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# ELITE SURVIVAL FIRST, THEN MERITOCATIZATION

**Implications of Elite Survival on the Meritocratization of  
Bureaucracies: A Panel  
Data Study from 1820 to 2010**

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## ABSTRACT

Previous research has shown that meritocratic recruitment increases bureaucratic performance and decreases corruption (Evans and Rauch, 1999, 2000). However, less emphasis has been made on why meritocratic practices take root. This paper aims to explore this scientific gap by testing two main hypotheses. Increased rates of tertiary enrolment in autocracies is proposed to have a negative effect on meritocratization ( $H_1$ ). This is suggested to occur as a growing educated class may directly compete with the ruling elites for power. Conversely, increasing rates tertiary enrolment is suggested to increase the likelihood of meritocratization in democracies ( $H_2$ ). This mechanism is proposed, as democratic rulers are concerned about the provision of public goods. They are thereby willing to sacrifice their natural inclination toward favouring their core constituencies, as costs for retaining patronage networks increases with a growing educated class. Evidence was found for both  $H_1$  and  $H_2$  – autocracies display a significant negative relationship with meritocratization as tertiary enrolment increases, while a significant positive relationship is found for democracies. The study was empirically executed using panel data, with measures of tertiary enrolment and meritocracy dating from 1820 to 2010 – which to date is the first time to be tested. In addition, up to 108 countries were evaluated over the time period, using a variety of controls. This paper thereby provides new evidence based on a larger collection of data than previous studies investigating the causes of meritocratization.

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## Introduction

Meritocracy may signal fairness in the process of recruitment, absorbing the most talented applicants into the public administration. Yet, meritocracy may not necessarily equate to merit reforms – many countries generally have merit laws but do not follow them in practice (Rothstein and Sorak, 2017: 41; Schuster, 2017). This paper therefore aims to investigate the adoption of merit in practice – not legal merit reforms.

However, merit in practice entails costs for the ruling elite in autocracies, where rulers (and their children) may lose the advantages procured through networks of nepotism and political favouritism – as talented outsiders from the lower classes may take their jobs (Shefter, 1977, 1994; Sundell, 2013, 2014). This therefore creates a dilemma for the elites – where opening up the public administration to an increasingly educated work force, may directly increase competition with the political elite, and thus likely diminish its dominance over political affairs. Increasing rates of tertiary enrolment in autocratic regimes, is therefore suggested to disincentivize the adoption of merit reforms.

Conversely, the likelihood of merit in practice is proposed to increase among democracies; when the educated class grows, the political elite is compelled to meritocratize as the advantages of patronage networks loses its benefits (Hollyer, 2011a, 2011b). Thus, as the legitimacy of a democratic regime is dependent on the electoral support of its citizens – leaving out a growing educated class may be more costly for the ruling elite, which in turn increases pressures for adopting merit in practice.

This paper thereby evaluates the diverging outcomes in bureaucratic recruitment, and more particularly, why some bureaucracies recruit applicants based on their talents and merits, and why other bureaucracies rely on partial recruitment-channels based on networks of patronage and nepotism. These recruitment-patterns are related to the Weberian distinction; where public employees on one hand are recruited through merit-based practices, insulated from the ruling elite, and on the other hand, a politicized bureaucracy where public employees are partially selected through personal networks based on nepotism and patronage, accountable to the political elite (Weber, 1921/1978; Silberman, 1993). Yet, first of all, why is it relevant to have a meritocratic bureaucracy?

Previous research has shown that meritocratic recruitment increases bureaucratic governance and decreases corruption (Evans and Rauch, 1999, 2000). Bureaucracies adopting merit in practice may receive larger shares of investments, in comparison to bureaucracies with no meritocracy (Mauro,

1995). Meritocratic recruitment may mitigate the likelihood of civil wars (Lapuente and Rothstein, 2014), increase democratic stability (Cornell and Lapuete, 2014) and the legitimacy of the political system in place (Rothstein, 2008). Bureaucracies recruiting applicants by merit may also explain why countries with vast natural resources can accumulate and invest resources efficiently (Acemoglu and Robinson, 2012; Mehlum, Moene and Torvik, 2006). Establishing meritocracy may have a profound effect on interpersonal trust, as there seem to be a causal relationship between trust in authorities (vertical trust) and inter-personal trust (horizontal trust). This implicates that when trust in authorities increases, trust will spread among the public themselves (Rothstein, 2001; Uslander and Badescu, 2004; Ek and Rothstein 2005; Rothstein and Teorell, 2008; Rothstein, 2011).

In addition, having a meritocratic bureaucracy may impact a wide array of aspects associated with human well-being, such as environmental quality (Laegreid and Povitkina, 2018), natural disaster preparedness (Ahlbom and Povitkina, 2016), egalitarian values (Teigen and Wängerud, 2009; Rothstein, 2016) and health (Holmberg and Rothstein, 2010; Halleröd et al., 2013). The absence of meritocracy, may thus bring about dire consequences for entire societies, crippling the delivery of public goods and services. It is therefore important to identify what causes the adoption of meritocracy from a scientific as well as a societal point of view. However, while the outcomes of meritocracy on governance has been established – less emphasis has been made on what incentivizes meritocratization. This paper aims to explore this scientific gap, by investigating the effect of tertiary enrolment on meritocratization over time.

Previous papers have argued that higher rates of secondary enrolment increase the likelihood of meritocratization – as the political legitimacy for retaining existing patronage networks decreases with a growing educated population (Holliyer, 2011b, 2011a). Thus, the political elite is suggested to be pressured to meritocratize in order to maintain its political legitimacy. This paper complements previous research by introducing a novel theory: increased rates of tertiary enrolment is suggested to disincentivize the political elite in autocratic regimes from adopting merit in practice, as it triggers increased competition between the already-established political elite on one side, and the educated populace on the other side – that have yet challenged the hegemony of the old guard. In this context, the political elite is suggested to hold positions “with close proximity to power or policymaking [including] all elected representatives, executive officers of organisation and senior state employees” (Lilleker, 2003: 207).

The above-stated mechanisms may thereby display two divergent patterns. First, democracies are more likely to show similar outcomes in accordance with previous research, where an increasingly educated class pressures the political elite to introduce merit in practice, as keeping recruitment-procedures based on patronage weakens its political legitimacy (Hollyer, 2011a, 2011b). Second, increasing rates of tertiary enrolment disincentivizes the ruling elite in autocracies from introducing merit in practice, as it may directly increase competition with the ruling elite, and thus likely diminish its dominance over political affairs (Sundell, 2013, 2014; Shefter, 1977, 1994). Furthermore, access to the public administration may be more dependent on the rate of completed tertiary enrolment rather than secondary enrolment. Tertiary enrolment is thereby evaluated instead of secondary enrolment, which was the basis of previous studies. However, the effects of secondary enrolment were controlled for, showing that the results hold for both levels of education (see Appendix VII).

Two main hypotheses are suggested: increased rates of tertiary enrolment is proposed to have a negative effect on meritocratization when interacted with autocratic regimes ( $H_1$ ). In addition, this paper evaluates whether democratic regimes increase the likelihood of meritocratization with rising rates of tertiary enrolment ( $H_2$ ). Evidence was found for both  $H_1$  and  $H_2$  – increasing rates of tertiary enrolment shows negative and significant effects on meritocratization for autocratic regimes, whereas the effect of democratic regimes displays significant positive results on meritocratization. Thus, increasing rates of tertiary enrolment in democracies facilitate meritocratization, whereas rising rates of tertiary enrolment in autocracies, have a negative effect on meritocratization – further entrenching the ruling elites into their patronage networks.

The study was empirically executed using panel data analysis with data on tertiary enrolment from 1820 to 2010, together with data measuring the impartiality of public administrations from 1789 to 2017 – which to date is the first time to be tested. In addition, up to 108 countries were evaluated for nearly two centuries using a variety of controls. This paper thereby provides results based on a larger collection of data than previous studies, investigating the causes of meritocratization. While previous studies evaluated the implications of secondary enrolment on meritocratization (Hollyer, 2011a, 2011b) – the requirements for formal recruitment may more likely correspond to tertiary education. The relationship between tertiary enrolment, merit adoption and political regimes overtime is thereby introduced for the first time in this paper, investigating its implications on meritocratization for 190 years. This paper therefore brings forward new evidence in terms of conditions that may incentivize and disincentivize merit adoption, and contributes by finding evidence for the effect of tertiary enrolment in two ways. First, increasing rates of tertiary enrolment decreases the likelihood of

meritocratization – under autocratic rule. Second, increasing rates of tertiary enrolment increases the likelihood of merit adoption – under democratic rule. The following section reviews previous literature that suggests the above-stated mechanisms.

## **Literature Review**

When the recruitment to the public administration is determined by the merits and talents of its applicants, it may significantly improve the deliverance of public goods. However, the causes of meritocratic recruitment have rarely been studied.

It may for instance be intuitive to think that merit laws establish meritocracy. This is however rarely the case – merit laws rarely transpire into merit in practice. For instance, Uganda has merit legislation, which according to the Swedish government agency SIDA is ‘close to perfection’ – although corruption is alarmingly high (Rothstein, 2018: 61-62). The same may apply to Italy, where all its regions have shared the same legislation for over 150 years. However, cross-variations between regions are extremely diverse in terms merit in practice. For instance, the farthest northern regions such as the Bolzano region, have levels of meritocracy on par with Denmark. While in contrast, its southern regions have ratings closer to Morocco and Nigeria (Charron et al., 2014; Charron, Dijkstra and Lapuente, 2015b; Rothstein, 2018). Practices of merit recruitment are in these examples thereby rarely related to the presence of merit laws (Rothstein and Sorak, 2017: 41; Schuster, 2017). Another illustrative example is the comparison between the developments of the Dominican Republic and Paraguay, showing that the Dominican Republic, albeit having adopted merit reforms – fail to implement them in practice, whereas Paraguay in relative terms, succeeds to adopt merit in practice without any legislation. These indications of good governance in Paraguay, are suggested to arise from “fragmented control over bad government” (Schuster, 2016: 8), which may allow space for periodic practices of merit recruitment (Schuster, 2016, 2017). This paper therefore evaluates the likelihood of adopting merit in practice – not merit laws. But if laws often are unable to uphold merit in practice, then why have meritocratic recruitment managed to be established in some cases and not in others?

Previous literature has identified certain factors that may facilitate the establishment of merit in practice. One main argument is that rising rates of secondary enrolment may put pressure on the political elite to meritocratize, as the costs of sustaining recruitment-channels based on patronage

networks increases. The legitimacy of the ruling elite is thereby theorized to be undermined, if the elite continues to hold on to recruitment-procedures based on patronage and nepotism, as pressures for merit adoption increases with a growing educated class (Hollyer, 2011a, 2011b). However, competing views exist whether increasing rates of secondary enrolment facilitates or obstructs merit in practice. In contrast, historical evidence shows that the nobilities in Europe agreed to adopt merit in practice, as long as they continued to hold on to power. This assumption is based on the nobilities' disproportionate access to education during the 19<sup>th</sup> and early 20<sup>th</sup> century – indicating that merit adoption was incentive-compatible under conditions when higher educational enrolment was low (Sundell, 2013, 2014). These views seemingly contradict each other in their conclusions. However, what is missing from these previous studies is the impact of political regimes on meritocratization as education enrolment increases.

This paper suggests that the former argument holds for democracies (Hollyer, 2011b), as the legitimacy of democratic regimes is based on the support of the electorate, pressuring the political elite to make concessions when the middle class expands (Olson 1993, Keefer and Vlaicu 2008; Hollyer, 2011a, 2011b). The costs of keeping a growing middle class outside of the public administration, is thus assumed to be greater than holding on to recruitment-procedures based on patronage. The latter mechanism on the other hand, is suggested to be in accordance with how autocratic rulers operate (Sundell, 2013, 2014; Shefter 1977, 1994). In this case, opening up the public administration to an increasingly educated work force, may directly increase competition with the ruling elite in autocracies, and thus likely diminish its dominance over political affairs. The elites may thereby opt for informal recruitment channels, in order to block competitors from having access to the public administration through formal means, as the legitimacy of the ruling elite in autocracies are bounded by the loyalty of their supporters, upheld by networks of patronage and nepotism (Magaloni, 2006, 2008; Magaloni and Kricheli, 2010; Geddes, 2014). In this context, increasing educational equality between the ruling elite and the middle class, can be interpreted as the reason for social conflict rather than the solution for it – a conflict that the elite in autocracies are willing to take in order to maintain their hegemony. Conversely, meritocratization may be incentive-compatible if access to higher education is limited to the elite, as such change only generate competition among the elite themselves (Sundell, 2013, 2014; Shefter, 1977, 1994).

The differential effect of education on merit recruitment when taking political regimes into account, may be explained by the divergent time horizons of the political elites in democracies and autocracies. Time horizon denotes the political elite's future anticipation about the durability of the regime

(Lapuente and Nistotskaya, 2009). Indications of a wide time horizon, and its effects on the decision-making of the political elite has been widely documented – it may be interpreted through respecting property and contract rights (Clague et al. 1996; Dahlström and Lapuente, 2017), increased rates of domestic investments (Wright, 2008a), stabilizing the path to democracy (Wright and Escriba-Folch, 2011), increased aid effectiveness (Wright, 2008b), less inclination toward nationalizing assets (Jensen, Malesky and Weymouth, 2014), and finally, an increased likelihood to adopt merit in practice (Lapuente and Nistotskaya, 2009). Yet, what causes a widened time horizon has often been limited to either ‘regime durability’ or the ‘probability of regime failure’, indicating a close relationship to elite survival (Clague et al., 1996, Przeworski et al, 2000).

For instance, if the ruling elite is ensured that their position is consolidated, they will be incentivized to make long-term decisions, signifying a widened time horizon. Conversely, if the elite perceives its position to be severely threatened, it incentivizes a behavioural pattern based on a short-term rationale, indicating a short time horizon (Clague et al. 1996; Wright, 2008a, 2008b, Lapuente and Nistotskaya, 2009; Wright and Escribá-Folch, 2011; Wilson and Wright, 2015). In general terms, democracies may therefore have an advantage over autocracies, as the legitimacy of democratic states relies on the support of the electorate (Keefer and Vlaicu, 2008), whereas in autocracies, regime survival mainly relies on the support of a narrow group of regime loyalists (Magaloni, 2006, 2008).

Another explanation for why merit in practice may take root is when power is limited to a small circle of rulers. Consequently, public employees conceive their politicians as less credible in such a situation, which incentivizes the rulers to bridge this lack of trust and increase efficiency by professionalizing the public administration (Knott and Miller, 2006, 2008; Lapuente, 2010; cf. Dahlström et al. 2012). This may well apply for autocratic regimes, where power frequently is concentrated to a few key-players. Thus, in terms of power-concentration, autocracies may be more incentivized to adopt merit in practice than democratic regimes. Autocratic rulers may thereby opt to delegate power by meritocratizing the public administration.

Autocrats may also enjoy the advantage of making swift and efficient decisions, as they are comprised of fewer veto-players in comparison to democracies. In addition, the ruling elite does not need to take any opposition into consideration, as they are able to reconcile all existing contradictions through coercive force (Lapuente, 2007; D’Arcy, Ellis and Nistotskaya, 2015). Autocracies are thereby able to deal with issues associated with collective action problems – by enforcing collective order through the authority of an external agent (Hobbes, 1651/1997). Democracies on the other hand share the



nature of a credible commitment problem. This is associated with the Montesquieuan thought of delivering welfare-enhancing goods, by ‘tying the hands of the elite’, through a horizontal division of power between institutions, and a vertical division of power between citizens and incumbents (Montesquieu, 1748/1989). These two notions thereby point toward how an institutionalized democracy tend to provide public goods as a means of maintaining political legitimacy (Olson 1993, Keefer and Vlaicu 2008; Hollyer, 2011a, 2011b), and how autocracies may implement policies – despite opposition – thereby adopting merit in practice efficaciously if rulers decide it is a necessary measure. However, the decisiveness of autocratic rulers is a double-edged sword – it may also imply that autocrats could ignore demands for merit adoption if it threatens its existence. Democracies on the other hand, may not ignore such demands easily due to their institutional design, as the basis of their legitimacy relies on the provision of public goods.

