection is not equal to five years.

We use information on the mayor’s birth district to distinguish native versus non-native mayors. For 90 of the 103 districts of our baseline sample, we have information on the birth district. Data on 36 districts come from the data repository of Martinez-Bravo et al. (2017), while data for the remaining 54 districts are obtained via online search.

Previous occupation of democratic mayor

We construct a dummy variable *Democratic mayor worked in private sector pre-election* which equals one if the occupation before becoming democratic mayor as indicated by Martinez-Bravo et al. (2017) is “Businessman/Private Employee” (as opposed to “Civil Servant”, “Politician”, “Military”, “Lecturer/Teacher”, “Celebrity” or “Other”). This way we obtain information for 32 of the 103 districts of our baseline sample. For the remaining districts, we attempted to fill the gaps via online search based on the same distinction as in the data repository, and were successful for 55 districts (mayors).

Party affiliation of democratic mayor

We construct a dummy variable that equals one if the first democratic mayor is member of the Golkar party. The information we have on party membership does not always correspond to the period in which the person served as first democratic mayor. Party membership data from Martinez-Bravo et al. (2017), which is our data source for eight mayors, are as of 2009. Additional data that we are able to retrieve via online search for 58 mayors correspond to the first democratic mayorship period whenever possible, and otherwise to later years. For three districts we infer that the mayor is not member of Golkar because another party won 50 or more percent of votes in the 1999 legislative elections and thus did not need to rely on

support from other parties in the mayor election. This information is thus as of the mayorship period. Finally, for eight districts in our sample for which the above sources do not provide information on party membership, we infer that the democratic mayor is member of Golkar because the last Suharto mayor was elected as first democratic mayor.

Direction of college degree of democratic mayor

In order to identify the study direction of democratic mayors with college degree, we first use the title(s) indicated in the mayor name variable. Thereby we obtain information on 40 mayors and the following directions: Business Administration (name contains title “MBA”), Management (“MM”), Engineering (“Ir.”), Medicine (“Dr.”), Law (“SH”), Economics (“SE”), Education (“S.Pd.”), Islamic Studies (“KH”). As a quality check we randomly picked five districts in which the mayor name includes the title MBA or MM and investigated through online search which specific degree the mayor obtained. In all five cases, the obtained direction was Business/Management. For the remaining 42 mayors in our sample who have a college degree but none of the above titles is reported, the mayor name includes the titles “M.Si”, “M.Sc”, “MS”, “B.Sc” or no title besides “Drs.”. Therefore it is not possible to identify the specific study direction of these mayors using the mayor name variable. We therefore performed an online search on these mayors and identified the study direction of 19 of them. We then compute four more generic dummy variables indicating the broad study direction: “Economics, Business, Finance”, “Politics” (including political science, public administration and related degrees), “Law” and “Other”, which serves as baseline category in the specification of Table OA7.

Education of last Suharto mayor

Martinez-Bravo et al. (2017) provide information on the years of schooling of the last Suharto mayor for most districts; this gives us information for 91 districts in our main sample. Based on Indonesia’s education system, we use this information to infer the mayor’s level of education in terms of degrees as follows: < 16 years of schooling → no college degree; 16 years of schooling → bachelor degree; 18 or more years of schooling → master or PhD degree.¹⁶ Finally, for three districts with missing data we infer that the last Suharto mayor has a college degree because the mayor name includes the title “Drs.”. In two districts with missing data the last Suharto mayor has no academic or military title, thus we infer that the mayor has no college degree.¹⁷

Mayors cited in corruption cases

In this section we describe the creation of a dataset on corruption cases at the mayor level. In order to understand the institutional context we start by briefly discussing Indonesia’s recent history of corruption reduction efforts. During the Suharto era corruption was legally regarded as a criminal act through law 3/1971, but in practice government officials were permitted – and perhaps even encouraged – to extort bribes. After Suharto’s fall the more comprehensive and ambitious law 31/1999 was passed, but its enforcement suffered from

¹⁶ The highest number of school years in the data is 18, thus de-facto none of the last Suharto mayors in our sample has a PhD degree. The path to a master degree in Indonesia is as follows: 6 years primary school, 3 years elementary school, 3 years highschool, 4 years bachelor degree, 2 years master degree.

