

Patronage or Meritocracy?

Public Sector Employment in Kenya, Tanzania and Uganda after Independence¹

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Abstract

It is commonly argued that the efficiency of public services in Africa deteriorated after independence as governments hired too many people, allowed earnings to erode and performance standards to decline. Various explanations have been offered for this. Some focus on the merit-based criteria for entry, in particular the state's role as an employer of last resort of graduates from domestic colleges and universities. Others view public employment as an instrument of patronage, arguing that it was used to buy the support of particular ethnic groups or regions. Using a probit model this paper analyses the effects of education, age, place of birth and ethnicity on the probability of holding a public sector job in Kenya, Tanzania and Uganda in the 2000s. It finds that educational level, age and the developmental level of a respondent's place of birth have a large influence on an individual's likelihood to hold public sector employment, while ethnic favouritism seems to have only a minor effect once other factors are controlled for. The findings support the first proposition that the state was a default employer of highly educated workers in the decades of independence and politicians thus exercised relatively little discretion over the allocation of skilled jobs. However, the state's absorption of graduates waned with time and private sector employment is a much more likely career prospect for East Africa's younger cohorts of graduates. This could have important future consequences for East Africa's labour markets.

¹ This paper is anticipated to form a chapter in a PhD thesis on public employment and pay in East Africa c.1950 – 2010.

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I. Introduction

For much of Africa's postcolonial history public sector employees constituted an important share of the middle and upper-middle classes. By the late 1970s public sector employees comprised roughly half or more of all formal sector employment in Kenya, Tanzania and Uganda and an even larger share of high-income earners.³ East Africa's emerging educational elite showed a strong preference for public sector careers with over 60 percent of Kenya and Tanzania's university graduates absorbed into the government system in the 1960s and 1970s.⁴ The fact that these jobs, and by extension, high social status, was distributed politically rather than through market competition has led to considerable speculation about the politicisation of public employment. Class-based analyses of the 1960s and 1970s presumed that the public sector was the preserve of a narrow, rentier class that lived parasitically off the taxation of rural producers and stifled entrepreneurial activity.⁵ Such interpretations gave way in the 1980s and 1990s to theories of clientelism, which argued that jobs were used instrumentally by political patrons to distribute rents to individuals or groups who could deliver grassroots political support.⁶

Understanding the nature and consequences of public sector hiring practices is important not just for assessing the efficiency of public spending. If the strength of democracy is conditional on independent business interests and income earners not beholden to the state, then presumably the extent to which middle class voters depend on the government for their earnings and what social groupings they represent also aids our understanding the sources of democratic contestation in Africa.⁷ In the wake of structural adjustment and the contraction of the state in many African countries, it is valuable to reconsider who has access to the formal labour market.

Using recent census data from Kenya, Tanzania and Uganda, this paper explores the correlates of public employment and how they changed over time, using age of respondents as a proxy for likely year of entry into the public service. It argues that contrary to the patronage literature presumptions, educational qualifications mattered considerably for access to public sector jobs and these formal entry criteria therefore limited the ability of politicians to allocate them discretionarily. The probability of holding public sector employment has fallen rapidly since the 1980s with a smaller share of secondary and tertiary educated East Africans in their 20s and 30s working for the state than their colleagues who entered the system 20 years earlier. Rather than increasing the competition and politicking for public sector jobs however, it seems that the employment preferences of skilled labour may also have changed over the past decades. Today, on average, people from poorer and historically underserved regions of their respective countries are likelier to work for the government than those from more developed regions, suggesting that East Africa's most networked and advantaged youth are opting for private sector careers. Moreover, contrary to common perception, there is little evidence of ethnic preference in the distribution of jobs; the public services of Kenya and Uganda are relatively representative of the ethnic composition of their populations.

³ Roughly the top 10-20% of earners. Kenya: Statistical Abstract, 1980 (62% in Kenya in 1979); Tanzania survey of employment and earnings, 1978 (76% in Tanzania in 1976).

⁴ See Table 2, pp.8-9.

⁵ (Fanon 1963; Bates 1981; Shivji 1976)

⁶ For instance: (Chabal and Daloz 1999; Acemoglu and Robinson 2010; Englebert 2000; Young 1994)

⁷ For a discussion of this literature see: (Arriola 2013)

II. Theory

i. The public sector and the educational elite

The dominant role of the public sector as an employer of educated labour is an oft-remarked upon feature of developing country labour markets.⁸ In much of Africa public employment grew faster than private employment in the first decades after independence leading to characterisations of African governments as bloated, inefficient and growth-inhibiting.⁹ In the late colonial and immediate postcolonial era however, policymakers' main preoccupation was not with the sectoral composition of employment but rather with the pace of Africanisation. Of major concern was the shortage of skilled African manpower needed to replace departing colonial officers and drive the implementation of ambitious development plans. Angus Maddison characterised the skills gap in Sub-Saharan Africa in 1965 as a 'crisis situation', as '[a]lmost all leading posts in the administration and the economy were held by expatriates and settlers until very recently.'¹⁰ The fervour attached to building an indigenous civil service, both to further nationalist aims and state-led development, is evident in policy documents of the era. President Kenyatta stressed in his introduction to Kenya's first development plan that it 'places particular emphasis on the expansion of secondary education. This should have the greatest and earliest effect on the capacity of Kenya's citizens to contribute to the nation's development and to benefit from it.'¹¹ Governments turned to manpower analysis and educational planning to generate the skilled manpower needed to staff the bureaucracy. Fearing the loss of government-financed tertiary graduates to the private sector, East Africa's governments also provided tied bursaries that required graduates from tertiary institutions (colleges and universities) to work for the government for 2-5 years upon graduation. In exchange these graduates were guaranteed state employment.

But the skills crisis proved less surmountable than imagined. Decolonisation unleashed strong popular demand for education.¹² Over the course of the 1960s secondary enrolment increased three-fold in Tanzania and six-fold in Kenya.¹³ But the labour market did not keep pace with this increase in supply and already by the early 1970s concerns about open unemployment among secondary school leavers began entering the public discourse. A tracer survey from Kenya dated what was to become known as 'the school leaver problem' to 1969 when 14% of the previous year's secondary school leavers had been unable to secure jobs.¹⁴ A 1974 survey of school leavers in Uganda similarly concluded that falling demand for secondary educated workers meant that students were postponing labour market entry by continuing their education.¹⁵ In 1970 the National Assembly in Kenya appointed a select committee to study the unemployment problem.

With a growing unemployment problem and stalling economic performance in the 1970s critics came to see the heavy state hand in the skilled labour market as an allocative inefficiency, which in the absence of price signals led to mismatches in the supply and demand for skills and queuing for jobs in

⁸ (Assaad 1997; Gersovitz and Paxson 1995; D. L. Lindauer 1981)

⁹ For instance the well-known World Bank Berg report: (World Bank 1981)

¹⁰ (Maddison 1965, 18)

¹¹ (Kenya 1964), Introduction by Prime Minister Kenyatta.

¹² (Kpessa, Béland, and Lecours 2011)

¹³ Kenya: Statistical Abstract, various years; Tanzania: Annual Manpower Report to the President, 1975.