An additional important factor for facilitating merit adoption, is the establishment of an independent judiciary prior to merit reforms (Wilson, 1887; Goodknow, 1900; Weber, 1921/1978). This is suggested to explain why Sweden managed to gradually reform its bureaucracy in the early 19<sup>th</sup> century, subsequently professionalizing the bureaucracy by 1875 (Rothstein, 2011a; 2011b; Teorell, 2017: 215). Records show that court cases of bureaucratic malfeasance, ranging from milder cases of misconduct, embezzlement, third-party abuse<sup>1</sup> and forgery shaped the fight against corrupt practices. A significant prerequisite for the initiation of these reforms, is suggested to be the establishment of a well-functioning court-system (Rothstein and Teorell, 2015a, 2015b). Similarly, the professionalization of the Prussian civil service, is assumed to be related to the establishment of an independent judiciary by 1775 (Finer, 1997). First, the judiciary established a merit-system where each applicant had to pass two examinations. Second, the rulings of the judiciary were protected from executive interference, and was given the authority to remove civil servants, through well-founded investigations (Finer 1932; Finer 1997). Having executive constraints may therefore be decisive for professionalizing the bureaucracy as both cases illustrates. Furthermore, these cases show that ratifying reforms intended to professionalize the bureaucracy, rarely had any effect after being passed. In fact, merit in practice only surfaced after a long period of time – often after decades, sometimes over a century.

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<sup>1</sup> Usually consisting of bribery cases or extortion involving third parties such as citizens.

The following section theorizes the causes for meritocratization, by adding historical evidence that corresponds with the mechanisms discussed in this section. Two main hypotheses are then suggested following this discussion.

## Theory

Building on the previous sections, two main assumptions are held regarding the meritocratization of the public administration and are derived into two main hypotheses. First, the acceptance of meritocratization is plausible if the continuation of elite dominance is ensured in autocratic regimes, as it widens the time horizon of the ruling elite, and in turn, incentivizes long-term investments for regime survival (Clague et al., 1996; Wright, 2008a, 2008b). Opening up the public administration to an increasingly educated population, may therefore directly increase competition with the political elite and thus diminish its dominance over political affairs. Increasing rates of tertiary enrolment is thereby hypothesized to disincentivize the adoption of merit reforms (Sundell, 2013, 2014; Shefter 1977; 1994).

Furthermore, contesting views exist about the capacity of autocratic regimes to introduce merit in practice. On one hand, autocrats may have advantages that facilitate the introduction of merit in practice more efficaciously than democracies. First, autocracies do not have to take any opposition into account when implementing policies (D'Arcy, Nistotskaya and Ellis, 2015). Second, it may be more likely that such reforms are implemented in autocracies, as the decision-making power is concentrated to a small number of veto-players among autocratic regimes – indicating higher decisiveness (Lapuente, 2007). Third, autocracies may be incentivized to adopt merit reforms deriving from high power-concentrations, in order to decrease the divide between rulers and bureaucrats. Thus, ruling elites in autocracies may therefore introduce merit reforms as a means to alleviate credibility-related issues (Dahlström et al. 2012; Knott and Miller, 2006, 2008). This was for instance the case of Francisco Franco in Spain, who by the end of his rule introduced measures for meritocratizing the public administration (Lapuente, 2007). The adoption of merit in practice may also have been incentivized as Spain by 1970 had a tertiary enrolment rate of 1.3%, which may have facilitated the shift toward meritocratization due to low rates of tertiary enrolment.

However, it is yet unclear whether these advantages among autocracies translates into a willingness to reform, as the legitimacy of the ruling elite in autocracies, are bounded by the loyalty of their

supporters upheld by patronage networks (Magaloni, 2006, 2008; Magaloni and Kricheli, 2010; Geddes, 2014). The case of Iran shows that tertiary enrolment increased from 1.0% prior to the Iranian Revolution in 1979 to 6.3% in 1998, during the incumbency of reformist president Mohammad Khatami. From this period of time, merit in practice had significantly increased. However, the re-election of the former president Mahmoud Ahmadinejad in 2009, led to wide protests from the young and educated middle class over claims of electoral fraud. The gains made to meritocratize the public administration soon deteriorated, as the ruling elite increased measures to avert pressures from the educated class (Milani, 2010; Tahmasebi-Birgani, 2010; Dabashi, 2011). Thus, when the political elite felt threatened, they did not hesitate to increase recruitment-procedures based on patronage and nepotism as strategy to hold on to power. The development of meritocracy and tertiary enrolment in Iran is presented below.

FIGURE 1, THE DEVELOPMENT OF MERITOCRACY AND TERTIARY ENROLMENT IN IRAN

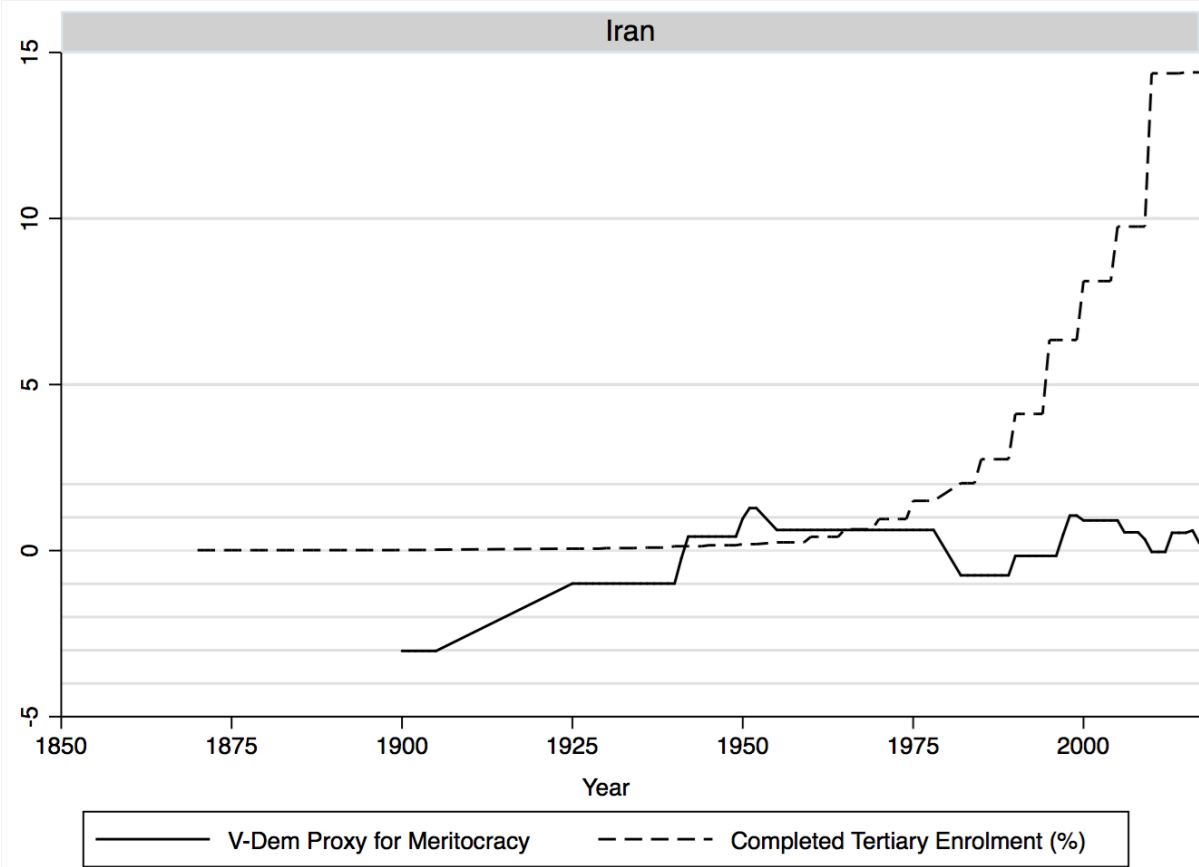


Figure 1 displays the progression of meritocracy and tertiary enrolment over time in Iran. Merit in practice is displayed to have decreased significantly after the Iranian Revolution in 1979, as the new ruling elite secured their grip on power by establishing recruitment-procedures based on patronage and nepotism. However, the time horizon of the ruling elite widened as time passed, and by 1998 merit levels had increased slightly above '1'. These advances dropped to '0' as widespread protest ensued after accusations of electoral fraud in 2009. Tertiary enrolment reached 14.4% by 2010. However, ratings of merit in practice were by 2010 lower than the meritocracy scores of 1941, when tertiary enrolment only counted to 0.1%.

Previous historical evidence on the professionalization of the public administration in Sweden (cf. Rothstein, 1998) and the United Kingdom (cf. Greenaway, 2004) – points out that the processes of merit adoption initiated in autocratic settings, are dependent on the continuation of elite dominance where the ruling elite have disproportionate access to education (Sundell, 2013, 2014; Shefter 1977, 1994). Thus, political elites in autocracies may meritocratize when tertiary enrolment rates are low, as competition will be limited among ‘themselves’ – they have nothing to fear nor to lose from meritocratic recruitment other than enhancing the bureaucratic apparatus. Conversely, when tertiary enrolment increases among the population, it may trigger a direct competition with the ruling elite and thus likely reduce their dominance over political affairs. Increasing rates of tertiary enrolment may therefore disincentivize the adoption of merit reforms, compelling the political elite to increasingly rely on informal channels for recruitment, using networks based on patronage.

The second assumption proposes that consolidated democracies tend to provide public goods based on a long-term rationale, which may pressure the political elite to make concessions to the general public when tertiary enrolment rates rise (Olson 1993, Keefer and Vlaicu 2008; Hollyer, 2011a, 2011b). However, opposing views suggests that democratic regimes may be less likely to succeed with adopting merit reforms in practice. First, because they lack the coercive force to override opposition (D’Arcy, Nistotskaya and Ellis, 2015). Second, patronage may in some instances be more difficult to root out in democracies, where the survival of political parties is dependent on the appointment and loyalty of civil servants (Lapuente and Rothstein, 2014). Third, patronage is likely to be further exacerbated when competition among parties are high (Nistotskaya, and Lapuente, 2009; Hicken, 2011).

On the other hand, historical research points out that the professionalization of the bureaucracy in United States may have been incentivized by increasing rates of tertiary enrolment (cf. Lewis, 2007). The professionalization process took place in a partially democratic setting with executive constraints, where the rise in tertiary enrolment is suggested to have incentivized merit in practice (Hollyer, 2011a, 2011b). Thus, the political elite in a democratic setting may respond differently, by making concessions to the general public when tertiary enrolment rates rises (Olson 1993, Keefer and Vlaicu 2008; Hollyer, 2011a, 2011b). Increasing rates of tertiary enrolment in democracies, is thereby suggested to incentivize the adoption of merit in practice, as opportunity costs increases for retaining the existing patronage networks (Hollyer, 2011b).

Further historical evidence may explain why the ruling elites in autocracies and democracies have diverging motivations for adopting merit in practice. This may be illustrated by comparing the historical outcomes of Sweden and the United Kingdom as monarchical autocracies on one hand, and the United States as a democratic state on the other hand. The main professionalization of the Swedish bureaucracy can be dated back as far as 1789 and ending in 1875 – lasting for almost a century (Rothstein, 1998; Teorell, 2017). As an effect, nepotism decreased in the late 19th century and onward – but without the nobility losing any of its influence – as it had disproportionate access to education. However, their numbers were diluted over the course of time as the central public administration expanded. It is therefore suggested the aristocracy's acceptance of meritocratic recruitment arose from the assurance of continued elite domination – by having exclusive access to higher education (Sundell, 2013, 2014; Shefter, 1977; 1994). In addition, the professionalization of the bureaucracy in the United Kingdom is thought to have followed a similar process as in the Swedish case.

The development toward a professionalized bureaucracy in the United Kingdom, is suggested to have started from the Northcote/Trevelyan report (1854). However, it was not until Premier Gladstone's (1870) Order-in-Council for competitive examinations that a turning point could be observed, which was progressively followed up by several legislations over time<sup>2</sup> (Silberman, 1993: 401; Greenaway, 2004: 2-3). The primary aim of the reform was to avoid class conflict – tasks were divided between clerks who were assigned routine-tasks (sons of the middle class) and mandarins, representing the intellectual class (sons of the aristocracy). The latter group like in the Swedish case, had disproportionate access to prestige universities such as Oxford and Cambridge. Progress however accelerated in wartimes, especially during the World Wars, which opened up recruitment outside of the nobility circles (Butler, 1993; Greenaway, 2004; Horton, 2006; Cline, 2008). Thus, the professionalization of the Swedish and British bureaucracies is characterized by a continued process of merit reforms – initiated when tertiary enrolment rates were low in a non-democratic setting. This thereby allowed for the improvement of merit in practice over time, as such reforms and practices were tolerated by the aristocracy.

In contrast, the political elite in the United States did not attempt to tie the civil service to universities. Conversely, bureaucratic recruitment was accessed through practical examinations, where common school education was conceived as satisfactory (Hoogenboom, 1959: 312-313). Civil servants were in

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<sup>2</sup> Such as the Playfair Committee (1874-75), the Ridley Commission (1886-90), the MacDonnell Commission (1912-15) and the Haldane Committee on the Machinery of Government (1917-18) (Pyper and Burnham, 2011: 199-200).

turn the basis of a patronage system, which became increasingly costly as federal services expanded by the end of the 19<sup>th</sup> century. The first initiated merit reform, named the Pendleton act (1883), was designed in order to gain sufficient support from high-ranking federal officials. This was executed by leaving high federal positions untouched and by making the process of removing patronage networks gradual – ensuring that the elite would not be affected by these changes (Johnson and Liebecap, 1994: 29). This change of labour arrangements was manifested through the division of ‘classified’ (merited) personnel and ‘unclassified’ (political appointed) personnel (Ibid: 32). By 1905, half of all federal civil servants were recruited by merit. However, few states had adopted merit laws. This changed with the Great Depression, forcing a majority of the states to adopt merit laws in order to raise bureaucratic efficiency – as the federal states were facing a legitimacy crisis. Hence, by the mid 1930s, most federal states had adopted merit laws, which laid the foundation for a professional bureaucracy in the United States (Camões and Ruhil, 2003).

The dissimilar process of bureaucratic professionalization between the United States on one side, and Sweden and the United Kingdom on the other side, may have been caused by the absence of an entrenched class-system dominated by the aristocracy in the United States – as was the case in Sweden and Victorian England. Thus, attempts to introduce merit in practice occurred when Sweden and the United Kingdom were ruled as Monarchical Autocracies. Merit reforms in Sweden and the United Kingdom were passed when tertiary enrolment rates were lower than 0.1%, and as both states had established a meritocratic recruitment, tertiary enrolment only reached 0.1% for Sweden and 0.2% for the United Kingdom. The incentives for adopting merit in practice may herein lie in the fact that the ruling elite found no competition from the lower classes, and thus opted to meritocratize in order to increase bureaucratic efficiency. However, the United States had passed its first merit reforms in a democratic setting. Tertiary enrolment reached 0.9% in 1883 when the Pendleton Act was ratified, with further merit reforms being passed in most states by 1935 as tertiary enrolment had reached 4.8%. Furthermore, improvements in merit in practice is only observed as tertiary enrolment passes 9.0% by 1960. The historical progression of bureaucratic recruitment in the United States, thereby showcases how rulers in a democratic setting operate when tertiary enrolment rates increase – by gradually providing merit in practice as a public good in order to maintain their political legitimacy. The development of meritocracy and tertiary enrolment for these three cases are illustrated on the following two pages.