¹⁷ For mayors with a military title but no academic title, we cannot infer college degree status. This is because a look at the districts in which the last Suharto mayor was elected as first democratic mayor, for which we know the last Suharto mayor’s college degree status directly from the Martinez-Bravo et al. (2017) database, reveals that some mayors with only a military title have a college degree while others do not.

strong resistance by government officials.¹⁸ Furthermore, the Indonesian justice system – consisting of police, prosecutors and courts – frequently accepted bribes in return for dropping investigations, sloppy prosecutions and issuing light sentences and acquittals.¹⁹ The situation improved somewhat in 2003 with the formation of the Corruption Eradication Commission (*Komisi Pemberantasan Korupsi*, or *KPK*) as well as an anti-corruption court (*Pengadilan Tindak Pidana Korupsi*) on the basis of law 30/2002, which in turn follows Article 43 of law 31/1999. The KPK and the anti-corruption court were designed to take over corruption cases from the justice system under particular circumstances, which are listed out in law 30/2002. The KPK is institutionally independent of government and has more investigative rights than the police, while the corruption court is a branch of the general court that only tries cases the KPK prosecutes (Butt, 2017).

There are different stages in a corruption case, which we assign different numbers in the process of our data collection. First, the relevant body performs research to collect information (*corr_status* = 1). This process may lead to the start of official investigations (2). If these result in sufficient evidence, the person is declared an official suspect and thereby becomes a defendant at court (3).²⁰ The defendant may then be convicted (4) or acquitted (5). For each democratic mayor in our sample, we determine the status using different data sources. If none of our sources indicates any status described above, we assign *corr_status* = 0. We do not restrict the timing to the period in which the mayor serves as first democratic mayor. One data source we use are detailed lists on corruption cases provided by the watchdog *Indonesia*

¹⁸ Makarim & Taira S. (2012) provide a detailed overview of the differences between law 3/1971 and law 31/1999 and an elaborate discussion of other Indonesian anti-corruption laws.

¹⁹ The justice system has therefore often been described as “mafia” (*mafia peradilan*) (Butt and Lindsey, 2010).

²⁰ Once this stage is reached, the defendant must (at least temporarily) resign from his mayor position.

Corruption Watch (ICW), which are available for the period 2005-2007.²¹ We also use similar data from the KPK, which is available for the period 2006-2019.²² We then complement the obtained information with a Google search on each mayor using the words “[Mayor’s full name] korupsi”. This search was carried out in October 2020. We study the relevant page results and assign the relevant corruption status among $corr_status = 1$ and $corr_status = 5$ to the mayor if applicable, and assign $corr_status = 0$ if the search yielded no result and our other sources do not indicate any status between 1 and 5. In this search process we exclusively focus on action taken by the prosecution service (consisting of one Attorney General’s Office, High Prosecution Offices at the province level and District Prosecution Offices), the KPK, official courts and/or or the police. We source all information from newspaper reports rather than blogs or similar pages.²³ To make this qualitative search process manageable and due to the fact that the pages describing a corruption case are typically on top of the Google results list, we only focus on results on the first page of Google results (which typically contains around 10 results). Our overall procedure described above implies that if the mayor was merely consulted as witness in a corruption case or was solely accused of corruption from individuals or groups outside the bodies listed above, we assign $corr_status = 0$. We always use the most recent result across all sources: for example we double-check whether a suspected mayor was convicted or acquitted later, or if an acquitted mayor was involved in another case

²¹ Indonesia Corruption Watch (2008) lists all corruption cases examined and decided by (general) courts during 2007 (see Appendix 8 in the source), 2006 (Appendix 9) and 2005 (Appendix 10). We complement these data with additional information from ICW for 2007 which also lists cases that had not been taken to court yet, thus also cases with $corr_status = 1$ or $corr_status = 2$. This information was published by several newspapers, for example *Detik*: see <https://news.detik.com/berita/d-832658/41-bupati-terkait-kasus-korupsi>.

²² The KPK documents the cases it handles. See <https://www.kpk.go.id/>.

²³ The five most common sources are *news.detik.com* (10 cases), *kompas.com* (9), *tempo.co* (8), *tribunnews.com* (4) and *liputan6.com* (3). For one district we only find information on a corruption case in a journalist’s blog rather than on official news portals. For this district we use the information from another data source of higher quality which we describe further below.

later on. We make sure the person reported in the source is the mayor and not someone else with the same name; in some cases this necessitates a second round in which we add the name of the district in which the mayor held the mayor position to the Google search for verification. Finally, for all mayors with *corr_status* < 4 as of the described data sources, we search for the full mayor name in the archive of publications of electronic documents on decisions of all courts in Indonesia.²⁴ This yields a change of *corr_status* from 0 to 4 in one district (see also footnote 23). The final dataset indicates 51 mayors with *corr_status* = 0, three with status research (*corr_status* = 1), two with status investigations (2), 15 with status official suspect (3), 27 convicted mayors (4) and five acquitted mayors (5). All convicted mayors were sentenced to prison, with an average sentence duration of 4.3 years and frequently an additional monetary fine in place of further prison time.