¹⁴ (Kinyanjui 1974)

¹⁵ (Currie and Maas 1974)

the urban areas.¹⁶ Some argued that the public sector's large employment role, coupled with high public sector salaries and generous nonpecuniary benefits, led to an undersupply of educated labour to the private sector with consequences for the growth of industry. Adapting the Harrod-Todaro model to explain the effects of Egypt's employment guarantees for graduates (which were similar to those of East Africa), Assaad (1997) showed that they had resulted in queuing for government jobs, unemployment and a reduction in private sector employment of graduates.¹⁷ Deadweight loss in terms of underutilized labour, combined with higher labour costs to the private sector, came to be seen as particularly damaging to the development of management-intensive activities such as manufacturing, presumed to have been an important component in the East Asian growth miracle.¹⁸ Some reports also questioned whether state employment led to an over-investment in education and an excessive emphasis on formal qualifications that crowded out of more productive investment in agriculture or industry.¹⁹ Furthermore, as the fiscal crisis of the 1970s intensified, government employment policies were also blamed for growing budget imbalances. With pressure on the state to continue employing the rapidly increasing output of from colleges and universities, some have argued that the governments employed more staff than they needed resulting in ballooning wage spending that crowded out more socially productive public investments and putting downward pressure on average earnings.²⁰ Meanwhile political economists characterised the cosy relationship between higher education and government employment as the means by which the existing elite perpetuated its privilege, with taxes from peasant agriculture paying for educational subsidies and high public sector wages to the most privileged members of society.²¹

This diagnosis attributed the public employment problem to policy mistakes and rent-seeking by elites. This led to a generic set of policy prescriptions: African governments were encouraged to curb employment growth, outsource government functions, privatize state-owned enterprises and pursue a more modest pace of educational expansion.²² While commitment to full scale public service reform may have been mixed, these core prescriptions were broadly implemented in the 1990s and 2000s: the pace of state expansion slowed in many African countries, governments divested from state-owned enterprises and real earnings began to recover.²³

ii. Patronage, not academic merit?

However, the perceived failure of structural adjustment to yield a rapid recovery gave traction to a different theoretical framework focusing not on policy mistakes and price distortions but on the deep-rooted social fissures in postcolonial African states such as ethnic plurality, regional inequalities and weak national cohesion.²⁴ Seen in this light, public employment patterns were not indicative of a misguided state-led approach to development but served opaque political motives unrelated to the delivery of public services. Public employment rested on a patronage logic: jobs were a private benefit that politicians distributed to politically important individuals or social groups in exchange for

¹⁶ (Todaro 1969; Harris and Todaro 1970), also indirectly echoed in the Kenyan 1974 development plan: (Republic of Kenya 1974)

¹⁷ (Assaad 1997)

¹⁸ From (Nelson and Pack 1999): 'In contrast, in many countries initially as poor as Korea and Taiwan, the market for college graduates was almost exclusively the government bureaucracies, where their skills arguably made little contribution to economic development.' (p.433)

¹⁹ (World Bank 1969)

²⁰ (Gelb, Knight, and Sabot 1991; World Bank 1981)

²¹ (Collier and Gunning 1999; Bates 1981)

²² (World Bank 1981)

²³ For evidence of fall in employment, see: (Schiavo-Campo 1998)

²⁴ (Chabal and Daloz 1999; Bratton and van de Walle 1997; Englebert 2000)

their political support or that of their communities.²⁵ This led to a public service ill equipped to deliver public services, where jobs were distributed without regard to skill or experience and where staff served at the discretion of political patrons rather than in accordance with an institutionalised career path. It may also have distorted the incentives to acquire skills, and in the worst case scenario, heightened political tension and risk of civil conflict.

Theories of clientelism have been very influential in the political economy literature on developing countries, particularly in Africa.²⁶ However, there is an inherent tension between the patronage narrative and the earlier assumption about public sector jobs benefitting a rapidly growing educated elite. If, as suggested by labour economists of the 1960s and 70s, governments employed virtually all college and university graduates, then such posts (which made up the senior civil service), were not discretionarily allocated. Patronage may have influenced promotions or political appointments, but entry into the coveted public sector labour pool was meritocratic and rules bound.

Some argue that patronage operated within the education system rather than at the time of employment, i.e. patrons had the discretion to allocate places in secondary and tertiary institutions. Yet the literature on educational progression in all three countries stress the importance of national examinations results in determining a student's educational progression and suggests that there was relatively little scope for politicians to influence the educational trajectory of individual students.²⁷ Furthermore, for such a model to hold patrons and clients must have very long time horizons; the lag between entry into a prestigious secondary school for instance and a graduate position in government is at least 10 years. If political circumstances shifted in that period the payoffs would change considerably.

Others have argued that patronage was internal to the public sector, determining pace of promotions and pay of those already selected into public employment. While this paper will not test this hypothesis it seems likely that such a scenario would not be as growth inhibiting as patronage writ large. Firstly, given the rapid compression of wages after independence, official earnings did not vary much between employees on different pay grades²⁸ and such patronage would therefore have made a rather small dent on the allocation of the overall wage bill. Discretionarily allocated benefits and rents may have been subject to patronage considerations but these flows are unlikely to have been of the same order of magnitude as the wage bill (as the wage bill was ~10% of GDP). Secondly, if the pool within which patronage is operating is of relatively homogenous workers (same training and cognitive ability), this form of favouritism should not lead to a serious misallocation of skills; the promoted people would still hold the right qualifications. Lastly, that networks and social attributes matter for advancement within organisations is hardly unique to developing countries. How and why such networks are more malign in some contexts than others calls for a much more sophisticated model than that presented in the general patronage literature to explain Africa's economic underperformance.

While there have been a number of studies and surveys conducted that shed light on the relationship between the education system and public employment in East Africa since independence and a growing literature on the nature and manifestations of patronage politics in Africa more broadly, there is little that bridges the gap between them.

²⁵ (Acemoglu and Robinson 2010; Robinson and Verdier 2013; Gelb, Knight, and Sabot 1991; Bratton and van de Walle 1997)

²⁶ For a good overview, see: (Mkandawire 2013)

²⁷ (Heyneman 1979; Mwiria 1990; Psacharopoulos and Loxley 1985)

²⁸ (D. L. Lindauer 1994)

III. Existing quantitative evidence

i. Skilled labour markets in East Africa

At its peak around 1990, the public sector employed roughly 700,000 people in Kenya, 500,000 in Tanzania and 240,000 in Uganda, constituting around 50% of formal sector employment in Kenya, 70% in Tanzania and 60% in Uganda.²⁹ While fragmentary, there are a number of data sources on educational composition of the labour markets in the Kenya, Tanzania and Uganda which support the proposition of a strong link between educational attainment and the likelihood of being among these hundreds of thousands of public sector employees. Data shows that since the colonial era the skills levels of Kenya, Tanzania and Uganda's public services have increased considerably. Half or more of public sector employees in the 2000s had secondary school education – 79% in Kenya, 64% in Uganda³⁰ and 58% in Tanzania - compared to the educational status of the working population as a whole, which in Kenya today is 26%, in Uganda 13%, and in Tanzania 8%. At independence the public sectors contained far fewer secondary educated workers; comparable figures were 15% in Kenya, 16% in Uganda and 8% (an upper bound estimate) in Tanzania. On an incremental basis 90% of the new public sector jobs created in Kenya between 1967 and 2009 were filled by secondary or tertiary graduates, a roughly similar share in Uganda (1967-2002), and around 70% in Tanzania (1962-2006).³¹ Creation of public sector jobs for unskilled workers may have mattered at crucial junctures in particular countries, but the vast amount of public employment creation since independence has benefitted comparatively well educated workers.

Table 1. Percentage of employment with secondary education or higher, total labour force compared to the public sector, 1960s and 2000s

	1960s			2000s		
	All employment	Public sector	Year and source	All employment	Public sector total	Year and source
Kenya	3	15 (upper bound)	1972 manpower survey, cited in statistical abstract (presuming all mid & high level posts had sec edu)	26	79	2009 census
	All employment (formal sector only)	Public sector		All employment	Public administration and education	
Tanganyika / Tanzania	2	8	1962 high-level manpower survey	8	58	2006 labour force survey
	All employment (formal sector only)	Public sector and education		All employment	Public services, education and health	
Uganda	11	16	1967 high level manpower survey	13	64	2002 census

Sources: See bibliography section on statistical sources for more details.