**FIGURE 2 AND FIGURE 3, THE DEVELOPMENT OF MERITOCRACY AND TERTIARY ENROLMENT IN SWEDEN AND THE UNITED KINGDOM**

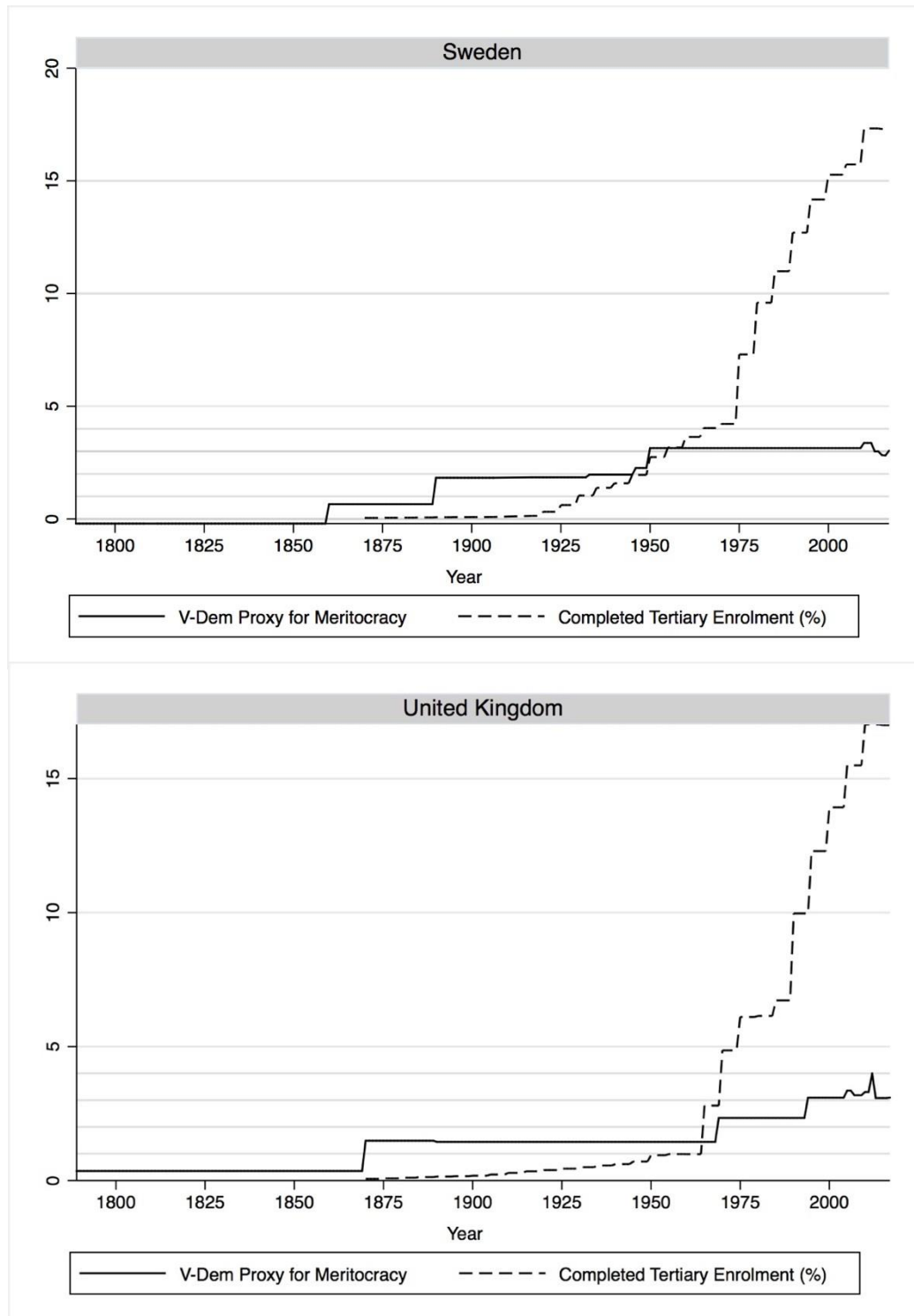
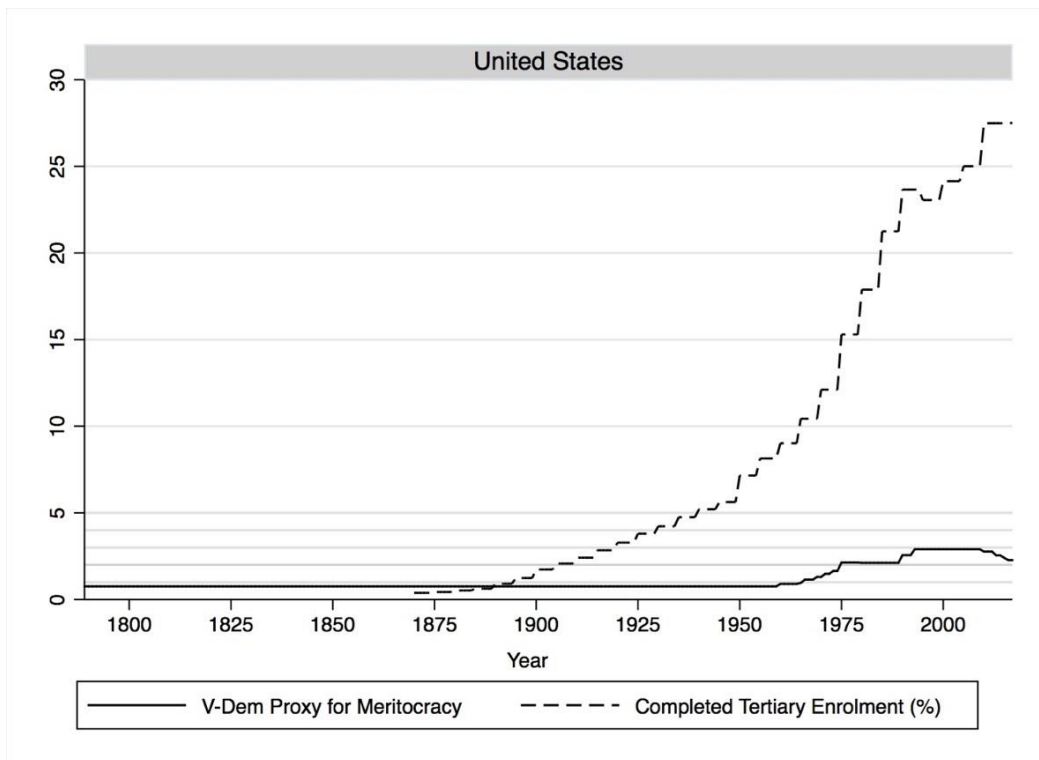


Figure 2 and Figure 3 describe the progression of tertiary enrolment and meritocracy over time for Sweden and the United Kingdom. Merit reforms were according to the literature initiated in 1809 for Sweden (Rothstein, 1998) and 1853 for the United Kingdom (Pyper and Burnham, 2011). These figures illustrate that first, reforms did not lead to merit in practice immediately. In addition, merit reforms were initiated while tertiary enrolment rates were low in the United Kingdom ( $<0.1\%$ ) and Sweden ( $<0.1\%$ ), which may have incentivized the political elites to adopt merit in practice as the rulers were not threatened by an increasing educated class from the 'outside'. Tertiary enrolment had by 1875 only reached  $0.1\%$  for both Sweden and the United Kingdom, coinciding with significant increases in meritocratic recruitment.

**FIGURE 4, THE DEVELOPMENT OF MERITOCRACY AND TERTIARY ENROLMENT IN THE UNITED STATES**



**FIGURE 5, THE DEVELOPMENT OF MERIT IN PRACTICE OVER TIME: 1789-2017 (SWE, US, UK)**

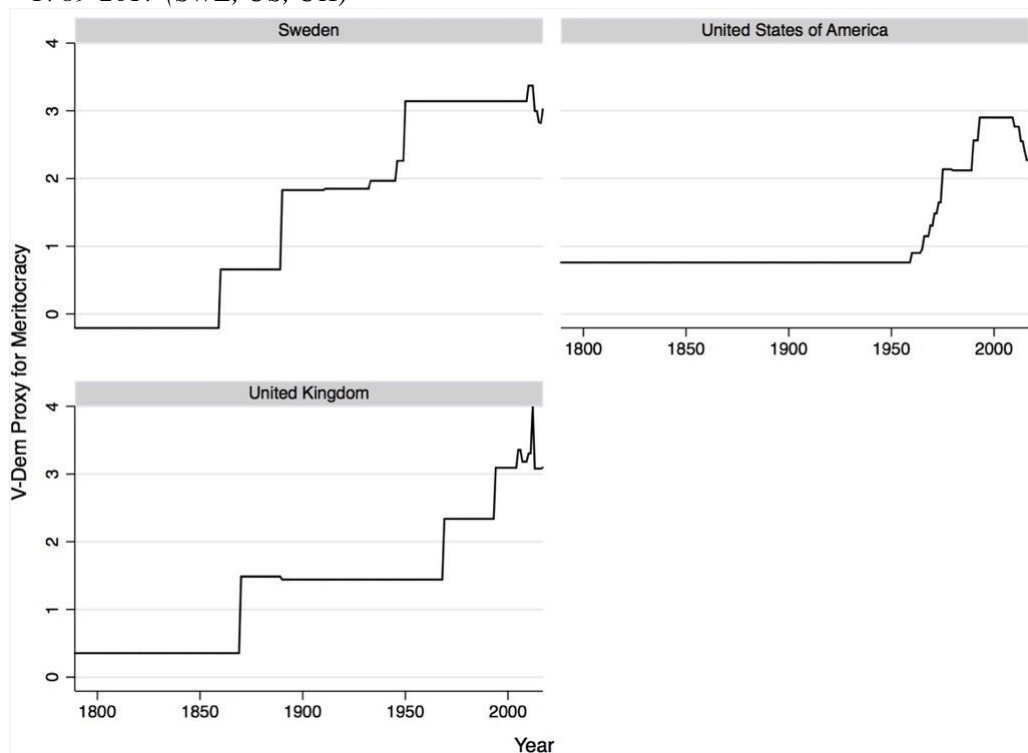


Figure 4 describes the progression of tertiary enrolment and meritocracy over time in the United States. Merit reforms were according to the literature initiated in 1883 with the Pendleton Act (Theriault, 2003). United States, in comparison to the other two cases, had significant increases in tertiary enrolment (0.9%) when merit reforms were introduced. By 1935 enrolment rates reached 4.8%, which may have further pressured the political elites among the federal states to adopt merit laws. However, significant increases in merit in practice may only be observed by 1960, when tertiary enrolment had reached 9.0% Figure 5, illustrates the incremental progression of merit in practice for all the three country-cases.



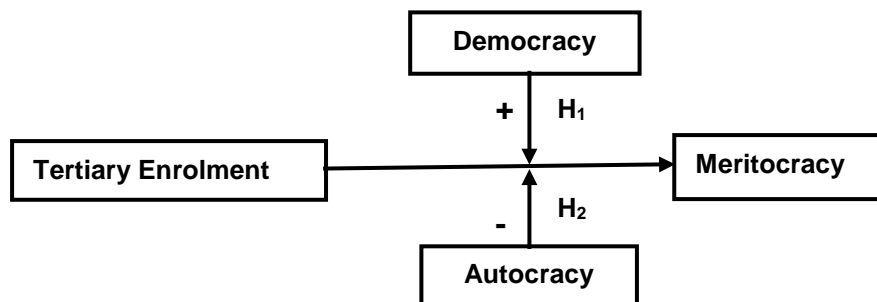
Democratic rulers may thereby end up adopting merit in practice with increasing rates of tertiary enrolment, as they are concerned about the provision of public goods, and thus provides merit in practice as a form of public good. This means that the political elites are willing to sacrifice their natural inclination toward favouring their core constituencies. Conversely, the institutionalized design of autocratic regimes, inherently set the time horizon of the rulers shorter than in democracies, as the legitimacy of the regime is held up by a minority of loyalties supporting their survival. Autocratic rulers are thereby not incentivized to provide public goods to the general public, and thus remain protective of their recruitment-channels based on networks of patronage and nepotism. From this discussion above, two main hypotheses are suggested:

H<sub>1</sub>: Democratic regimes, when interacting with higher rates of tertiary enrolment, increases the likelihood of merit in practice (moderating effect).

H<sub>2</sub>: Autocratic regimes, when interacting with higher rates of tertiary enrolment, decreases the likelihood of merit in practice (moderating effect).

H<sub>0</sub>: No support is found for H<sub>1</sub> and H<sub>2</sub>.

FIGURE 6, OPERATIONALIZATION OF H<sub>1</sub> AND H<sub>2</sub>



In order to establish whether either of these two hypotheses have any bearing, a statistical analysis is executed using panel data. Selection of data and details about the methodological approach are discussed in the following section.

## Data and Methodology

Data is derived from three main sources: the V-Dem Country-Year database (2018) with temporal data ranging from 1789 to 2017, the Polity IV Annual Time-Series (2017) with data on political regime characteristics and transitions from 1800 to 2017, and lastly Lee and Lee's Long-Run Education Dataset (2016) with data on educational enrolment from 1820 to 2010. In total, 108 countries were at most matched between the tertiary enrolment and merit in practice measures.

One dependent variable was used – namely the Rigorous and Impartial Public Administration, which is drawn from the V-Dem Country-Year Database (Coppedge et al., 2018: 157). The V-Dem Country-Year database builds its data with the help of 3000 country experts, with a minimum of six to seven coders for each variable. The coders were asked on a 0-4 scale: “Are public officials rigorous and impartial in the performance of their duties?” – with higher numbers implying being more impartial. While impartiality is well-connected to fairness and quality of government in theory (cf. Rothstein and Teorell, 2008), it may not directly translate into meritocratic recruitment. A correlation was run over several variables linked to meritocratic recruitment, showing that the variable has an empirically strong correlation to meritocracy. One measurement for meritocratic recruitment is taken from the questionnaire ‘q2\_a’ from the QoG Expert Survey (2015), and is stated as: “When recruiting public sector employees, the skills and merits of the applicants decide who gets the job” (Dahlström et al., 2015: 8). Albeit the correlation shows high significance ( $r=0.699$ ), the relationship only displays the correlation at one point in time, and thus additional variables were correlated with the suggested V-Dem measure for meritocracy. The full correlations table is displayed below.

TABLE 1, CORRELATION BETWEEN VARIABLES

Variable	Rigorous and Impartial Public Administration	Impartiality (QoG Exp. Survey, 2015)	Meritocracy (QoG Exp. Survey, 2015)	ICRG Indicator of Quality of Government
Rigorous and Impartial Public Administration	1.000			
Impartiality (QoG Exp. Survey, 2015)	0.729	1.000		
Meritocracy (QoG Exp. Survey, 2015)	0.699	0.848	1.000	
ICRG Indicator of Quality of Government	0.799	0.808	0.777	1.000

*The Rigorous and Impartial Public Administration variable from the V-Dem Country Year Data set (2018), was correlated with data from the Quality of Government Expert survey (2015), using survey question q2\_a (indicating meritocracy) and q7 (indicating impartiality). In addition, the ICRG indicator of Quality of Government was included from the Quality of Government Time-Series Data set (2018). The overall correlations with the V-Dem measure show high empirical significance.*

In addition, the V-Dem measure also shows high empirical correlation with the (ICRG) Indicator of Quality of Government<sup>3</sup> (Teorell et al., 2018: 319), composed of the mean of three variables measured as ‘Corruption’, ‘Law and Order’ and ‘Bureaucratic Quality’ ( $r=0.799$ ) – signifying an overall close relationship with the concept of Quality of Government. Given the empirical evidence, the V-Dem measure is estimated as an adequate proxy for meritocratic recruitment.