²⁴ The archive can be accessed at <https://putusan3.mahkamahagung.go.id/>. We also search the archive for the name of all mayors with *corr_status* > 3 as indicated by ICW, KPK and/or the Google search source(s). We find the corruption-related court rule documentation for 44% of these mayors in the archive. For mayors with relatively common first and last name we do not fully study the multitude of page results in the archive, which is arguably the main reason for not finding more cases. This exercise therefore increases our confidence that mayors with *corr_status* = 0 in our database were indeed not involved in a corruption case.

OA4.4 District-specific variables (except KPPOD variables)

1999 election outcome variables

Our primary data source for the results of the 1999 local legislative elections is the website *pemilu.asia* by Kevin Evans from *The Australia-Indonesia Centre*. The website provides pie charts on the election outcomes of nearly all districts that then existed. We use this data to compute the dummy variable *Golkar wins 1999-elections*, which equals one if Golkar obtains the largest vote share. For two districts in our sample of 103 districts, data are missing. For these districts, we infer the Golkar vote share from Sevin (2001).²⁵ We also use the election outcome data to compute the variable *1999-election vote share HHI*, which is a Herfindahl-Hirschmann Index based on the vote share of participating parties.

Population

We compute population based on the population census of 2000. Data are provided by *IPUMS-International*.

Population density

We compute population density as the ratio of population and surface area in square miles, both measured in 2000. We use a shapefile provided by the BPS to compute the surface area.

GDP per capita

Data on GDP is obtained from The World Bank's *Indonesia Database for Policy and Economic Research* (INDO DAPOER). We use the data for 2000 and compute GDP per capita

²⁵ For both of these districts, Sevin (2001) indicates that Golkar received more than 50% of votes, thus *Golkar wins 1999-elections*=1.

by dividing total GDP by population as of 2000.

Education of working age population

We compute this variable using educational attainment data at the individual level from the 2000 population census. At the individual level, the variable takes either 0 (less than primary education), 1 (primary education completed), 2 (secondary education completed) or 3 (college degree obtained). We define the working age population as the subset of inhabitants between the age of 15 and 65.

Religious fractionalization

Using the results of the 2000 population census, we compute religious fractionalization as a Herfindahl-Hirschmann Index (HHI) based on the district-specific shares of each religion. The shares are computed based on the micro-data of individuals. The census distinguishes between Muslims, Buddhists, Hindus, Christians and “Other”.

Expenditure data

Expenditure data are provided by the Directorate General of Financial Considerations within the Indonesian Ministry of Finance.²⁶ Development Expenditure consists of expenditure on the following sectors (see the original name in brackets): Industry (*Sektor Industri*); Agriculture and Forestry (*Sektor Pertanian Dan Kehutanan*); Water Resources and Irrigation (*Sektor Sumber Daya Air Dan Irigasi*); Labor (*Sektor Tenaga Kerja*); Transport (*Sektor Transportasi*); Mining and Energy (*Sektor Pertambangan Dan Energi*); Tourism and Regional

²⁶ see http://www.djpk.kemenkeu.go.id/?page_id=321

Telecommunication (*Sektor Pariwisata Dan Telekomunikasi Daerah*); Regional Development and Settlement (*Sektor Pembangunan Daerah Dan Pemukiman*); Environmental and Spatial (*Sektor Lingkungan Hidup Dan Tata Ruang*); Education, National Culture, Trust, Sustainable God, Youth and Sports (*Sektor Pendidikan, Kebudayaan Nasional, Kepercayaan, Terhadap Tuhan Yang Maha Esa, Pemuda Dan Olah Raga*); Population and Family Welfare (*Sektor Kependudukan Dan Keluarga Sejahtera*); Health, Social Welfare, the Role of Women, Children And Youth (*Sektor Kesehatan, Kesejahteraan Sosial, Peranan Wanita, Anak Dan Remaja*); Housing and Settlements (*Sektor Perumahan Dan Pemukiman*); Religion (*Sektor Agama*); Science And Technology (*Sektor Ilmu Pengetahuan Dan Teknologi*); Legal Sector (*Sektor Hukum*); Government Apparatus Sector and Supervision (*Sektor Aparatur Pemerintah Dan Pengawasan*); Politics, Information, Communication Mass Media Sector (*Sektor Politik, Penerangan, Komunikasi Media Massa*); Security and Public Order (*Sektor Keamanan Dan Ketertiban Umum*); Trade, Regional Business Development, Regional Finance and Cooperative (*Sektor Perdagangan, Pengembangan Usaha Daerah, Keuangan Daerah Dan Koperasi*).