Existing survey data also suggests that the majority of people graduating from higher learning institutions found jobs in the public sector. Useful data comes from tracer surveys designed to understand the career paths of a particular set of graduates and manpower surveys that provide stock

²⁹ Data derived from: Uganda: World Bank, 1991 (estimate for 1987); Kenya: Statistical Abstract 1991; Tanzania: Statistical Abstract, 2011.

³⁰ The Ugandan definition of public sector here is loosely defined, using the 2002 census industry categories public administration, education and health. See further discussion on pp.9-10.

³¹ Calculated by comparing the total 'new' jobs created between these two years with the growth in the number of secondary graduates in public employment.

measures of the skills composition of the formal labour force at large. These datasets are rarely comprehensive (the tracer surveys tend to cover a particular set of educational institutions and the manpower surveys a subset of the labour market), but give a sense of the order of magnitude of the government's labour market share (see Table 2 for a summary of all relevant surveys located).

These surveys suggest that in the 1960s-1980s, somewhere in the order of 65-90% of all working university and college graduates were employed by the public sectors in Kenya and Tanzania. Ugandan estimates are only available for the 1960s but at that time at least, the levels were comparable to Kenya and Tanzania.

In the early post-independence period the public sector's absorption of secondary school completers was also very high. A Kenyan survey from the late 1960s found that two-thirds of those secondary school graduates (Form IV) that did not proceed to Form V joined the public sector or a public sector training programme (1965-68).³² In Uganda, among employed secondary school graduates, 66-93% worked for the public sector between 1964-1971.³³ Since then however the share of secondary school completers entering public employment in Kenya and Uganda has fallen considerably. In Tanzania in contrast, where secondary school expansion was considerably slower, the public sector continued to absorb more than half of all secondary school leavers until as late as 1990.

ii. Ethnic favouritism and public spending

There are also many studies that have demonstrated that ethnic politics has mattered for the distribution of public resources, particularly in Africa. Perhaps the most commonly tested hypothesis is that leaders will tend to privilege members of their own ethnic group or region in their distribution of services, investments and jobs. Such ethnic or regional favouritism is believed to retard economic growth by reducing allocative efficiency and biasing public spending towards private goods (wages, educational opportunities etc.) over more growth-enhancing public investments.³⁴ A number of econometric studies find evidence of such favouritism. Hodler and Rauschky have used subnational data from 126 countries to compare night-time light intensity (a proxy for level of development) in the region of birth of political leaders, finding a significant and positive effect.³⁵ This effect was strongest in weak institutional contexts and where educational attainment was low. Franck and Rainer use a sample of 18 countries to look at the effect of ethnic favouritism on primary education and infant mortality and also find a strong and significant effect of being a coethnic of the country's leader during childhood.³⁶

Individual country studies also find evidence of ethnic preference. With a focus on Kenya, Burgess et al. show that the ethnicity of the sitting president influenced the level of road investment at district level, although only under autocratic conditions.³⁷ Kramon and Posner, also with a focus on Kenya, find that being a coethnic of the President during primary school age increased educational attainment, attendance and completion rates.³⁸ Carlson examined voter behaviour in Uganda using a voting simulation exercise and found that voter patterns are consistent with the expectation that a coethnic leader will provide more public goods or benefits.³⁹

³² (Kinyanjui 1974)

³³ (Currie and Maas 1974)

³⁴ (Easterly and Levine 1997; Englebert 2000)

³⁵ (Hodler and Raschky 2014)

³⁶ (Franck and Rainer 2012)

³⁷ (Burgess et al. 2015)

³⁸ (Kramon and Posner 2012)

³⁹ (Carlson 2010)

Table 2. Summary of tracer and manpower survey results, Kenya, Tanzania and Uganda

Country	Source	Type	Year	Sample / coverage	Size, response rate	Results
Kenya	(Kinyanjui 1974)	Tracer survey	1968	Secondary students, Form IV leavers, 1 years after completion	3,000 Over four years – 1965-68	Form IV completers went on to: Upper secondary: 27% Public sector training programmes or employment: 48%
Kenya	(Hughes 1987)	Tracer survey	1987	University of Nairobi graduates	294	Among uni graduates between 1970-83: 64-79% entered public empl.
Kenya	(Kenya. Ministry of Manpower Development and Employment 1989)	Manpower survey	1986	Entire formal sector	Formal sector establishments. Likely under-coverage of private sector	Of total recorded formal sector employment, public sector employed: Uni grads: 75% Secondary: 60%
Kenya	(Kenya. Ministry of Labour and the Kenya National Bureau of Statistics 2011)	Manpower survey	2010	Entire formal sector	Likely under-coverage of private sector	Of total recorded formal sector employment, public sector employed: Uni grads: 44% Secondary?
Tanzania	(Tanzania 1971) <i>Annual manpower report of the President</i>	Admin data on placements	1970-82	Secondary, Form IV leavers	Full coverage	Of all Form IV completers between 1970-82, 63% were placed through the govt mechanism (presumably in public employment)
Tanzania	(Tanzania 1984)	Tracer survey	1982	Secondary, Form IV leavers	500 from 7 schools (public only)	
Tanzania	Cited in: (Cooksey, Mkude, and Levey 2003)	Tracer survey	1989	University – faculty of engineering	Unknown	Graduates between 1977-80: 84% worked for the public sector
		Tracer survey	1995	University – faculty of engineering	Unknown	Graduates between 1992-94: 64% worked for the public sector
Tanzania	Faustin Mukyanuzi, <i>Where Has All the Education Gone in Tanzania?</i> (Brighton: Institute of Development Studies: University of Sussex, 2003).	Tracer survey	2003	Secondary and university students from 10 secondary schools and 5 university faculties	Stratified sampling of schools / faculties. Stratified sampling of students. secondary: 1000, response rate 97% Uni: 500, response rate: 90%	Shares in public employment Form IV 1990 leavers: 50% Form IV 1995 leavers: 26% University 1980 leavers: 72% University 1999 leavers: 55%

Uganda	Cited in: (Knight 1967)	Manpower survey	1963	Formal sector employment and earnings	All formal sector employers	Public sector and education share of graduates in formal employment: University graduates: 68% Secondary completers: 84%
Uganda	(Uganda. Ministry of Planning and Economic Development. 1967)	Manpower survey	1967	Formal sector employees	All of government and all formal sector employers	Public sector and education share of all graduates in formal employment University graduates: 70% Secondary completers: 69%
Uganda	(Currie and Maas 1974)	Tracer survey	1971	Secondary school leavers	209 respondents (response rate 37%) randomly sampled from 25 government secondary schools	Activity 1 year after completion of secondary school: Further studies: 59% Government employment: 11% Private employment: 5% Unemployment/other: 25%
Uganda	Cited in: (Currie and Maas, 1974)	Tracer survey	1971	Secondary school leavers	N/A	Public v. privately employed secondary school leavers: 1964: public: 93%; 1969: public: 78%; 1971: public: 66%
Uganda	(International Labour Organisation 1979)	Manpower survey	1977	Formal sector employees, establishments with 50+ workers	All establishments with 50+, thus in particular underestimates the stock of primary and secondary teachers	Government and community services (primarily health and education) as % of total 'high-level manpower': 71% (Government: 60%; community services: 11%)

Others have sought to model how ethnic patronage influences political settlements at a higher level. In challenge to the notion of a winner-takes-all scenario where the President's men gain all the benefits of public spending, Francois, Rainer and Trebbi have argued that political coalitions in Africa are surprisingly inclusive, with ministerial appointments allocated in roughly similar proportions to the country's ethnic group shares.⁴⁰ They argue that this is due to the threat of revolution or internal coups, which leaders can fend off by including other ethnic groups in the ruling coalition. These inclusive ruling coalitions in turn extend the flows of patronage to their respective ethnic clients, ensuring a relatively equitable ethnic distribution of spending. Related findings, albeit descriptive, are provided by Bangura.⁴¹ With a sample of 15 countries from around the world, this study shows that ethnic diversity is not correlated with worse political outcomes but rather that ethnic structure and institutional characteristics influence ethnic proportionality. Moreover, their African case study countries are not outliers on measures of ethnic proportionality in public sector institutions.⁴²

A further set of literature has examined how institutional features and policies may mitigate or exacerbate ethnic favouritism. While Burgess et al. find that democracy eliminated ethnic patronage in Kenya, Miguel examines the claim of a more successful nation-building effort in Tanzania (under Nyerere) than in Kenya.⁴³ He uses a matched pair design, looking at school communities on the two sides of the Kenya-Tanzania boarder, to show that ethnic diversity had a stronger negative effect on public goods provision in Kenya than in Tanzania.