Nevertheless, while the V-Dem proxy for meritocracy brings about great opportunities for temporal research, it also carries problems. First, the country experts are unknown to the users, with no description of the field of expertise that the coders may hold. Second, coding data stretching back as far as over 200 years ago, will be less accurate the longer you go back in time as sources and evidence of such practices will be scarcer – giving rise to validity problems. On the other hand, this way of coding temporal data is the only possible way, making the benefits outweigh its costs.

Two main independent variables were employed. The first independent variable is the ‘Tertiary Enrolment (%)’<sup>4</sup>, provided by Lee and Lee’s Long-Run Education Data set (2016). The dataset ranges from 1820 to 2010, making it a suitable measure for analyses overtime. The educational measurement is registered in five-year intervals and was linearly interpolated in order to make the data fit with other measurements. However, one issue is whether the quantity of education reflects the quality. On one hand, the research questions are primarily focused on how access to public administration regulates the behaviour of the political elite. On the other hand, the quality of education may influence the professionalism of the employees, and in turn affect impartiality ratings. Using a variety of control variables is therefore necessary in order to account for such an issue. These controls are discussed on pp. 22-23.

The second main independent variable denotes the political regime. Three political regime measurements were employed: The Democracy (BMR) from the V-Dem Country Year Data set, together with the Institutionalized Democracy and Institutionalized Autocracy measures from the Polity IV Data set. First, Democracy (BMR), is a “dichotomous democracy measure based on contestation and participation. Countries coded as democratic have (1) political leaders that are chosen through free and fair elections and (2) a minimal level of suffrage” (Coppedge et al., 2018: 288). Countries that pass these minimal requirements are hence coded as ‘1’. This paper interprets

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<sup>3</sup> The ICRG Indicator of Quality of Government runs from 1984-2017, with a total of 4,083 observations. The QoG Expert Survey measurements only run for 2015, and include 124 observations for the Meritocracy measure, and 121 observations for the Impartiality measure.

<sup>4</sup> More specifically, tertiary enrolment is counted in *completed* rates of tertiary enrolment.

countries coded as '0' as non-democracies, with an inclination toward autocratic rule. Thus, for analytical facilitation, countries coded as '0' are denoted as autocracies, albeit there may be a high degree of variation in terms of regime type characteristics. Second, Institutionalized Democracy is an additive eleven-point scale (0-10) based on: "[First], the presence of institutions and procedures through which citizens can express effective preferences about alternative policies and leaders. Second, the existence of institutionalized constraints on the exercise of power by the executive. Third, the guarantee of civil liberties to all citizens in their daily lives and in acts of political participation" (Marshall, Gurr and Jagers, 2017: 14). Hence, instead of applying a classical categorization (cf. Sartori, 1970, 1991), democracy is interpreted as a continuous measurement using three weights, indicating the existence or absence of political participation, executive recruitment and constraints on the chief executive – with no necessary minimal requirements for democracy. Third, Institutionalized Autocracy similarly employs an additive eleven-point scale (0-10): "derived from codings of the competitiveness of political participation, the regulation of participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive (Marshall, Gurr and Jagers, 2017: 16). This measurement follows the same logic as the Institutionalized Democracy variable, without having any categories in common. Therefore, these two measurements, albeit similar in their structure, function as entirely separate measurements.

The use of dummy variables vis-à-vis continuous measurements have certain advantages and disadvantages. Including a dummy variable such as Democracy (BMR), has the advantage of facilitating the analysis of the empirical results – the effect of democracies and non-democracies are clearly detected as '1' and '0'. However, it may also lead to a loss of information, which may consequently overfit the model at hand. Hence, using a continuous point-scale measurement may complement and increase the complexity in the analysis, but leaves doubt to whether a state may pass as a democracy. In addition, the effect of autocracies and democracies may not be clearly detected, as the significance for each category may be potentially exhausted by having fewer observations per point on the scale. Thus, the advantages of using a dummy variable in a panel data analysis is the clear outcomes in terms of regime categories, which serves this study well. The main emphasis is therefore put on interpreting the results from the Democracy (BMR) dummy variable, leaving the continuous eleven-point-scale (0-10) variables as complementary measurements for testing the hypotheses at hand.

All controls are motivated by previous research and theories presented in the earlier sections of this paper. First, the time horizons of political elites have previously been related to ensuring property

rights (Olson, 1993; Clague et al., 1996). A measurement for property rights is therefore included, deriving from the V-Dem Country Year Database and uses an interval measure, ranging from 0-1, with higher rates indicating: “the right to acquire, possess, inherit and sell private property, including land” (Coppedge et al., 2018: 237). Second, the establishment of an independent judiciary was crucial for the professionalization process of the Swedish and Prussian bureaucracies (cf. Finer, 1933; Finer 1997; Teorell and Rothstein 2015a, 2015b; Teorell, 2017). Two controls were employed in order to cover for the existence of an independent judiciary, namely ‘Regulation of Chief Executive Recruitment’ and ‘Executive Constraints’. The Executive Constraints control is taken from the Polity IV Data Set, and uses a point-scale ranging from 1-7, where ‘1’ denotes the absence of constraints on the executive branch, while ‘7’ denotes the subordination of the executive branch, implying that horizontal accountability is well institutionalized (Marshall, Gurr and Jagers, 2017: 62). This variable is interpreted as a proxy for an independent judiciary. In addition, the Regulation of Chief Executive Recruitment is included as a control with similar qualities to the Executive Constraints variable. This variable replaced the Executive Constraints measure, as it had a very high correlation ( $r > 0.7$ ) with the continuous democracy and autocracy variables.

The Regulation of Chief Executive Recruitment: “refers to the extent to which a state [irrespective of regime type] has institutionalized procedures for transferring executive power” (Marshall, Gurr and Jagers, 2017: 20-21), and is divided into three categories: ‘Unregulated’, ‘Transitional’ and ‘Regulated’. In an unregulated state, the appointment of the chief executive occurs through irregular seizures of power, whereas in transitional states, it occurs through closed appointments within political elite circles. However, in a regulated state, the procedure is institutionalized when appointments of the chief executive occur in a predictable manner such as competitive elections or hereditary succession (Ibid). Thus, states with a regulated appointment of the chief executive, indicate that a routinized and matured form of governance has been established and may thereby reflect when political elites have a widened time horizon, as well as providing evidence for institutional checks similar to the establishment of an independent judiciary (cf. Finer 1997; Teorell, 2017). This variable was recoded as a dummy variable, where instances of regulation was coded as ‘1’.

Third, GDP/capita is derived from the V-Dem Country Year Database. The usage of GDP/capita may facilitate the understanding of how economic growth impact meritocratization, while additionally control for how increased wealth and education effects meritocratization. Lastly, GDP/capita may have a significant role in affecting the time horizon of the ruling elite, as well as controlling for whether pressure for meritocratization increases with increasing rates of GDP/capita.

The inclusion of GDP/capita removed eight further countries when added with the other controls. The construction of the models takes the exclusion of such cases into consideration by incrementally adding each control variable at the time. In addition, combinations of the control variables are tested. Finally, all controls are included in the last model in order to test for a full combined effect. Furthermore, the restricted variety of control variables, is an issue of limited availability, combined with the requirement of being related to the theories and hypotheses presented in this paper. The models are therefore parsimoniously constructed in order to correspond with the availability of data. The controls may hence not cover all possible variations, possibly leading to the issue of omitted variable-biases. The results will therefore be interpreted with caution to this fact. A detailed summary of the collected data is presented below.

**TABLE 2, SUMMARY STATISTICS**

Variable	Data Source	Years Included	Obs	Mean	Std. Dev.	Min	Max
Rigorous and Impartial Public Administration	V-Dem (2018) Country Year Data set	1789-2017	24522	-.014	1.448	-3.533	4.623
Tertiary Enrolment (%)	Lee and Lee Long Run Data set (2016)	1820-2010	15443	2.047	4.159	0	33.6
Democracy (BMR)	V-Dem (2018) Country Year Data set	1789-2017	15979	.328	.47	0	1
Institutionalized Democracy	Polity IV Data set (2017)	1800-2017	16603	3.566	3.9	0	10
Institutionalized Autocracy	Polity IV Data set (2017)	1800-2017	16603	4.061	3.526	0	10
GDP/capita, log	V-Dem (2018) Country Year Data set	1789-2017	12711	8.251	1.124	5.595	12.305
Property Rights	V-Dem (2018) Country Year Data set	1789-2017	24840	.445	.283	.002	.953
Executive Constraints	Polity IV Data set (2017)	1800-2017	16603	3.806	2.407	1	7
Regulation of Chief Executive Recruitment	Polity IV Data set (2017)	1800-2017	16603	.565	.496	0	1

*The Rigorous and Impartial Public Administration variable, from the V-Dem Country Year Data set (2018) is the main dependent variable and is in this paper referred to as the V-Dem Proxy for Meritocracy. Two types of independent variables were employed: First, Tertiary Enrolment (%). Second, two democracy variables are used, whereas one is a dummy variable: the Democracy (BMR). The second, Institutionalized Democracy, is a continuous measure, using an eleven-point scale (0-10). In total, four controls are employed: GDP/capita log, Property Rights, Executive Constraints and Regulation of Chief Executive Recruitment. However, only three controls are used for each model: GDP/capita log, Property Rights, Executive Constraints – for Democracy (BMR). The second arrangement of controls includes GDP/capita log, Property Rights and Regulation of Chief Executive Recruitment – for the Institutionalized Democracy and Institutionalized Autocracy variables.*

One noteworthy observation is the prevalence of unequal sample sizes, which may bring about unequal variances. Unequal variances in turn may affect the statistical power of the models, leading to confounding biases where parameters are either over- or underestimated. However, the amount of observations are large enough to avoid the greater consequences of these issues at hand, as the

lowest sample amount to 12711 observations. This issue will also be taken into consideration during the interpretation of the final results.

As this paper sets out to explore the propensity of meritocratization over time, long-run effects are calculated using panel data analysis. Furthermore, due to the nature of the data being country-coded over time, measured in years, a fixed effects model was opted for while successfully passing the Hausman test. In addition, due to the time-format of the data; there will be a risk for autocorrelation, occurring as a consequence of correlated residuals over time, which in turn may amplify the results. In order to check for autocorrelation, the Wooldridge test was executed and successfully passed. However, the problem of autocorrelation may for unforeseen events still affect the results and should therefore be considered. Lastly, the models have passed all standard regression diagnostics.

Based on the collected data three main model are used, covering the effect of tertiary enrolment on meritocratization, using a linear fixed effects model. These main models are tested using the ‘V-Dem Proxy for Meritocracy’ for years overlapping tertiary enrolment (1820-2010).

The models are outlined as follows below and are denoted as Linear Fixed Effect Model 1-3:

$$\begin{aligned} & \text{!}_{\#} = \& + \&^* +, -./, \text{O } 12, 345 + 2 -_{\#} + \&_6 7 + 538, /80 \left( ; > \right)_{\#} + \\ & \&_5^* +, -./, \text{O } 12, 345 + 2 -_{\#} \times 7 + 538, /80 \left( ; > \right)_{\#} + \&_6 \text{A7B}/8/\text{D} . -/_{\#} + \&_E \text{B}, 3\text{D} +, -0 \\ & < . \text{Fh} - \text{H}_{\#} + \&_1 \text{J} + 8\text{K} - . \text{L} + \text{M32H} - , / . 2 - \text{H}_{\#} + \text{N} \quad (1) \end{aligned}$$

$$I_{\#} = \& + \&_{\#}^{*}, -./, O 12, 345 + 2 -_{\#} + \&_6 O2H - . - K . 32 / 4 . P + Q 7 + 538, / 80_{\#} + \&_{\#}^{*}, -./, O 12, 345 + 2 -_{\#} \times O2H - . - K . 32 / 4 . P + Q 7 + 538, / 80_{\#} + \&_6 A7B / 8 / D . - /_{\#} + \&_E B, 3D +, - 0 < . Fh - H_{\#} + \&_I < + FK4 / - . 32 3R Mh . + R 1 J + 8K - . L + < + 8 . K . - 5 + 2 -_{\#} + N \quad (2)$$

$$\begin{aligned} I_{\#} = & \& + \&^*_{+,-./,O\ 12,345+2-\#} + \&_{\otimes} 02H.-K.-32/4.P+Q\ SK-38,/80 + \\ & \&^*_{+,-./,O\ 12,345+2-\#} \times 02H.-K.-32/4.P+Q\ SK-38,/80 + \&_{\otimes} A7B/8/D.-/'_{\#} + \\ & \&_{\oplus} B.3D+,-.0.<Fh\ -H_{\#} + \&_{\downarrow} <FK4/-..32\ 3R\ Mh\ .+R\ 1\ J+8K.-L.+<+8.K.-5+2-\# + N\ (3) \end{aligned}$$

The variables are incrementally added, starting with the main focal relationship until reaching a full model in the final column. Thus, all three models presented above, corresponds to the final column for each table where all variables are included. In regards of modelling the regime types; Model 1, includes the Democracy (BMR) variable and is presented in Table 3; Model 2 uses the continuous Democracy variable and is presented in Table 4, and lastly, Model 3 uses the continuous Autocracy variable and is presented in Table 5. The following section presents the results.

## Results

The results from the panel data analysis, using fixed effects regressions are presented in this section. The results in total consists of three tables, using linear fixed effects regression. Table 3 evaluates the effect of tertiary enrolment on meritocratization and includes the moderating effect of Democracy (BMR). Table 4 evaluates the effect of tertiary enrolment on meritocratization together with the moderating effect of Institutionalized Democracy. In addition, Table 5 evaluates the effect of tertiary enrolment on meritocratization, including the moderate effect of Institutionalized Autocracy. All tables presented, consist of eleven models with an identical build-up on the independent variable-side. Model 1, displays the effect of tertiary enrolment on meritocratization. Model 2, adds the political regime measure without including tertiary enrolment. Model 3, adds the tertiary enrolment and political regime variables together. Model 4, adds the interaction effect between the political regime variable and tertiary enrolment. The structure for Model 4 is retained for all subsequent models, which adds the control variables. Model 5-7 adds each control variable independently, checking for the individual effect of each control. In Model 8-10, two of the control variables are added in combinations in order to check for more complex effects. Lastly, the full model for all tables are presented in Model 11. This modelling structure facilitates the comparison and evaluation of the effects on meritocratization, while incrementally increasing the complexity until reaching a full model in the eleventh numbered column.