OA4.5 KPPOD data

KPPOD collected data for 134 districts in 2002, 200 districts in 2003 and 214 districts in 2004. For 121 districts we have data for all three years, for six districts we only have data for 2002 and 2003 and for 65 districts we only have data for 2003 and 2004. We use the panel as much as possible in our analysis (thus also include districts for which only two years are available), conditional on imposing the same sample selection criteria as in our main analysis and further dropping two districts that have no medium-sized or large manufacturing over

2000-2004. No matter the nature of a specific KPPOD variable, a larger reported score always represents an improvement rather than simply an increase in the variable. Therefore, in Table OA6 we change the names of the variables “Abuse of authority” and “Illegal levies outside bureaucracy” to “Absence of abuse of authority” and “Absence of illegal levies outside bureaucracy”, respectively. Regarding the latter, we note that the KPPOD surveys include separate questions on the severity of illegal levies charged by a) local government officials and b) non-governmental agents such as security officers, community groups and gangsters. However, only the results on illegal levies charged by non-governmental agents are published at the district level (thus the addition *outside bureaucracy* in Table OA6.) The summary of the 2003 survey results mentions that illegal fees charged by local government officials were perceived to be most onerous. Below we copy the variable descriptions from the original KPPOD (2002) description.

Infrastructure

The score on every infrastructure sub-component is in part measured through a survey on local business actors and the consultation of a panel of experts. Furthermore, the score is co-determined by other, variable-specific data, which we report in the following (see KPPOD, 2003, p.110, for all below variables).

Availability of Streets. “Ratio of the length of the streets in the city/regency over region’s area”

Availability of Sea Ports. “Availability or distance to sea port in kilometers”

Availability of Airport. “Availability or distance to airport in kilometers”

Availability of Telephone Service. “Number of telephone lines per capita”

Availability of Electricity Service. “Production of electricity/KWh of available electricity”

Quality of Streets. “Ratio of the length of streets with good quality over total length of streets”

Quality of Sea Ports. “Type and capacity of sea port and average departure per week”

Quality of Airport. “Type of airport and average flights per week”

Quality of Telephone Service. Data source: “Regency/city and province in figures by BPS”

Quality of Electricity Service. Data source: “Regency/city and province in figures by BPS”

Institutional Quality

Service procedure. “Measures the quality of government service and professionalism of government apparatus in providing service to business community” (KPPOD, 2003, p.108).

Abuse of authority. “Measures the distortion of regional government apparatus in providing service to business community” (p.108; larger score ↔ less distortion)

Consistency of regulations. “Measures the certainty, clarity, and consistency in enforcement of regional regulations and other policies regulating business” (p.108)

Law enforcement. “Measures law certainty such as protection on work contract and ownership right, consistency of court decisions especially those related to business” (p.108)

Illegal levies outside bureaucracy. “Portrays regional government’s settlement of illegal practice in levy conducted by people or group of people outside bureaucracy that disturbs business” (p.108; larger score ↔ less distortion)

Executive-Legislative relations. “Captures problems caused by poor relations between DPRD

and Regional Government” (p.108)

Retribution / Taxes. “Analyzes the structure of levies applicable in the region, especially regional tax and regional retribution” (p.108)

Development Budget / Total Budget. “Measures the commitment of regional government in developing physical infrastructure needed to support business activities manifested in fund allocation in development budget” (p.108)

Regional policy and regulation. “Assesses the quality of policies/legal products made by regional government (regional regulations, Decision of regent/mayor, etc.) especially those related to business community. Several aspects are examined from those regulations such as juridical aspect, philosophy, substance, principles, and effects that might produce by said legal products. Regulations related to service, levy, pricing, labor, and so on are the focus.” (p.108)

OA4.6 Details on the selection of districts

In 20 of the 103 districts in our sample the first democratic mayor was elected six instead of five calendar years after the appointment of the last Suharto mayor.²⁷ In 11 of these districts the last Suharto mayor was appointed in 1994, in four districts the appointment occurred in 1995 and in five districts the appointment happened in 1997. We choose to keep these districts in our sample but also show in column 2 of Table OA4 that the results are robust to dropping these 20 districts. For the districts that appointed the last Suharto mayor in 1994 and elected the first democratic mayor in 2000, a comment by Hofman and Kaiser (2006) and

²⁷ We have to use the difference in calendar years as our criterion for whether the election of the first democratic mayor was delayed, because for some districts we do not know the exact date of the last Suharto mayor appointment.

the large share of “1994-2000 districts” (11/20) suggests that the reason is not district-specific. Specifically, in their discussion of the 2004 legislative and presidential elections Hofman and Kaiser (2006) state that “the Ministry of Home Affairs (...) extended the tenures of regional heads during the 2004 elections (...), believing that the absence of local elections and ongoing tenure of incumbent regional heads will enhance stability during the election season.” Since the 1999 elections arguably occurred in an even less stable environment, it appears likely that the same decision was made during those elections.

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