Fewer studies have looked at public employment and ethnic preference. Those few articles that do consider employment (e.g. Bangura, 2006) typically consider only a narrow band of senior positions or political appointees rather than the hundreds of thousands of employees drawing state salaries. As the wage bill usually comprises around 30-40% of public expenditure it is a prime suspect in the literature on patronage resources; some researchers have also suggested that public sector jobs are a particularly attractive form of patronage because they can be narrowly targeted to individual clients and solve time inconsistency problems.⁴⁴

The rest of this chapter seeks to quantitatively analyse the merit-based criteria (education, age/experience) and ascriptive criteria (ethnicity or region of origin) that are commonly presumed to have influenced access to public sector jobs in Kenya, Uganda and Tanzania. Using a probit model it considers the effect of various variables on the probability of holding public employment as well as how they might have changed over time.

⁴⁰ (Francois, Rainer, and Trebbi 2012)

⁴¹ (Bangura 2006)

⁴² Senior civil service, parliament and cabinet.

⁴³ (Miguel 2004)

⁴⁴ (Acemoglu and Robinson 2010; Robinson and Verdier 2013)

IV. The determinants of public sector employment in Kenya, Tanzania and Uganda

i. Data and method

The Kenyan, Tanzanian and Ugandan statistical bureaus have released microdata from recent population censuses, available through the Minnesota Population Center's Integrated Public Use Microdata Series (IPUMS).⁴⁵ Using these datasets I construct a probit model to investigate the correlates of the probability of holding a public sector job in East Africa in the 2000s. By treating the age of the respondent as a proxy for year of entry into government employment it is also possible to examine how employment opportunities have changed over time. While some respondents may have entered the public sector mid-career, the tracer studies identified in Table 2 suggest that most graduates were absorbed into public employment within a year of completing their schooling. The sample is restricted to Kenyan/Ugandan-born individuals and in the Tanzanian case citizens between the ages 25 – 55 who are economically active (i.e., engaged in some form of economic activity, whether informal or formal). The Kenyan sample is from 2009 and covers 10% of the total population ($n \approx 900,000$); the Tanzanian sample is from 2002 and covers roughly 11% of the population ($n \approx 700,000$); and the Ugandan sample, also from 2002, covers 10% of the population ($n \approx 400,000$). As a quality check and to increase the number of years under consideration, I also present results from the Kenyan 1998/99 labour force survey and the Tanzanian 2000 labour force survey. These surveys are considerably smaller (Kenya: $n \approx 12,000$; Tanzania: $n \approx 16,000$), but contain more detailed questions about employment.

I construct a dependent variable set to 1 if the individual is a public sector employee and 0 if not. Roughly 7-10% of the respondents worked for the public/government sector, giving 36,000 public employee respondents in Uganda, 60,000 for Kenya and 65,000 for Tanzania. The Kenyan 2009 census helpfully recorded respondents sector of employment according to the same categories used in its annual employment surveys, thus we have a precise public employment dummy. The Tanzanian and Ugandan censuses did not record employment by public/private sector, but the respondent's 'industry of employment' include the categories 'public administration and education' sector in the Tanzanian case and the separate industries 'public service', 'education' and 'health' for Uganda. These industrial categories appear to cover the majority of the general government in both countries, albeit not parastatal employees. In this paper I will refer to the dependent variable generically as public employment, but the Kenyan variable, which includes parastatals, is not strictly comparable to the Ugandan and Tanzanian ones which are a rough measure of general government employment.

Furthermore, the Tanzania and Uganda variables capture not only government employees but also some private education and health providers. In Tanzania 8% of the 2002 teaching forces worked in private schools and in Uganda private schools employed 23% of secondary and primary school teachers in 2002, and private health facilities roughly 20% of health workers in 2005.⁴⁶ The wording of the census question also suggests that contractors and temporary staff would likely fall within this

⁴⁵ The Kenyan and Ugandan statistics bureaus released a 10% sample in microdata form; while the Tanzanian sample is 11% (not self-weighting). These samples are made available by the Minnesota Population Center (2014), who curate a database of Integrated Public Use Microdata Series (IPUMS), made available by the national statistical agencies of each respective country.

⁴⁶ Tanzanian teachers, see Tanzania Statistical Abstract; Ugandan teacher data from the Education Management Information System 2002; data on Ugandan health workers in 2005 reported in: (Africa Health Workforce Observatory 2009, 30–35)

definition of government employment: in Tanzanian census the question is worded as follows: ‘What is the main activity at [respondent's] place of work for the last seven days?’, and in Uganda: ‘What is the main economic activity of the place where [name] works?’. The overall effect then, is a laxer definition of government employment than that used in the administrative data. However, for the purposes of this study, where our interest is in the allocation of jobs that fall under public control, the inclusion of contractors at least should not present a major drawback; presumably contract and temporary staff would be subject to the same patronage pressures as permanent staff. In the case of Tanzania moreover, I use the smaller 2000 labour force survey which contains a precise indicator on sector of employment to corroborate the main results.

The first set of independent variables relate to characteristics of the individual respondent: age, sex and highest level of education attained. The summary statistics below give some indication of the differences between the public sector employees and the sample as a whole. Public sector employees are on average older (except in Uganda), their educational attainment is higher and women are underrepresented. The average Kenyan public sector employee has a just above a secondary school degree while the Ugandan and Tanzanian averages lie just below secondary level.

The second set of variables relate to characteristics of the respondent’s district or region of birth.⁴⁷ These indicators are used to examine how ascriptive criteria related to a person’s social background may influence employment opportunities. In particular, does coming from a more economically advantaged increase or reduce the likelihood of public employment? I include four measures of the level of development in an individual’s place of birth. Distance from the capital measures the proximity to each country’s main node of commerce, industry and government activity, and thus its likely level of integration into the formal economy. Population density is a useful measure both of the productivity of a region and its likely infrastructure penetration. I also use the share of the working population in private, formal sector employment (wage employment), as a measure of alternative, skilled labour opportunities beyond the public sector. Lastly, the average years of schooling of the cohort born in the 1930s is used as a proxy for the level of human development in the late colonial era.⁴⁸ On the whole public sector employees come from slightly more developed regions of the country than the average labour force participant.

The last variable relates to the ethnicity of the respondent. This analysis is limited to Kenya and Uganda as ethnic proxies could not be constructed for Tanzania.⁴⁹ However, as Tanzania is considered to be one of the few countries in Africa where ethnicity has played a relatively minor role in politics, any ethnic preference effects would likely be weaker than in Kenya and Uganda anyhow.⁵⁰

The Ugandan census data coded individuals by ethnic group. I include the 10 largest ethnic groups (which comprise roughly 75% of the population) and a composite group of all remaining small ethnic group. Two of the Ugandan ethnic groups have had coethnic Presidents in the recent past: the Langi (President Obote), and the Banyankole (President Museveni).