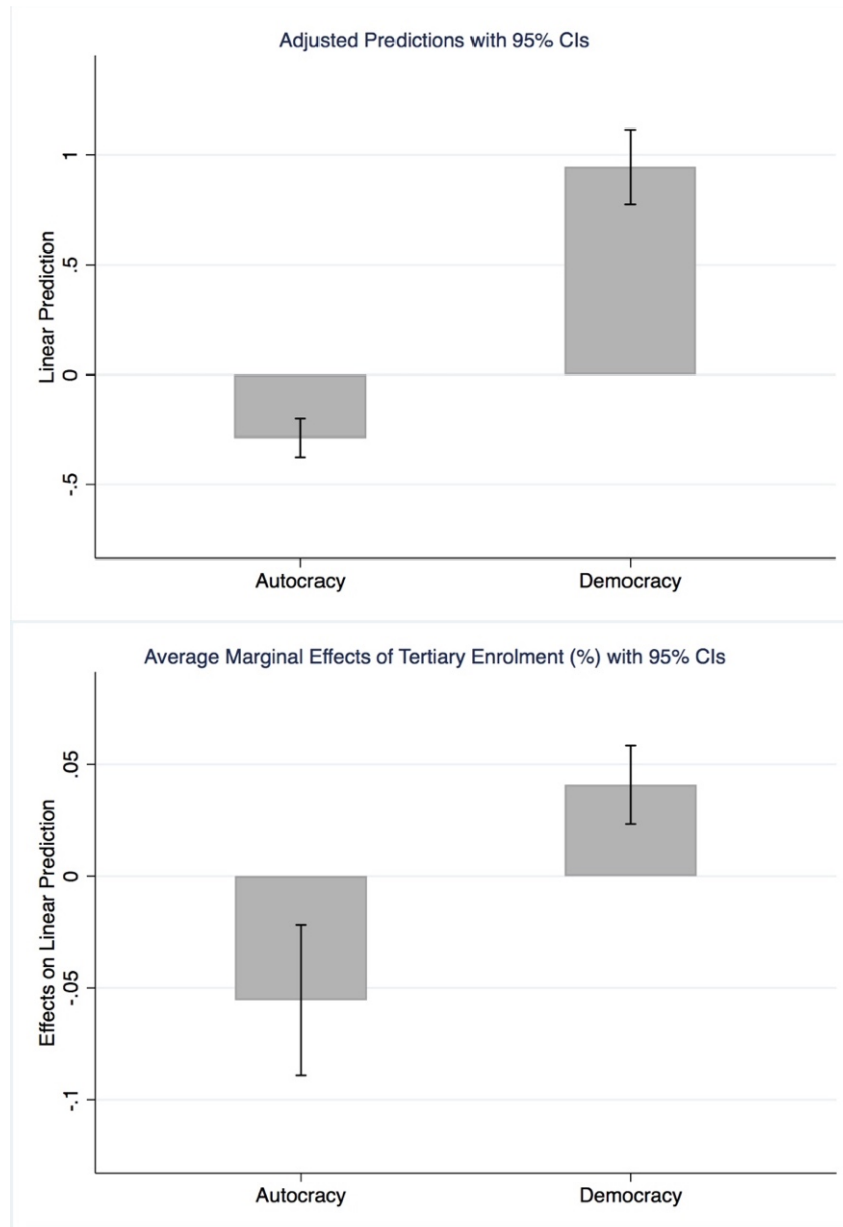
The remaining part of this section is structured as follows: First, results for Table 3, Table 4 and Table 5 are presented together with the respective models, where independent variables and control variables are added until reaching a full model in the last column.

Table 3 (see p. 29) displays the results from the Linear Fixed Effects Model (1), evaluating the effect of tertiary enrolment on meritocratization. Model 1 illustrates the individual effect of tertiary enrolment, which shows a positive and significant effect on meritocratization. Model 2, removes the Tertiary Enrolment (%) variable and replaces it with the Democracy (BMR) dummy, showing that democratic regimes have a significant and positive effect on meritocratization, while the autocratic reference category shows a significant negative relationship with meritocratization. Adding Tertiary Enrolment (%) together with Democracy (BMR) in Model 3, shows positive effects for both democratic and autocratic regimes with a consistent stronger coefficient among democracies. Model 4 adds the interaction effect between the Democracy (BMR) dummy variable and Tertiary Enrolment (%). Here, the effect between democracies and autocracies show a diverging trend: Democracies



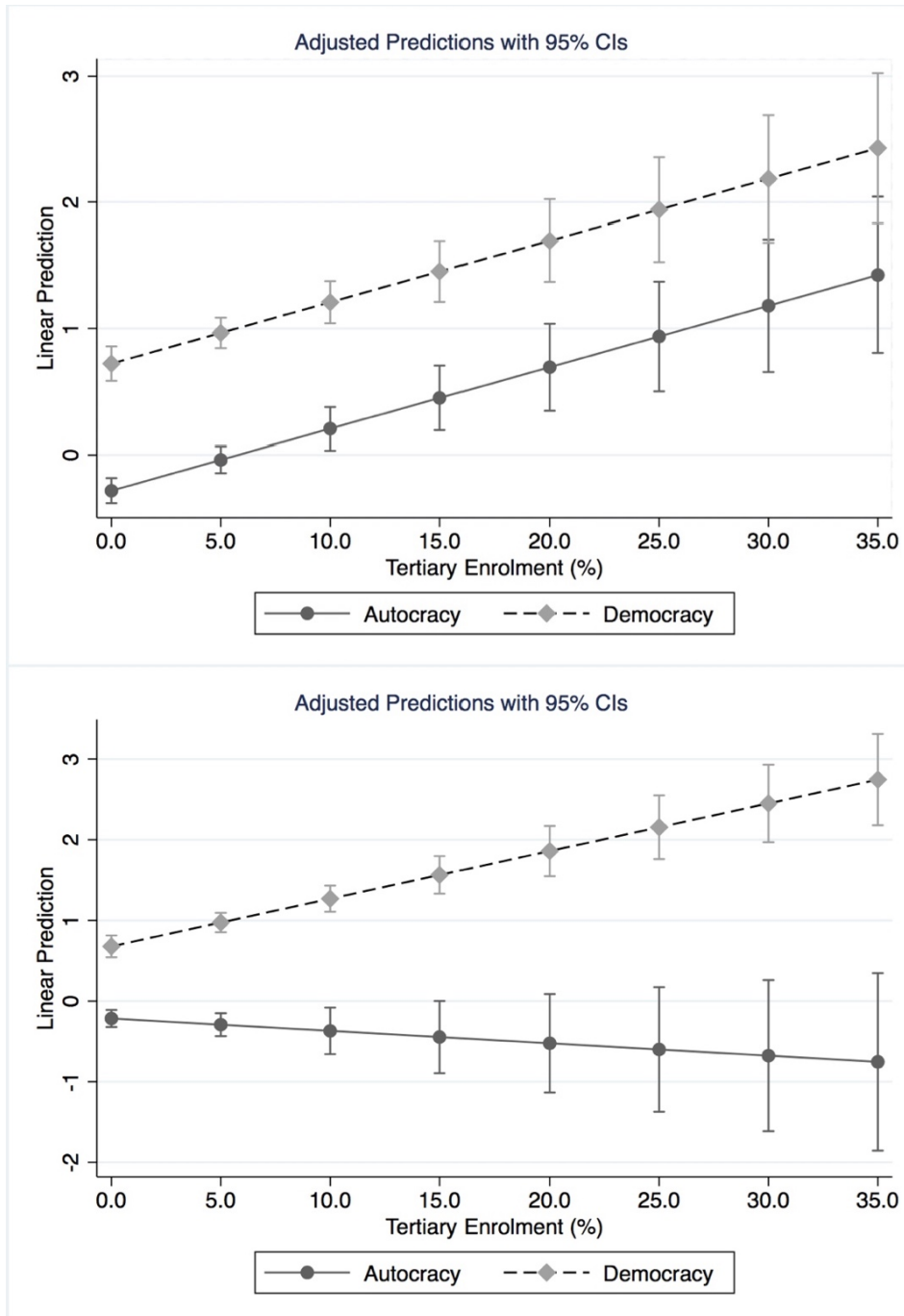
display a positive effect on meritocratization when tertiary enrolment rates increases, while the effect of autocracies goes in the opposite direction. However, the marginal effects of autocracies surpass the zero-threshold as tertiary enrolment increases past 15%, making the results insignificant. Figures for these trends are presented on the two following pages.

**FIGURE 7 AND FIGURE 8, LINEAR PREDICTION OF MODEL 2 AND MODEL 10**



The top figure illustrates the linear prediction of Model 2 in Table 3, where the individual effect of the Democracy (BMR) dummy is estimated on meritocratization. Democracies have a positive effect on meritocratization. Conversely, autocracies show a slight negative effect. The results show high significance ( $p < 0.01$ ). This below figure illustrates the linear prediction of Model 10 in Table 3, which includes an interaction effect between Tertiary Enrolment (%) and Democracy (BMR), together with the Property Rights and Executive Constraints controls. In comparison to Model 2 – Model 10 illustrates that the negative effect and significance for autocracies increases, whereas the positive effect for democracies, albeit diminished, still retains its significance.

FIGURE 9 AND FIGURE 10, LINEAR PREDICTION OF TERTIARY ENROLMENT ON MERITOCRATIZATION (MODEL 3 AND MODEL 4)



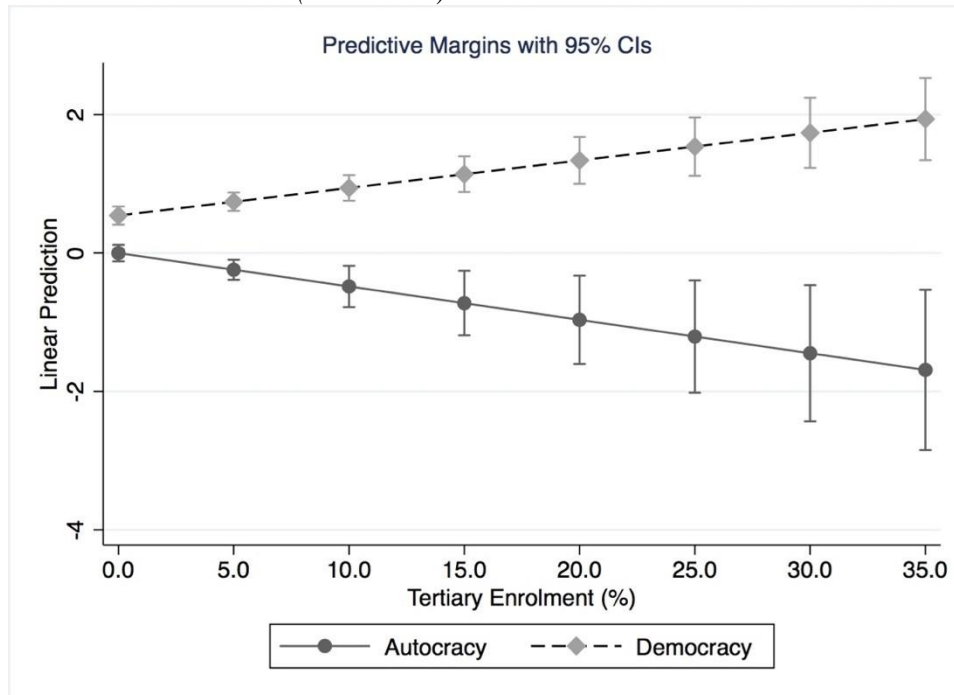
Linear prediction of Model 3 (top figure), where Tertiary Enrolment (%) and the Democracy (BMR) dummy is estimated on meritocratisation. Both regimes show positive trends, albeit autocracies have a consistent weaker strength than democracies. Significance remains high ( $p < 0.01$ ). The divergence between democracies and autocracies starts to show in Model 4 (below figure), where the interaction effect between Democracy (BMR) and Tertiary Enrolment (%) make democracies have a positive effect on meritocratisation, while conversely, autocracies have a negative effect. The negative impact of autocracies with rising tertiary enrolment rates is however yet insignificant past 15% tertiary enrolment.

Model 5-7, adds the control variables individually. When controls are added, the divergent effects of democracies and autocracies increases as tertiary enrolment figures rises. Significant results are found in Model 7, which adds the Property Rights control to the interaction effect between Democracy (BMR) and Tertiary Enrolment (%). The results show empirically significant results ( $p < 0.01$ ) – albeit in opposite directions for democracies and autocracies. Democracies are inclined toward increased merit in practice when tertiary enrolment rates increase. Conversely, the effect is negative for autocracies, as the propensity for merit adoption decreases with higher rates of tertiary enrolment.

Model 8-10, includes a combination of the control variables while retaining the interaction effect between Democracy (BMR) and Tertiary Enrolment (%). Model 10, which included Executive Constraints and Property Rights control, yielded the highest significance ( $p < 0.01$ ) among these combinations of controls, as the effect of democracies and autocracies continue to diverge with increasing rates of tertiary enrolment. Model 11, includes all variables and maintain high significance for democracies ( $p < 0.01$ ) and autocracies ( $p < 0.05$ ). The divergent trend between democratic and autocratic regimes remains, albeit weakened.

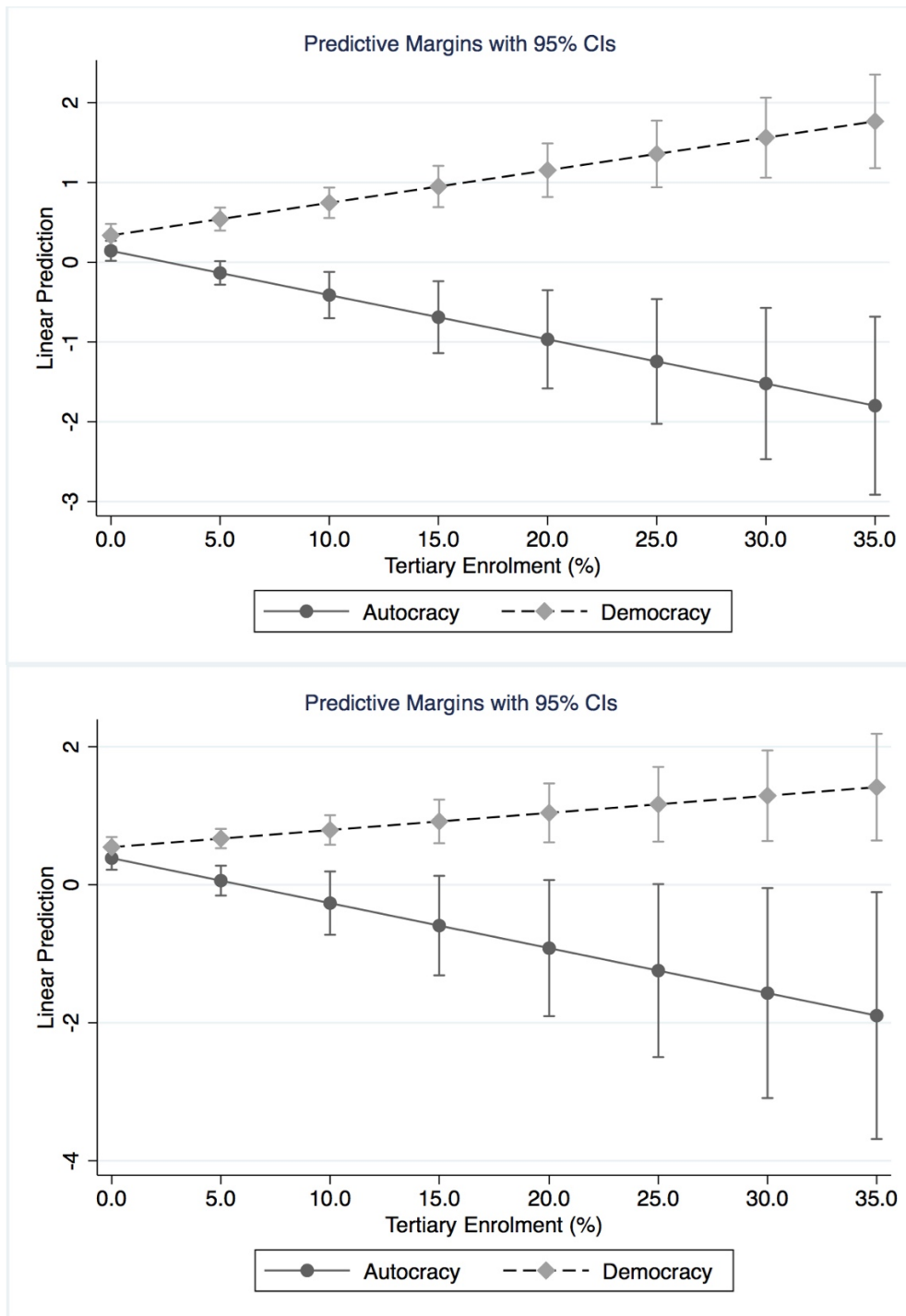
The marginal effects for Model 7, Model 10 and Model 11 are presented below and on the subsequent page and is followed with the presentation of Table 3.

**FIGURE 11, LINEAR PREDICTION OF TERTIARY ENROLMENT ON MERITOCRATIZATION (MODEL 7)**



*In Model 7, the divergence between democracies and autocracies increases and shows high significance ( $p < 0.01$ ), as the Property Rights control is added to the interaction effect between Democracy (BMR) and Tertiary Enrolment (%).*

FIGURE 12 AND FIGURE 13, LINEAR PREDICTION OF TERTIARY ENROLMENT ON MERITOCRATIZATION (MODEL 10 AND MODEL 11)



In Model 10 (top figure), the divergence between democracies and autocracies increases further and is highly significant ( $p < 0.01$ ), as a combination of controls – Property Rights and Executive Constraints – are added to the interaction effect between Democracy (BMR) and Tertiary Enrolment (%). In Model 11 (below figure), the divergence between democracies and autocracies remains significant, as all controls added to the interaction effect between Democracy (BMR) and Tertiary Enrolment (%). The diminishing effect of democracies and the increased effect among autocracies, may however have been augmented by the loss of observations.

TABLE 3, THE EFFECT OF TERTIARY ENROLMENT ON MERITOCRATIZATION

VARIABLES	V-Dem Proxy for Meritocracy										
	1	2	3	4	5	6	7	8	9	10	11
Tertiary Enrolment (%)	0.0800*** (0.00959)		0.0488*** (0.00950)	-0.0154 (0.0168)	-0.0537* (0.0296)	-0.0306* (0.0164)	-0.0482*** (0.0178)	-0.0669** (0.0282)	-0.0548* (0.0284)	-0.0555*** (0.0172)	-0.0652** (0.0275)
Democracy		1.233*** (0.131)	1.004*** (0.108)	0.894*** (0.114)	0.736*** (0.124)	0.425*** (0.130)	0.542*** (0.118)	0.284* (0.146)	0.488*** (0.125)	0.193 (0.129)	0.160 (0.138)
Democracy × Tertiary Enrolment (%)				0.0744*** (0.0186)	0.0838*** (0.0280)	0.0876*** (0.0182)	0.0881*** (0.0184)	0.0958*** (0.0263)	0.0798*** (0.0268)	0.0964*** (0.0182)	0.0900*** (0.0256)
GDP/capita, log					0.209** (0.0908)			0.213** (0.0917)	0.115 (0.0914)		0.133 (0.0936)
Executive Constraints						0.146*** (0.0308)		0.137*** (0.0346)		0.122*** (0.0280)	0.110*** (0.0323)
Property Rights							1.734*** (0.370)		1.585*** (0.407)	1.526*** (0.352)	1.336*** (0.380)
Constant	-0.00281 (0.0227)	-0.288*** (0.0445)	-0.283*** (0.0507)	-0.216*** (0.0541)	-1.674** (0.731)	-0.640*** (0.107)	-0.992*** (0.186)	-2.115*** (0.727)	-1.708** (0.710)	-1.262*** (0.186)	-2.059*** (0.707)
Observations	13,348	15,410	10,137	10,137	8,189	9,687	10,137	7,851	8,189	9,687	7,851
R <sup>2</sup>	0.138	0.253	0.318	0.333	0.356	0.375	0.388	0.401	0.399	0.417	0.432
Country <i>N</i>	108	184	107	107	99	103	107	95	99	103	95
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 3 uses Democracy (BMR) as a political regime variable, where the reference category denotes autocratic regimes. Robust standard errors in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ ,

\* $p < 0.1$

The control variables for Table 3 showed high significance, albeit GDP/capita loses its significance in Model 9 and Model 11. In addition, among the control variables – Property Rights had the strongest direct effect on meritocratization, followed by GDP/capita and Executive Constraints. A comparison between the combined coefficient effects of Tertiary Enrolment (%) and Democracy (BMR), using Model 3, Model 10 and Model 11, shows that the effect of autocratic regimes on meritocratization shifts from positive in Model 3 to negative in Model 10-11. Democratic regimes similarly display positive effects on meritocratization in Model 3 and retains the positive effect in Model 10-11, although weakened. This comparison is illustrated below.

Combined Coefficient Effects			
Model	3	10	11
<b>Autocracy</b>	1.63968	-1.8648	-2.19072
<b>Democracy</b>	2.64368	1.56724	0.99328

*Tertiary Enrolment is calculated at 33.6%, indicating the highest enrolment rate in the data set and is compared to the outcomes of Democracy (BMR).*

The weakened effect among democracies in Model 11 in comparison to Model 10, may be caused by the fluctuation in observations, which decreases from Model 10 to Model 11 by 1,836 observations – corresponding to the exclusion of 8 countries.

Table 4 (see p. 32) illustrates the effect of tertiary enrolment and institutionalized democracy on meritocratization. In general terms, the results display similar trends as Table 3. The positive effects displayed in Model 1-3 turn negative in Model 4, where ‘0’ in Institutionalized Democracy shifts the coefficient negative. As the models proceeds from Model 4, having ‘0’ institutionalized democracy yields negative effects on meritocratization with rising rates tertiary enrolment. Conversely, low rates of tertiary enrolment together with ‘0’ institutionalized democracy, significantly diminishes the negative effects on meritocratization. Higher points of institutionalized democracy together with rising tertiary enrolment rates, show strong and positive effects on meritocratization in all models. However, the effect is more than halved in Model 11 while retaining a significant and positive effect. This may again be caused by the loss of observations from Model 10 to Model 11. A comparison between the combined coefficient effects of Model 3, Model 10 and Model 11 is presented on the next page, illustrating the changes in strength between the models at hand.

Combined Coefficient Effects			
Model	3	10	11
<b>Institutionalized Democracy: 0</b>	1.39776	-1.74048	-2.77872
<b>Institutionalized Democracy: 10</b>	2.78776	1.92592	1.43068

*Tertiary enrolment is calculated at 33.6, indicating the highest enrolment rate in the data set, and is compared to the outcome of the lowest (0) and highest (10) scores of institutionalized democracy.*

Similar to the prior table, Property Rights in Table 4 has the strongest and most significant effect on meritocratization, followed by Regulation of the Chief Executive and GDP/capita. However, the issue of fluctuating numbers of observations remains. Property Rights and Regulation of Chief Executive Recruitment may be differently dimensioned in their effects, as they include 2,040 further observations in comparison to GDP/capita, corresponding to the exclusion of 8 countries. Including all control variables in Model 11, shows that GDP/capita loses its significance while the other two controls retain high significance. Thus, the diminishing strength of higher institutionalized democracy and tertiary enrolment on meritocratization, may be augmented by the varying amounts of observations for each model. In addition, the increased negative effect for lower points of institutionalized democracy, combined with increasing tertiary enrolment rates, may likewise be augmented for the same reason. Thus, although the effects of both directions hold due to the overall high numbers of observations, they may have been augmented between Model 10 and Model 11. This change in effect holds for all Tables (1-3). Thus, the effect of Model 10, may illustrate the effects of tertiary enrolment combined with the regime typologies presented in this paper with better validity than Model 11.

The following page presents Table 4, displaying the results from the fixed effects regression models. The figures on the subsequent page, illustrate the marginal effects of Model 10 and Model 11 in Table 4. Model 11 weakens the strength of higher institutionalized democracy, while increasing the negative effect of less institutionalized democracy in comparison to Model 10. These shifts in strength may yet again be caused by a significant decrease in observations in Model 11

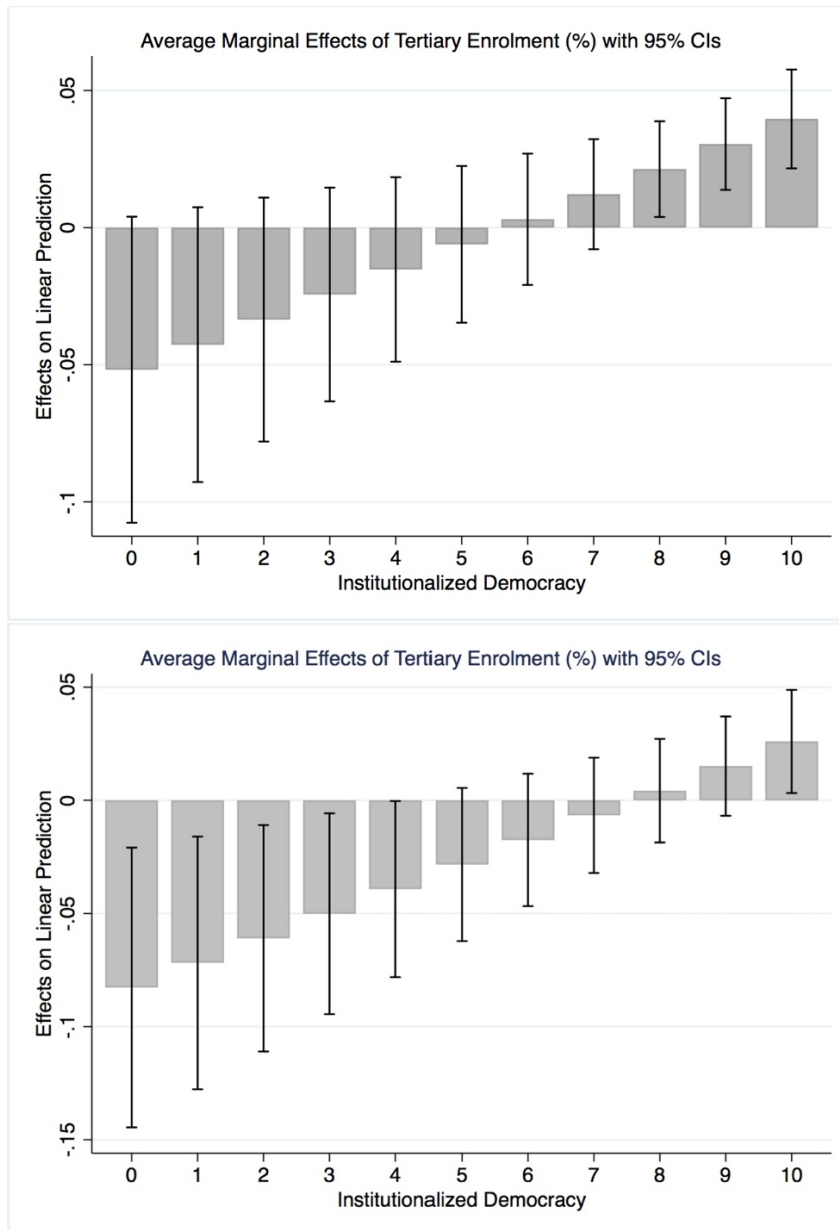
TABLE 4, THE EFFECT OF TERTIARY ENROLMENT ON MERITOCRATIZATION

VARIABLES	V-Dem Proxy for Meritocracy										
	1	2	3	4	5	6	7	8	9	10	11
<b>Tertiary Enrolment (%)</b>	0.0800*** (0.00959)		0.0416*** (0.00957)	-0.0431 (0.0260)	-0.0846*** (0.0292)	-0.0280 (0.0252)	-0.0679** (0.0296)	-0.0782*** (0.0292)	-0.0894*** (0.0317)	-0.0518* (0.0285)	-0.0827** (0.0315)
<b>Democracy</b>		0.148*** (0.0136)	0.139*** (0.0141)	0.127*** (0.0141)	0.108*** (0.0162)	0.105*** (0.0179)	0.0839*** (0.0169)	0.0874*** (0.0205)	0.0768*** (0.0187)	0.0592*** (0.0202)	0.0547** (0.0223)
<b>Democracy x Tertiary Enrolment (%)</b>				0.00988*** (0.00293)	0.0120*** (0.00305)	0.00848*** (0.00288)	0.0107*** (0.00314)	0.0112*** (0.00306)	0.0117*** (0.00325)	0.00915*** (0.00307)	0.0109*** (0.00327)
<b>GDP/capita, log</b>					0.163* (0.0861)			0.185** (0.0821)	0.110 (0.0850)		0.133 (0.0809)
<b>Regulation of Chief Executive Recruitment</b>						0.262* (0.135)		0.238* (0.129)		0.287** (0.119)	0.251** (0.122)
<b>Property Rights</b>							1.605*** (0.362)		1.318*** (0.372)	1.629*** (0.365)	1.331*** (0.374)
<b>Constant</b>	-0.00281 (0.0227)	-0.398*** (0.0503)	-0.467*** (0.0619)	-0.379*** (0.0657)	-1.440** (0.677)	-0.445*** (0.0689)	-1.056*** (0.167)	-1.671** (0.642)	-1.626** (0.658)	-1.138*** (0.172)	-1.871*** (0.628)
<b>Observations</b>	13,348	15,215	10,129	10,129	8,089	10,129	10,129	8,089	8,089	10,129	8,089
<b>R<sup>2</sup></b>	0.138	0.252	0.334	0.352	0.388	0.360	0.402	0.394	0.421	0.411	0.428
<b>Country N</b>	108	173	104	104	96	104	104	96	96	104	96
<b>Year FE</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4 includes Institutionalized Democracy as a political regime variable, from the Polity IV Data set. This measurement uses a 0-10 point-scale, where higher scores, indicate higher Institutionalized Democracy, while lower scores, indicate an absence of Institutionalized Democracy. Robust standard errors in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$



**FIGURE 14 AND FIGURE 15, MARGINAL EFFECTS OF TERTIARY ENROLMENT ON MERITOCRATIZATION (MODEL 10 AND MODEL 11)**



The top figure illustrates Model 10. Significant positive effects are observed when the Institutionalized Democracy measure reaches 7-10. Institutionalized Democracy displays negative relationship with merit in practice for lower points. However, the marginal effects vary between both positive and negative values for all points on the scale where negative effects are displayed. The below figure illustrates Model 11. Having 0-4 on the Institutionalized Democracy point-scale, displays significant and negative effects on meritocratization. Significant positive effects are only observed when Institutionalized Democracy reaches 10. Thus, having less institutionalized democracy displays increasing negative effects for merit in practice, whereas higher institutionalized democracy displays increasing positive effects.