⁴⁷ Kenya has 47 counties and 157 districts (some indicators on district basis, other on county basis), Uganda 57 districts and Tanzania 21 regions.

⁴⁸ While this indicator is strongly correlated with educational attainment today, it cannot be said to be a product of the postcolonial political settlement.

⁴⁹ Tanzania has not included questions about ethnicity in its censuses since the 1960s; moreover, the relatively large regions of birth coupled with strong ethnic heterogeneity would make ethnic proxies based on birth locations very blunt.

⁵⁰ See for instance: (Bangura 2006; Mamdani 2012)

Unfortunately the Kenyan census data does not code individuals by ethnicity so I use a proxy based on location of birth.⁵¹ Each of Kenya's 47 counties are assigned to the largest ethnic group in that county; if no group constitutes more than 50% of the population the county is coded as 'mixed'.⁵² Most counties are quite ethnically homogenous: of those with a majority ethnic group, that group on average constitutes 83 percent of the county population (s.d. 16). I include 12 different ethnic categories and one smaller residual group. It is worth noting that the 'mixed' category (i.e. counties where no ethnic group is a majority) is dominated by Nairobi-born respondents and as such is something of an outlier. Following Posner (2005), I also group Kenya's ethnic groups according to political alliances into five main blocks: GEMA (Kikuyu, Embu and Meru), KAMATUSA (Kalenjin, Maasai, Turkana and Samburu), Luhya, Luo and Kamba.⁵³ Kenya also has two ethnic groups who have had coethnic Presidents in the postcolonial era: the Kikuyu (Presidents Kenyatta and Kibaki) and the Kalenjin (President Moi).

Table 3. Summary statistics

KENYA

Variable	Full Sample					Public sector employees (dep. variable)				
	Obs	Mean	St. D.	Min	Max	Obs	Mean	St. D.	Min	Max
Age	945110	36.34	7.26	25	55	61607	38.59	8.35	25	55
Sex	945110	0.47	0.50	0	1	61607	0.37	0.48	0	1
Highest level of education (0 = none, 4 = tertiary)	926005	1.91	1.17	0	4	60869	3.20	0.93	0	4
District/county of birth effects										
Distance to capital city (county basis) (km)	945110	224.41	148.18	0	808	61607	209.14	128.94	0	808
Population density (people per km ²) (log)	945110	5.45	1.30	0.7	9.2	61607	5.61	1.25	0.69	9.18
% employed in formal private employment (wage emp.)	945110	11.19	4.38	0.8	26.3	61607	11.95	4.13	0.75	26.35
Ave years of education for cohort born in 1930s by district of birth	945110	2.05	1.00	0.02	6.56	61607	2.21	0.97	0.02	6.56
Ethnic group dummies										
Kikuyu	945110	0.20	0.40	0	1	61607	0.21	0.41	0	1
Luhya	945110	0.15	0.36	0	1	61607	0.14	0.35	0	1
Kalenjin	945110	0.11	0.31	0	1	61607	0.14	0.34	0	1
Luo	945110	0.10	0.30	0	1	61607	0.11	0.31	0	1
Kamba	945110	0.10	0.30	0	1	61607	0.10	0.30	0	1
Somali	945110	0.04	0.20	0	1	61607	0.02	0.13	0	1
Kisii	945110	0.06	0.24	0	1	61607	0.06	0.25	0	1
Mijikenda	945110	0.04	0.19	0	1	61607	0.03	0.18	0	1
Meru	945110	0.06	0.23	0	1	61607	0.05	0.22	0	1
Turkana	945110	0.02	0.14	0	1	61607	0.01	0.08	0	1
Embu	945110	0.02	0.14	0	1	61607	0.02	0.15	0	1
Mixed	945110	0.06	0.22	0	1	61607	0.07	0.26	0	1
Other	945110	0.03	0.17	0	1	61607	0.03	0.16	0	1

Source: Kenya Population and Housing Census, 2009 (Minnesota Population Center, 2015). Ethnic composition of county population from Burbidge, 2015, derived from 2009 census.

⁵¹ The census collected ethnic data but it has not been released as part of the microdata sample, so only summary statistics on ethnicity are available.

⁵² My approach is similar to that employed by Burgess et al., 2013, although they use earlier district boundaries while I use 2009 counties. Data on county ethnic composition taken from: (Burbidge 2015)

⁵³ (Posner 2005, 261)

UGANDA

Variable	Full Sample					Public sector employees (dep. variable)				
	Obs	Mean	St. D.	Min	Max	Obs	Mean	St. D.	Min	Max
Age	432971	35.87	8.19	25	55	36884	35.22	7.76	25	55
Sex	432971	0.42	0.49	0	1	36884	0.32	0.47	0	1
Highest level of education (0 = none, 4 = tertiary)	432971	1.37	1.16	0	4	36884	2.90	1.25	0	4
Distance to capital city (county basis) (km)	428961	201.86	100.63	0	385	36174	195.34	105.87	0	385
Population density (people per km2) (log)	428961	5.17	0.88	3.1	8.9	36174	5.26	1.07	3.1	8.9
% employed in formal private employment (wage emp.)	432971	3.62	2.55	1.0	18.4	36884	4.15	3.44	1.0	18.4
Ave years of education for cohort born in 1930s by district of birth	432971	2.32	0.97	0.5	5.9	36884	2.45	1.14	0.5	5.9
baganda	432971	0.18	0.38	0	1	36884	0.21	0.40	0	1
banyankole	432971	0.10	0.31	0	1	36884	0.10	0.30	0	1
basoga	432971	0.09	0.28	0	1	36884	0.08	0.28	0	1
bakiga	432971	0.08	0.27	0	1	36884	0.05	0.23	0	1
langi	432971	0.07	0.25	0	1	36884	0.06	0.24	0	1
iteso	432971	0.05	0.23	0	1	36884	0.08	0.27	0	1
bagisu	432971	0.05	0.22	0	1	36884	0.04	0.20	0	1
acholi	432971	0.04	0.21	0	1	36884	0.06	0.23	0	1
lugbara	432971	0.04	0.20	0	1	36884	0.04	0.20	0	1
banyoro	432971	0.03	0.17	0	1	36884	0.03	0.17	0	1
Other	432971	0.27	0.44	0	1	36884	0.24	0.43	0	1

Source: Uganda Population and Housing Census, 2002 (Minnesota Population Center, 2015)

TANZANIA

Variable	Full Sample					Pub sector employees (dep. variable)				
	Obs	Mean	St. D.	Min	Max	Obs	Mean	St. D.	Min	Max
Age	915842	36.4	8.5	25	55	65633	38.2	8.2	25	55
Sex	915842	0.5	0.5	0	1	65633	0.4	0.5	0	1
Highest level of education (0 = none, 4 = tertiary)	915842	1.5	1.0	0	4	65633	2.6	0.8	0	4
Distance to capital city (county basis) (km)	877338	522.5	257.5	0	981	58555	521.6	263.4	0	981
Population density (people per km2) (log)	877338	3.8	0.8	2.48	7.49	58555	3.9	0.9	2.5	7.5
% employed in formal private employment (wage emp.)	877338	6.5	2.3	3.24	15.15	58555	7.1	2.6	3.2	15.2
Ave years of education for cohort born in 1930s by region of birth	915842	1.63	0.62	0	3.4	65633	1.77	0.72	0	3.4

Source: Tanzania Population and Housing Census, 2002 (Minnesota Population Center, 2015)

V. Results

i. Educational achievement and public sector careers

The probit results confirm the fragmentary evidence from the 1960s to 1980s that a large share of East Africa's educated labour force was absorbed into the public sector. The full results tables (5-7) are found on pp.26-30. I start by considering models K.1, U.1 and T.1, which focus on age, gender and education variables without geographic controls or fixed effects. Most of the age, gender, education coefficients and interaction terms are strongly significant. How important is educational achievement for attaining a public sector job? For a working tertiary educated Kenyan born in the mid-1950s, the probability of holding public employment in the late 2000s is 0.59; for a Tanzanian of the same age-cohort the probability of general government employment was roughly 0.66 in the early 2000s, and for a Ugandan roughly 0.58. This compares to the probability of public employment for a secondary graduate of 0.20, 0.50 and 0.22, and a primary school graduate of 0.05, 0.15 and 0.02 respectively. For certain skill segments of the East African labour market then, the likelihood of working in the public sector is high. While Tanzania, which took a socialist orientation after independence, would be expected to have a large state sector, it is interesting to note that for tertiary graduates at least, the Kenyan and Ugandan probabilities are in the same ballpark.

In the Kenyan and Tanzanian cases the likelihood of holding public employment increases significantly with age, with a weak quadratic effect (fitted probabilities given in Figure 1). In Kenya less than 30% of all tertiary-educated born around 1980 work for the public sector, but roughly 60% for those born in the mid-1950s. Secondary graduates have also seen their public employment probabilities fall, from 0.20 for the mid-1950s birth cohort to 0.07 for the 1980 cohort. In Tanzania the share of tertiary graduates in public employment has also fallen from close to 70% among those born in early 1950s, to 40% for those born in the mid-1970s. The Kenyan 1998/99 labour force survey and Tanzanian 2000 labour force survey corroborate these findings. The smaller samples increase the confidence intervals considerably but the estimated levels are comparable to the population census results. Both labour force surveys suggest a more strongly quadratic relationship between age and public employment probabilities, with probabilities plateauing for respondents born before c.1955.

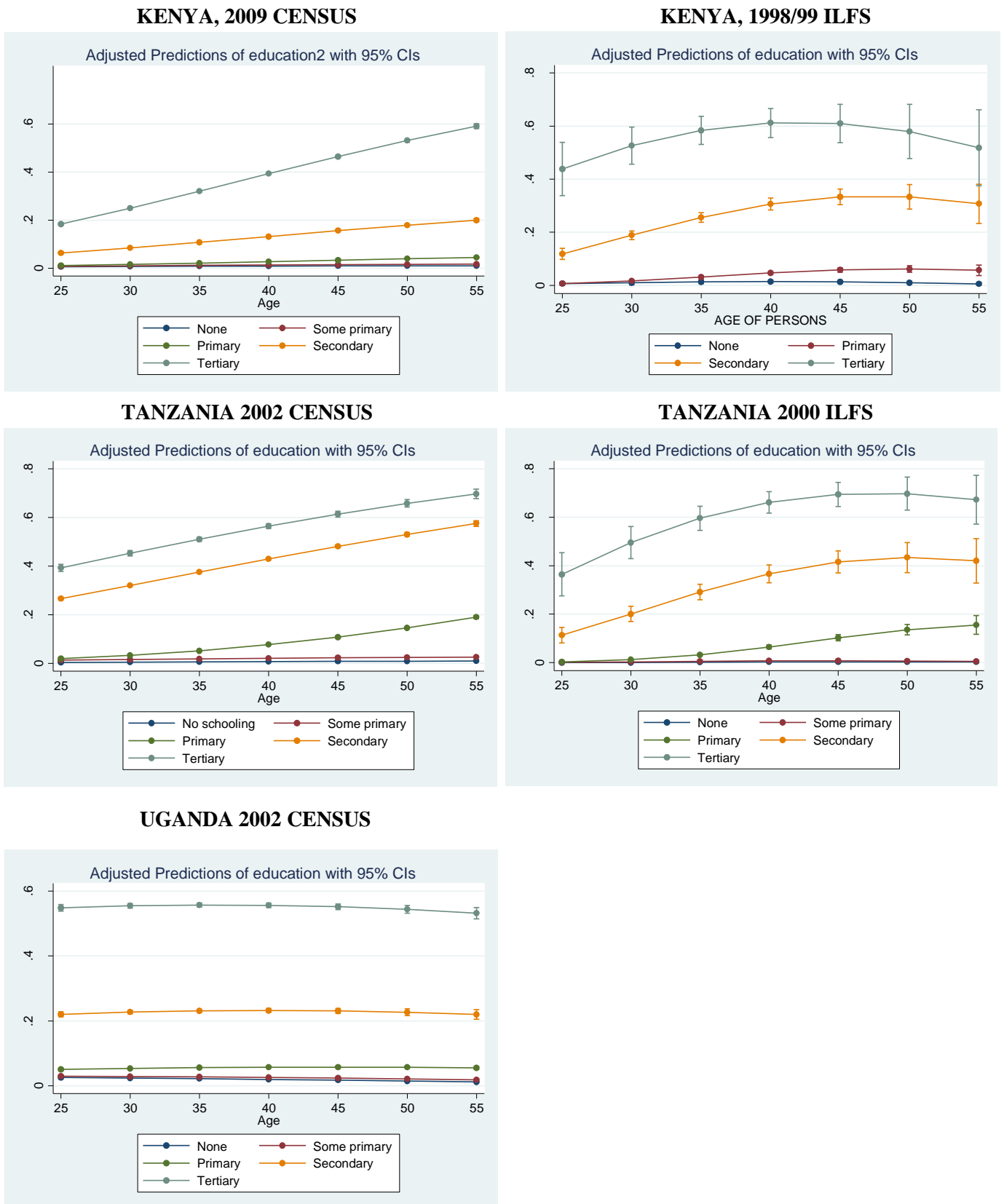
People born in the mid-1950s would have entered the labour market in the late 1970s. In the first two decades of independence therefore, the public sector employed a considerable share of the skilled labour force. The subsequent fall in the public sector's share of secondary and tertiary graduates supports the hypothesis that as the fiscal crisis intensified and structural adjustment reforms were implemented in the 1990s, the government's ability to absorb graduates declined, pushing graduates into the private sector. Furthermore, the decline in public sector earnings coupled with privatization reforms in the 2000s may also have made private employment a more attractive prospect.

This same pattern is not evident in Uganda however where the probabilities differ little with age of the respondent. This probably reflects the lower absorption of graduates into the public sector in the 1970s and 80s when the country was racked by civil strife, as well as the considerable rationalisation process in Uganda after President Museveni came to power in 1986 when more than half of all public sector employees were made redundant.⁵⁴ This created space for recent graduates to advance, reflected in the lower average age of Ugandan government employees than in Kenya or Tanzania.⁵⁵

⁵⁴ The Ugandan 2014 population census is due to be released within the coming months and would make it possible to test whether the age trends have changed since 2002.

⁵⁵ (Sendyona 2010)

Figure 1. Estimated probabilities of being employed in the public sector by educational attainment and age



Source: (Minnesota Population Center, 2015; Kenya National Bureau of Statistics, 1999; Tanzania National Bureau of Statistics, 2010.)

The model also provides some interesting results on gender and employment. Controlling for education alone, women are less likely to be employed by the government. However, this is driven by a male bias amongst lower educated workers (many of whom are construction workers, messengers and security guards). The gender*education interaction term shows that amongst the highly educated, women are more likely to be state employed than men.

Such high probabilities of holding a public sector job for those with higher education suggests that there was little political discretion in determining which graduates gained employment. Greater detail on a respondent's course of study and examination results would probably predict employment sector with even greater accuracy. Among the secondary educated, controls for type of and quality of secondary education would likely raise the predictive capacity of the model further. Skilled public sector employment then, appears consistent with an emphasis on formal, paper qualifications rather than ascriptive criteria. However, the sharp decline in the likelihood of working for the public sector for younger Kenyan and Tanzanian cohorts suggests a major reorientation of the labour market since structural adjustment and at least in theory more scope for more politicking in the distribution of the then scarcer public sector jobs. How is this influencing the criteria for employment? Once we control for level of education, what else influences the likelihood of holding a public sector job?

ii. Where do public sector employees come from?