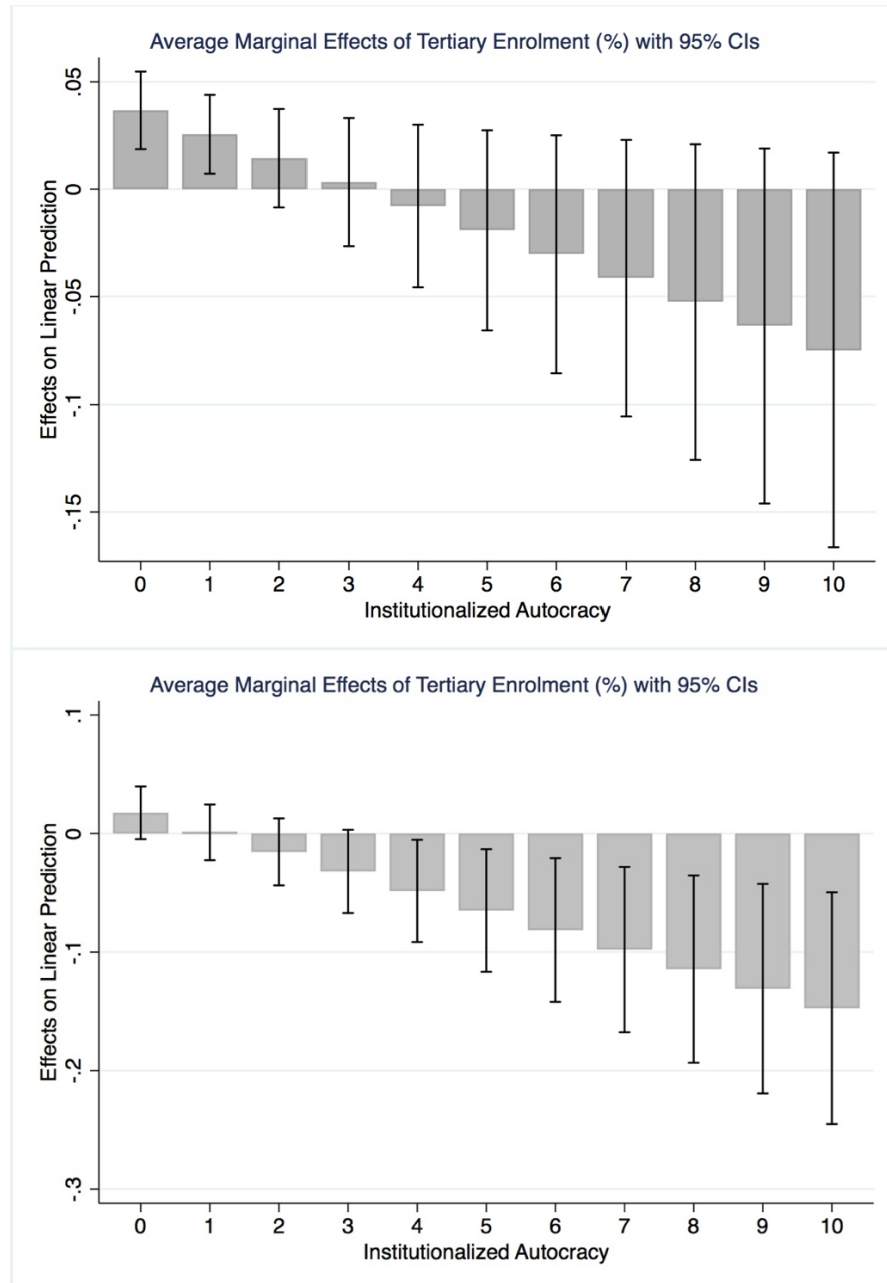
Table 5 (see p. 36) evaluates the effect of tertiary enrolment and institutionalized autocracy on meritocratization. Model 2 illustrates a significant negative effect on meritocratization with higher institutionalized autocracy. Model 3 similarly displays significant negative effects, albeit increasing tertiary enrolment rates shifts this trend toward a positive effect. Beginning from Model 4 and onward, the results display that higher institutionalized autocracy together with rising rates of tertiary enrolment have a significant negative effect on meritocratization. What is notable among the control variables is that the Regulation of Chief Executive Recruitment shows the most significant and strong measures on meritocratization, followed by the Property Rights variable and GDP/capita. However, the effects are augmented in Model 11, which may be caused by a decrease in observations in the same model. This shift from Model 10 to Model 11 is observed in the table below, illustrating how a fully institutionalized autocracy almost double its negative effect on meritocratization, whereas the absence of institutionalized autocracy has its positive effect on meritocratization decreased by more than half.

Combined Coefficient Effects			
Model	3	10	11
<b>Institutionalized Autocracy: 0</b>	1.76064	1.23312	0.588
<b>Institutionalized Autocracy: 10</b>	0.47064	-2.94148	-5.411

*Tertiary Enrolment is calculated at 33.6, indicating the highest enrolment rate in the data set, and is compared to the outcome of the lowest (0) and highest (10) scores of institutionalized autocracy.*

This shift in the effect from Model 10 and Model 11 is illustrated on the next page, and is then followed by the presentation of Table 5, illustrating the results from the fixed effects model. This is followed by the next section, which concludes the results presented here, using previous literature and theories to explain the outcome of the fixed effects regression models.

**FIGURE 16 AND FIGURE 17, AVERAGE MARGINAL EFFECTS OF TERTIARY ENROLMENT ON MERITOCRATIZATION (MODEL 10 AND MODEL 11)**



The top figure displays the marginal effects for Model 10. Lower points of institutionalized autocracy have a positive and significant effect on meritocratisation when tertiary enrolment increases. Points between 4-10 indicate an increasing negative effect on meritocratisation, albeit the marginal effects vary between both positive and negative values for all points on the scale, displaying negative effects. The below figure illustrates the marginal effects for Model 11, showing significant negative effects from 4-10 on the point-scale. An increase in institutionalized autocracy, conjointly with rising tertiary enrolment increases the negative effect on meritocratisation. Conversely, lower autocratic institutionalization together with increasing rates of tertiary enrolment, diminishes the negative effect on meritocratisation. The absence of institutionalized autocracy thereby shows positive effects, albeit without any significance.

TABLE 5, THE EFFECT OF TERTIARY ENROLMENT ON MERITOCRATIZATION

VARIABLES	V-Dem Proxy for Meritocracy										
	1	2	3	4	5	6	7	8	9	10	11
<b>Tertiary Enrolment (%)</b>	0.0800*** (0.00959)		0.0524*** (0.00958)	0.0610*** (0.00919)	0.0253** (0.0119)	0.0593*** (0.00892)	0.0371*** (0.00965)	0.0239** (0.0114)	0.0187 (0.0119)	0.0367*** (0.00921)	0.0175 (0.0113)
<b>Autocracy</b>		-0.134*** (0.0148)	-0.129*** (0.0157)	-0.108*** (0.0163)	-0.0920*** (0.0178)	-0.0813*** (0.0185)	-0.0666*** (0.0186)	-0.0699*** (0.0200)	-0.0660*** (0.0195)	-0.0445** (0.0202)	-0.0455** (0.0215)
<b>Autocracy × Tertiary Enrolment (%)</b>				-0.0186*** (0.00460)	-0.0230*** (0.00451)	-0.0127*** (0.00443)	-0.0164*** (0.00495)	-0.0198*** (0.00432)	-0.0195*** (0.00512)	-0.0111** (0.00480)	-0.0165*** (0.00496)
<b>GDP/capita, log</b>					0.269*** (0.0816)			0.270*** (0.0778)	0.191** (0.0885)		0.193** (0.0833)
<b>Property Rights</b>						0.468*** (0.131)		0.338*** (0.114)		0.419*** (0.120)	0.323*** (0.112)
<b>Regulation of Chief Executive Recruitment</b>							1.749*** (0.361)		1.252*** (0.383)	1.664*** (0.357)	1.225*** (0.386)
<b>Constant</b>	-0.00281 (0.0227)	0.671*** (0.0580)	0.539*** (0.0575)	0.515*** (0.0549)	-1.516** (0.673)	0.141 (0.121)	-0.564** (0.233)	-1.795*** (0.640)	-1.691** (0.676)	-0.846*** (0.249)	-1.952*** (0.654)
<b>Observations</b>	13,348	15,215	10,129	10,129	8,089	10,129	10,129	8,089	8,089	10,129	8,089
<b>R<sup>2</sup></b>	0.138	0.181	0.289	0.313	0.381	0.344	0.376	0.396	0.411	0.400	0.424
<b>Country N</b>	108	173	104	104	96	104	104	96	96	104	96
<b>Year FE</b>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 5 uses the Institutionalized Autocracy variable as a political regime measure. This measurement uses an eleven-point-scale (0-10), where higher scores indicate higher autocratic institutionalization. Robust standard errors in parentheses. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$

## Conclusion

The results from the previous section, illustrate that increasing rates of tertiary enrolment have a significant negative effect on meritocratization – among autocratic regimes. Conversely, rising rates of tertiary enrolment increases the propensity for meritocratization – among democratic regimes. Furthermore, institutionalized democracies have a significant positive effect on meritocratization, while institutionalized autocracies have a negative impact on meritocratization.

The first hypothesis ( $H_1$ ) suggests that an increasingly educated population, may trigger a competition with the political elite in autocracies over positions within the public administration. As the risk of losing influence over political affairs increases, it disincentivizes the ruling elite to adopt merit in practice (Shefter, 1977, 1993; Sundell, 2013, 2014). Evidence is thereby found for this claim among autocracies. The second hypothesis ( $H_2$ ) suggests that democracies may display a positive effect on meritocratization as tertiary enrolment increases. This mechanism is proposed, as democratic rulers are concerned about the provision of public goods, and are in turn willing to sacrifice their natural inclination toward favouring their core constituencies – as costs for retaining patronage networks increases with a growing educated class. The ruling elites in autocracies, thereby display less willingness to meritocratize than the political elites in democracies as tertiary enrolment rises.

Previous research theorizes that an increase in secondary enrolment, puts pressure on the ruling elite to meritocratize as opportunity costs rises (Hollyer, 2011a, 2011b). An increasingly educated class may thus pressure the ruling elite to change the foundations of recruitment – from informal and partial practices characterized by patronage and nepotism – to formal and impartial practices signified by merit in practice. The results illustrate that this mechanism may fit for democracies – albeit not for autocracies. First, according to the results, political regimes seem to have divergent institutional characteristics, which in turn impacts the time horizon of the political elite differently (Clague et al., 1996).

One possible explanation may be that the mechanisms for political legitimacy widely diverges. The dilemma of meritocratization on one hand, is that while autocracies may have the capacity to forcefully implement merit in practice (D’Arcy, Nistotskaya and Ellis, 2015) – they are limited to act due to the inherent nature of their support, compromising of regime loyalists. This condition compels the ruling elite to maintain the patronage networks in place. Autocratic regimes thereby have inherent difficulties to meritocratize, as a critical foundation of its legitimacy is bounded by the distribution of power and public goods to its regime supporters – as a strategy for regime survival. This

institutionalized design within autocratic regimes, implicates an inherent shorter time-horizon among the ruling elite in autocracies, as the fear for regime-breakdown may be greater than in democracies when education enrolment increases.

This suggestion may be underlined by the historical cases of Sweden and the United Kingdom on one hand, illustrating that merit adoption only was accepted as long as the dominance of the aristocracy was ensured (Sundell, 2013, 2014; Greenaway, 2004; Horton, 2006). The case of Spain under Francisco Franco displays similar patterns, as tertiary enrolment rates were low when efforts to meritocratize were initiated (Lapuente, 2007). The timing of merit adoption may have had an important role for the willingness of the ruling elite to meritocratize, as the state-formation in Western- and Northern Europe succeeded to lock in toward a path of merit reforms – during autocratic rule – and before tertiary enrolment rates had increased beyond higher rates.

The case of Iran on the other hand, shows that improvements of meritocratization may deteriorate quickly if the ruling elite decides that it may threaten its political hegemony (Milani, 2010; Tahmasebi-Birgani, 2010; Dabashi, 2011). In fact, increasing educational equality between the lower classes and the political elite in autocracies, may threaten the positions of the elite to such an extent that these patronage networks get further entrenched, and in turn pushes merit in practice further away. To quote Thomas Hobbes:

"Nature had made men equal. The weakest has strength enough to kill the strongest, and as to the faculties of mind find a yet greater equality amongst men than that of strength. From this equality arises equality of hope in attaining of our ends. And therefore, if two men desires the same thing, they become enemies and endeavour to destroy and subdue one another" (Hobbes, 1651/1985: 183-184).

Here he tells us something that we may not want to hear, that in fact *educational equality can be interpreted as the reason for social conflict rather than the solution for it*. While this paper found evidence that it may not be the case for democracies – it seems this mechanism proves right for autocratic regimes.

On the other hand, the dilemma for meritocratization among democracies, was suggested to lie in their inefficiency to carry out policies due low decisiveness (Lapuente, 2007). However, the disposition towards an increasingly educated population among the political elite in democracies, differs from the attitudes of the elite in autocracies. Democracies may meritocratize as the system is

dependent on the support of the general public, and thus adopts merit in practice in order to preserve its legitimacy – by delivering meritocratic recruitment as a public good. Democracies do not have the same space to ignore an increasing educated workforce, and thus the costs for retaining the existing patronage networks rises with increased educational enrolment (Holliyer, 2011a). This implies that the demands of a rising educated class may be better received by democratic regimes, as they become significant part of the electorate. While previous literature contests that the input-side bears little significance on bureaucratic governance in general and meritocratization in particular (Lapuente and Nistotskaya, 2009; D’Arcy and Nistotskaya; 2015) – these results contrarily show that the long-term effects of the input-side have important consequences for meritocratization.

In contrast to democracies, autocratic regimes manage to avert increasing pressures arising from higher rates of tertiary enrolment – as they are more concerned about their support from regime loyalist than the general public. Thus, *the survival of the regime comes first, meritocratization later*. The political elite in autocracies thereby have higher motivations for resisting merit in practice when tertiary enrolment rates increase, as the strategy for preserving their political hegemony lies with their supporters, which in turn are rewarded through recruitment-procedures based on patronage and nepotism (Przeworski et al, 2000; Wright, 2008a; Wilson and Wright, 2015).

In addition, the results illustrated in Table 5 shows that the Regulation of Chief Executive Recruitment measure has a significantly strong and positive effect on meritocratization in an autocratic setting. Having a wide time-horizon in autocracies may thus likely coincide with how well the regulation of the chief executive is institutionalized. This evidence relates to the theorization that executive constraints sets the foundation for a professionalized bureaucracy (Finer, 1997; Teorell, 2017). The evidence in this paper thereby points toward a generalization of the suggestion, which was mainly formulated for the Monarchical Autocracies in the 18<sup>th</sup>, 19<sup>th</sup> and early 20<sup>th</sup> century (c.f. Finer, 1997; Rothstein, 2011a, 2011b; Teorell, 2017).

Further testing of the hypotheses may be conducted in the following ways. First, using more refined variables where a wider variety of democratic and autocratic regime types are outlined, may improve the results on the input-side. This may complement the results, showing whether there are certain types of democracies or autocracies that further facilitate or inhibit merit in practice as tertiary enrolment increases. Second, a geographical control may add an extra dimension to the analysis. Such a dimension may for instance test varying effects between how democracies in Western Europe interact with education and meritocracy vis-à-vis the democracies of Eastern Europe. In other words,

it may uncover diverging and converging patterns depending on the geographical region. For instance, if geographical variations set democracies apart in regards of the likelihood of adopting merit in practice, further causes for meritocratization may be detected.

A third possible alley for future research may include whether gender have any effect; how does the ratio between male and female tertiary enrolment impact the likelihood of merit in practice over time? As previous studies have shown that gender has an important effect on governance (Teigen and Wängerud, 2009; Rothstein, 2016), the share of male and female enrollers should be explored. A suggestion would therefore be to measure how the propensity for meritocratization changes, depending on the rate of female and male enrollers. Four, while this study used country-level data, future studies may be conducted using regional or sub-regional data over time. The strength of such studies is that the hypotheses of this paper can test the internal variations of an individual country, displaying whether  $H_1$  and  $H_2$  may hold true for certain regions or the whole country per se. This may as in the case of adding a geographical layer, point to unexpected factors explaining what causes meritocratic recruitment, depending on the variation found among certain regions or sub-regions.