In Models K.2, U.2 and T.2 we introduce district of birth variables in order to understand how skill level interacts with the social conditions in which an individual was raised. Place of birth may influence career trajectories in a variety of ways. Presuming that labour is not perfectly mobile and people have a preference for staying in their locality and/or face asymmetrical information about employment opportunities and returns to education shaped by their location of birth, we may expect to see different career strategies depending on a person's place of birth. Furthermore, network effects and social capital are likely to be different for people from different regions in ways which may hinder or aid career opportunities. As described on p.12, we introduce four measures at district, county or regional level that try to capture long-run, static differences in level of economic development between geographic regions.⁵⁶

In Kenya three of the four coefficients pull in the same direction: controlling for education, age and sex and clustering errors at the province level, workers from less developed regions (far from the capital and with low population density) and with historically lower educational attainment are more likely to enter the public sector than in other part of the country, while the private employment coefficient is insignificant. The effects are considerable: all else equal, the predicted probability of public sector employment for a Kenyan born in an area with developmental indicators 1 standard deviation below the mean (i.e., further from Nairobi, lower population density, lower educational attainment and lower private sector employment) is 0.09, compared to 0.05 if born in a district with developmental indicators 1 standard deviation above the mean ($p < 0.01$). Although the effect is very weak, it also appears that this dynamic has become stronger over time. Interacting distance to place of birth from Nairobi with age of respondent weakens the effect, i.e., the overrepresentation of people from underdeveloped regions is stronger amongst younger cohorts (Model K.3).

There are likely both push and pull factors at work: public sector employment opportunities are more equitably distributed across the country than formal private employment (particularly teachers), generating jobs even in remote areas where non-natives to the area are unlikely to settle. While people

⁵⁶ Private emp and population density are not exogenous to public employment level, but still fairly slow-moving development indicators that are unlikely to respond rapidly to say a change in political regime.

from remote parts of the country may be willing to relocate to the centre, the reverse is less likely (indeed, the share of public sector employees born outside the district of current residence is higher in the more developed parts of the country). Also, in the absence of private sector opportunities, the demand for post-primary education may be lower in more remote regions other than for public sector careers. Governments may also have engaged in active affirmative action by lowering the bar into public sector training programmes for candidates from more remote and underserved regions of the country.⁵⁷ Lastly, network effects and ethnic favouritism may be higher in the private sector than public sector, privileging ethnic groups in more developed regions and pulling them away from the public sector. While the private employment share was insignificant in this model specification, it is strongly correlated with average years of schooling for the 1930s cohort.

In Uganda the results are similar although the private sector employment opportunities measure is weakly positive rather than negative, possibly reflecting the lower overall level of formal private sector jobs in Uganda in the early 2000s.⁵⁸ All else being equal, a Ugandan from an underdeveloped region (1 standard deviation below the means on each respective development indicator) has a government employment probability of 0.10, compared to 0.07 for a person born in a district with developmental indicators 1 standard deviation above the mean ($p < 0.01$). Interacting distance from Kampala with age has the same sign as in the Kenyan case, i.e., the effect may be stronger for younger cohorts, although the coefficient is insignificant.

The Tanzanian model has the same pattern as Uganda, although the predicted probabilities vary less between regions. The predicted probabilities for those from a region one standard deviation below the developmental averages is 0.065, compared to 0.068 for those a standard deviation above ($p < 0.01$). These weaker results may partly be a data problem: region of birth data for mainland Tanzania is less granular than for the other two countries (only 21 regional divisions) and thus the development variables have much lower standard deviations. Moreover, the more pervasive role of the public sector in Tanzania also mean that the employment shares vary less by region.

In all three countries then, tertiary and secondary graduates from more remote and historically disadvantaged regions of their respective countries have a higher probability of working for the public sector than their peers from more economically advantaged parts of the country, which has the effect of reducing regional and ethnic inequalities in access to public sector jobs. Considering that a graduate from Nairobi or Kampala is likely to have a wider range of employment options than one from Garissa or Gulu, this is perhaps not surprising. However, it works against common presumption that public employment was dominated by ethnic or regional groups that were wealthier and more politically influential. Although the results of interacting age and place of birth variables are weak, it appears that this effect is stronger for the younger cohorts than the older ones. It may therefore also reflect the effect of several decades of salary declines in the Kenyan, Tanzanian and Ugandan public sectors which may have led those younger graduates with more social capital to look to the private sector for employment. However, it is also possible that these geographic differences in public employment probabilities reflect ethnic political dynamics, given the geographic concentration of ethnic groups. How have these variables influenced the ethnic distribution of public sector jobs?

⁵⁷ Although not shown in the regression tables, an interaction term between distance from Nairobi and educational level shows that the developmental effect is strongest for the highly educated. (At least for teacher training colleges and some other tertiary facilities, there was an explicit policy of affirmative action in Kenya.)

⁵⁸ However, the strong correlation between private sector employment and educational attainment ($r = 0.8$) may also be influencing these results; removing average years of schooling from the regression turns the private sector coefficient negative

iii. Ethnic preference in public sector employment?

A last set of regressions introduce dummies for ethnicity.⁵⁹ This allows us to examine whether people from favoured ethnic groups or regions are over-represented amongst public sector employees. The first set of descriptive data makes no prior claims about favouritism and instead examines how probabilities vary for each major ethnic group in Kenya and Tanzania. The second set of results examines the effect of being a coethnic of a sitting President.

In Figures 4 and 5 (pp.31-34) I construct a measure of public employment equality by dividing each ethnic group's share in public employment by its population share, plotted by year of birth. Thus a score above 1 denotes an ethnic group that is over-represented in public employment and vice versa. Furthermore, to examine how educational attainment influences these levels, the second dotted line provides an equality score in relation to the number of secondary school graduates only (i.e., the ethnic group's secondary educated public employee share is divided by that ethnic group's share of the country's secondary school graduates).

For Kenya most groups have inequality scores quite close to one. Eight of the 12 groups have average scores within the range of 0.85 and 1.15, possibly suggestive of an explicit attempt to ensure ethnic equality in the distribution of public resources as argued by Francois, Rainer and Trebbi. Moreover, those ethnic groups that are significantly underrepresented in the public service also have very low educational attainment. Restricting the sample to secondary educated workers reverses the bias in a number of cases: the Somali, Turkana, Meru and Mijikenda are under-represented at the population level but over-represented in comparison to their educational attainment. In contrast, the Kikuyu and 'mixed' group employment advantage disappears once educational controls are introduced. Levels have been quite static over time moreover. The only clear time trends are the growing share of Somalis (starting from an exceptionally low base), and the 'mixed' category, which primarily captures people born in the multi-ethnic capital city, Nairobi, and likely reflects the high rate of urbanisation during this period which raised the educational attainment of the Nairobi-born.⁶⁰

In model K.5 I add ethnic group dummies to the probit model relating education, age, gender and geographic effects to the probability of holding public employment and cluster errors at the provincial level. Most of the ethnic group dummies are insignificant with these controls and there is no obvious relationship between ethnic group size and the coefficients. Compared to the base category (Kikuyu, Kenya's largest ethnic group), most other groups are over-represented. Of the ethnic groups with significant dummies, only the strong Kalenjin coefficient stands out as possibly reflective of an ethnic group advantage under President Moi's time in office.