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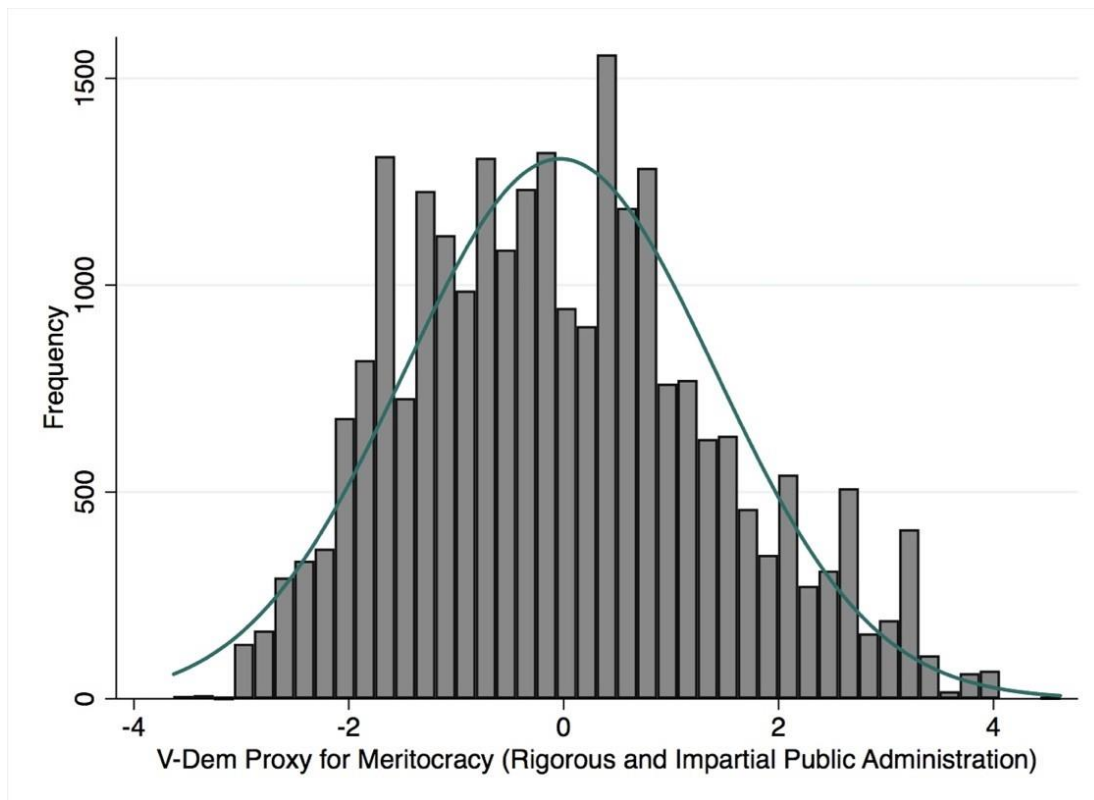
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# APPENDIX

## Appendix I

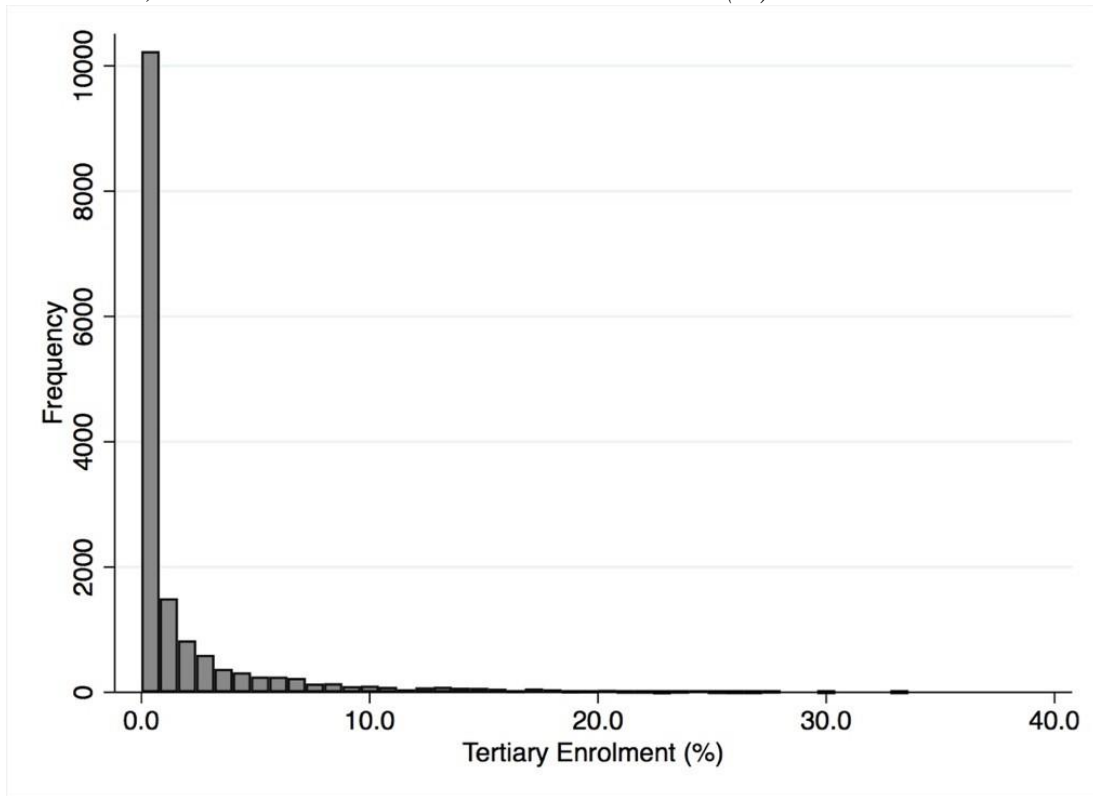
*FIGURE 18, DISTRIBUTION OF THE MAIN DEPENDENT VARIABLE – V-DEM PROXY FOR MERITOCRACY*



*The distribution of the main dependent variable is bell-shaped, but slightly skewed to the left. This may be expected as all observations are coded over a long period of time (1789-2017), when weaker institutions and governance prevailed the farther one goes back in time. The overall distribution is considered normal for conducting a statistical analysis.*

## Appendix II

FIGURE 19, DISTRIBUTION OF TERTIARY ENROLMENT (%)



*The distribution of one of the main independent variables – Tertiary Enrolment (%) – is heavily skewed to the left. This may be expected as all observations are coded over a long period of time (1820-2010), when tertiary education was still not prevalent. A large portion of the values lie between the 0-1%, with fewer observations between 10%-33.6%.*

## Appendix III

TABLE 6, THE COMBINED COEFFICIENT EFFECTS OF TERTIARY ENROLMENT (%) AND DEMOCRACY (BMR) ON MERITOCRATIZATION

Model	3	4	5	6	7	8	9	10	11
<b>Democracy (BMR): 0</b>									
<b>Tertiary Enrolment (%): 1</b>	0.0488	-0.0154	-0.0537	-0.0306	-0.0482	-0.0669	-0.0548	-0.0555	-0.0652
<b>Democracy (BMR): 0</b>									
<b>Tertiary Enrolment (%): 33.6</b>	1.63968	-0.51744	-1.80432	-1.02816	-1.61952	-2.24784	-1.84128	-1.8648	-2.19072
<b>Democracy (BMR): 1</b>									
<b>Tertiary Enrolment (%): 1</b>	1.0528	0.953	0.7661	0.482	0.5819	0.3129	0.513	0.2339	0.1848
<b>Democracy (BMR): 1</b>									
<b>Tertiary Enrolment (%) 33.6</b>	2.64368	2.8764	1.74736	2.3402	1.88264	1.25504	1.328	1.56724	0.99328

*This table shows the combined effect of Tertiary Enrolment (%) and Democracy (BMR) on meritocratization from Table 3. This table covers the combined effect of the coefficients of Tertiary Enrolment (%) and Democracy (BMR) from Model 3 to Model 11 – as these models include both variables. No interaction effect is included in Model 3. Model 4 includes an interaction effect without adding controls and is retained as a baseline for all subsequent models. Model 5-7 adds controls individually. Model 8-10 adds a combination of two controls for each model. Model 11 adds all controls.*

## Appendix IV

TABLE 7, THE COMBINED COEFFICIENT EFFECTS OF TERTIARY ENROLMENT (%) AND INSTITUTIONALIZED DEMOCRACY ON MERITOCRATIZATION

Model	3	4	5	6	7	8	9	10	11
<b>Institutionalized Democracy: 0</b>									
<b>Tertiary Enrolment (%): 1</b>	0.0416	-0.0431	-0.0846	-0.0280	-0.0679	-0.0782	-0.0894	-0.0518	-0.0827
<b>Institutionalized Democracy: 0</b>									
<b>Tertiary Enrolment (%) 33.6%</b>	1.39776	-1.44816	-2.84256	-0.9408	-2.28144	-2.62752	-3.00384	-1.74048	-2.77872
<b>Institutionalized Democracy: 10</b>									
<b>Tertiary Enrolment (%): 1</b>	1.4316	1.3257	1.1154	1.1068	0.8781	0.9078	0.7956	0.6317	0.5733
<b>Institutionalized Democracy: 10</b>									
<b>Tertiary Enrolment (%) 33.6%</b>	2.78776	3.14152	2.269442	2.95848	2.15276	2.07168	3.9312	1.92592	1.43068

*This table shows the combined effect of Tertiary Enrolment (%) and Institutionalized Democracy on meritocratization from Table 4. This table covers the combined effect of the coefficients of Tertiary Enrolment (%) and Institutionalized Democracy from Model 3 to Model 11 – as these models include both variables. No interaction effect is included in Model 3. Model 4 includes an interaction effect without adding controls and is retained as a baseline for all subsequent models. Model 5-7 adds controls individually. Model 8-10 adds a combination of two controls for each model. Model 11 adds all controls.*

## Appendix V

TABLE 8, THE COMBINED COEFFICIENTS EFFECTS OF TERTIARY ENROLMENT (%) AND INSTITUTIONALIZED AUTOCRACY ON MERITOCRATIZATION

Model	3	4	5	6	7	8	9	10	11
<b>Institutionalized Autocracy: 0</b>									
<b>Tertiary Enrolment (%): 1</b>	0.0524	0.0610	0.0253	0.0593	0.0371	0.0239	0.0187	0.0367	0.0175
<b>Institutionalized Autocracy: 0</b>									
<b>Tertiary Enrolment (%) 33.6%</b>	1.76064	2.0496	0.85008	1.99248	1.24656	0.80304	0.62832	1.23312	0.588
<b>Institutionalized Autocracy: 10</b>									
<b>Tertiary Enrolment (%): 1</b>	-1.2376	-1.205	-1.1247	-0.8807	-0.7929	-0.8731	-0.8363	-0.5193	-0.6025
<b>Institutionalized Autocracy: 10</b>									
<b>Tertiary Enrolment (%) 33.6%</b>	0.47064	-5.28	-7.79792	-3.08772	-4.92984	-6.54876	-6.58368	-2.94148	-5.411

*This table shows the combined effect of Tertiary Enrolment (%) and Institutionalized Autocracy on meritocratization from Table 5. This table covers the combined effect of the coefficients of Tertiary Enrolment (%) and Institutionalized Autocracy from Model 3 to Model 11 – as these models include both variables. No interaction effect is included in Model 3. Model 4 includes an interaction effect without adding controls and is retained as a baseline for all subsequent models. Model 5-7 adds controls individually. Model 8-10 adds a combination of two controls for each model. Model 11 adds all controls.*

## Appendix VI

TABLE 9, LIST OF COUNTRIES INCLUDED

List of Matched Countries for Year 2010: Tertiary Enrolment and Meritocracy			
1. Mexico	29. South Korea	57. Malawi	85. Czech Republic
2. Sweden	30. Philippines	58. Morocco	86. Denmark
3. Switzerland	31. Taiwan	59. Netherlands	87. Fiji
4. Ghana	32. Thailand	60. Panama	88. Finland
5. South Africa	33. Uganda	61. Sierra Leone	89. Greece
6. Japan	34. Venezuela	62. Spain	88. Guyana
7. Burma/Myanmar	35. Benin	63. Syria	89. Hong Kong
8. Russia	36. Cambodia	64. Tunisia	90. Iceland
9. Albania	37. Indonesia	65. Turkey	91. Kuwait
10. Egypt	38. Mozambique	66. United Kingdom	92. Luxembourg
11. Yemen	39. Nepal	67. Uruguay	93. Malaysia
12. Colombia	40. Nicaragua	68. Algeria	94. Mauritius
13. Poland	41. Niger	69. Cameroon	95. New Zealand
14. Brazil	42. Zambia	70. China	96. Norway
15. United States of America	43. Zimbabwe	71. Dominican Republic	97. Paraguay
16. Portugal	44. Canada	72. Gambia	98. Romania
17. El Salvador	45. Australia	73. Jamaica	99. Serbia
18. Bangladesh	46. Chile	74. Libya	100. Hungary
19. Bolivia	47. Costa Rica	75. Sri Lanka	
20. Honduras	48. Ecuador	76. Swaziland	
21. Mali	49. France	77. Togo	
22. Pakistan	50. Germany	78. Trinidad and Tobago	
23. Peru	51. Guatemala	79. Austria	
24. Senegal	52. Iran	80. Barbados	
25. Sudan	53. Ireland	81. Belgium	
26. Argentina	54. Italy	82. Bulgaria	
27. India	55. Jordan	83. Cuba	
28. Kenya	56. Lesotho	84. Cyprus	

*This table illustrates the list of countries, when the Tertiary Enrolment (%) and the Rigorous and Impartial Administration measure are matched for year 2010. An additional 8 countries were matched for the entire period of 1820 to 2010 and have at the ending-year disrupted as country-entities.*

## Appendix VII

TABLE 10, THE EFFECT OF SECONDARY ENROLMENT ON MERITOCRATIZATION

VARIABLES	V-Dem Proxy for Meritocracy										
	1	2	3	4	5	6	7	8	9	10	11
Secondary Enrolment (%)	0.0275*** (0.00402)		0.0155*** (0.00370)	-0.00203 (0.00756)	-0.0220** (0.00913)	-0.00558 (0.00699)	-0.0120* (0.00663)	-0.0236*** (0.00844)	-0.0245*** (0.00805)	-0.0129** (0.00618)	-0.0252*** (0.00761)
Democracy		1.233*** (0.131)	0.989*** (0.111)	0.832*** (0.124)	0.655*** (0.131)	0.384*** (0.137)	0.531*** (0.125)	0.225 (0.146)	0.439*** (0.127)	0.198 (0.136)	0.118 (0.139)
Democracy × Secondary Enrolment (%)				0.0221*** (0.00775)	0.0289*** (0.00799)	0.0247*** (0.00729)	0.0226*** (0.00729)	0.0302*** (0.00717)	0.0253*** (0.00768)	0.0242*** (0.00708)	0.0269*** (0.00710)
GDP/capita, log					0.275*** (0.0861)			0.274*** (0.0877)	0.225*** (0.0840)		0.232*** (0.0863)
Executive Constraints						0.140*** (0.0306)		0.133*** (0.0347)		0.117*** (0.0283)	0.108*** (0.0325)
Property Rights							1.765*** (0.378)		1.584*** (0.418)	1.532*** (0.356)	1.325*** (0.376)
Constant	-0.0484 (0.0343)	-0.288*** (0.0445)	-0.297*** (0.0542)	-0.211*** (0.0660)	-2.139*** (0.690)	-0.615*** (0.111)	-0.993*** (0.195)	-2.533*** (0.695)	-2.522*** (0.677)	-1.238*** (0.198)	-2.780*** (0.663)
Observations	13,348	15,410	10,137	10,137	8,189	9,687	10,137	7,851	8,189	9,687	7,851
R <sup>2</sup>	0.130	0.253	0.303	0.317	0.356	0.357	0.371	0.399	0.397	0.398	0.428
Country <i>N</i>	108	184	107	107	99	103	107	95	99	103	95
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 10 uses Democracy (BMR) as a political regime variable, where the reference category denotes autocratic regimes. Robust standard errors in parentheses. \*\*\* $p < 0.01$ , \*\* $p < 0.05$ , \* $p < 0.1$