In model K.6 I group the ethnic groups according to the main political alliances after independence, as described by Posner (2005). It suggests that the Kikuyu, Embu and Meru alliance (GEMA) is under-represented compared to other groups, particularly the Kalenjin-Maasai-Turkana-Samburu, although with predicted probabilities of public employment of 0.03 and 0.04 respectively the differences in likelihood of public employment are not enormous (all other variables are set to their mean). This may reflect the falling out of favour of GEMA after Kenyatta's death in 1978. However, given that GEMA were also the most economically integrated into the colonial economy and educationally advantaged

⁵⁹ When comparing the Kenyan and Ugandan results we must keep in mind that the Ugandan respondents are individually coded by ethnic groups while Kenyan respondents are assigned to the dominant ethnic group in their county of birth.

⁶⁰ During colonial times, labour migration restrictions tended to limit the number of Africans physically born in the capital, see: (Mkandawire 1985)

at independence, there may be other socioeconomic differences between these groups that the relatively crude socioeconomic measures are not capturing.

Lastly, model K.7 considers the effect of being a coethnic of the ruling President at the time of employment. We consider only the ethnic dummies for Kenya's 'ruling' ethnic groups, the Kikuyu and Kalenjin. Assuming that most people enter the public service around age 22,⁶¹ a further dummy is created for individuals of Kikuyu ethnicity who would likely have entered the job market during President Kenyatta or President Kibaki's presidencies, and a second dummy for Kalenjins who would have entered the job market during President Moi's tenure. With age, education and gender controls, the Kikuyu face a penalty: they are under-represented as a share of public employment, and the coefficient on the dummy capturing those entering during Kenyatta and Kibaki's presidencies is insignificant.⁶² The Kalenjin, however appear to have benefitted from positive discrimination during Moi's era: while the Kalenjin dummy coefficient insignificant, the coefficient for Kalenjin who likely entered the labour market during the Moi era is positive and significant. Nonetheless, in contrast to Burgess et al., who find that infrastructure spending in predominantly Kalenjin and Kikuyu districts were 2-3 times larger than the average during their coethnic President's tenure, the Kalenjin effect on public employment is relatively mild.⁶³ Those Kalenjin who entered the labour market during Moi's presidency have a predicted probability of public employment is 0.045 compared to 0.034 for the rest of the sample. Assuming that no further factors influenced the employment allocation pattern than those identified in the model, this would mean that roughly 2% of all 2009 public sector jobs had been unfairly allocated to Kalenjin candidates.

The Ugandan descriptive data (Figure 5) also shows a relatively even distribution of public sector jobs in comparison to population share.⁶⁴ The overall values range from 0.73 to 1.26, and seven of the 11 groups lie within ± 0.15 . As in the Kenyan case, many of the outliers are explained by differential educational attainment. Ethnic groups with high public employment shares (such as the Baganda) have a below-average share of secondary school graduates in public employment, and vice versa. Restricting the sample to secondary graduates reduces the coefficient of variation.

The regression model U.4, shows that, with education, age, gender and geographic controls, few of the ethnic dummies remain significant. Only the Iteso and Basoga appear over-represented compared to the biggest ethnic group (the Baganda); there are no obvious reasons why these groups should have been favoured politically.

As a further test, to fully eliminate the environmental differences stemming from geographic region of birth, I run a regression where the sample is limited to respondents born in Kampala or Entebbe (Wakiso), Uganda's two largest cities (located in close proximity to each other) and the most multi-ethnic part of the country (Model U.6). This reduces the sample significantly (~18,000). With this added geographic control and smaller sample size, only the Acholi and Other categories have significant coefficients. Dropping the Baganda entirely from the sample does not alter these results.⁶⁵

In Model U.5 I consider only the effect of belonging to the same ethnic group at as the President in roughly the years when those respondent would have entered the job market (assumed to be at age

⁶¹ Eyeballing the 2009 public sector sample by age, 22 appears be roughly when employment numbers stabilize.

⁶² Since most entered under Kibaki, this could be interpreted as supportive of Burgess et al.'s argument, that ethnicity only mattered under authoritarian rule.

⁶³ (Burgess et al. 2015)

⁶⁴ The Ugandan samples are smaller than the Kenyan ones and therefore the trends are more variable.

⁶⁵ The Baganda are significantly overrepresented as Kampala and Entebbe are located in the old Buganda Kingdom.

22). I focus on the Langi (President Obote's ethnic group) and the Banyankole (President Museveni's ethnic group). As Idi Amin's ethnicity is disputed we focus on respondents born after 1958. Given the rationalisation of government employment in the 1990s after Museveni came to power age of respondent is likely a weaker predictor of age of entry than in Kenya or Tanzania, but the Banyankole effect should be notable if Museveni had actively favoured members of his own group in government employment.

In contrast to the ethnic favouritism predictions, neither the Langi and Banyankole dummies are significant and the signs are negative. Those Langi who entered the service during Obote's presidency, have a weak but positive and significantly higher probability of public employment compared to the Langi overall, while coefficient on the Banyankole*Museveni era dummy is insignificant. The predicted probability of a Langi adult who came of age during Obote's rule entering the public service is 0.053, compared to 0.046 for Langi during other eras. Presuming that this effect is entirely due to Obote's rule, roughly 0.1% of all Ugandan public sector jobs could be said to be unfairly allocated to the Langi. Not strong evidence of ethnic favouritism in other words.⁶⁶

In summary, while ethnic inequalities in access to public employment opportunities do exist, they are largely explained by differential educational attainment and other geographic factors. The only strong sign of ethnic favouritism is the over-representation of former President Moi's ethnic group, the Kalenjin, in Kenya. However, even this effect made a relatively small impact on the overall allocation of jobs – I estimate that in the order of 2% of jobs, and thus a similar share of the wage bill, could be said to have unfairly benefitted the President's men. The main relationship between ethnicity and public employment then, is that which is mediated through education. This raises questions about geographic inequalities in educational access and whether some ethnic groups have been privileged through unequal patterns of educational spending.

iv. Ethnic inequalities in educational attainment

Many of Africa's newly independent states in the 1960s had significant regional and ethnic inequalities in educational attainment, often stemming from the patterns of missionary penetration. Julius Nyerere discussed such educational inequalities in his 1962 inaugural speech:

'You will discover that the missionaries did not build their schools all over Tanganyika, but only in certain areas. And as a result of this not only are the majority of educated Africans today likely to be Christians, but a very large proportion of them are drawn from the Wahaya, Wanyakyusa, and Wachagga peoples. So those who would strike at our unity could equally well exploit this situation to stir up animosity between the tribes. (...)'⁶⁷

Data on the distribution of missions suggest that colonial era educational investments have had a persistent effect on regional inequalities in educational attainment. The correlation table below shows the correlation coefficient between the density of missions by Kenyan counties (derived from Nunn, 2010) and the average years of schooling by county of birth, for each decade of birth. While still strong and persistent for cohorts born in the 1980s, the coefficient falls progressively with each successive cohort.

⁶⁶ I have also run the same model using regions instead of ethnic groups, presuming that Museveni has favoured Westerners and Obote Northerners. The interaction coefficients are insignificant under this specification too.

⁶⁷ (Nyerere 1967)

Table 4. Pearson’s correlation coefficient, missions and educational attainment by county of birth, Kenya

	Missions per 1,000 km ²		Missions per 1,000 km ² <i>Excl. cities</i>	
Average years of schooling, 1930s cohort	0.612	**	0.516	**
Average years of schooling, 1940s cohort	0.510	**	0.452	**
Average years of schooling, 1950s cohort	0.433	**	0.412	**
Average years of schooling, 1960s cohort	0.364	*	0.361	*
Average years of schooling, 1970s cohort	0.338	*	0.327	*
Average years of schooling, 1980s cohort	0.339	*	0.325	*

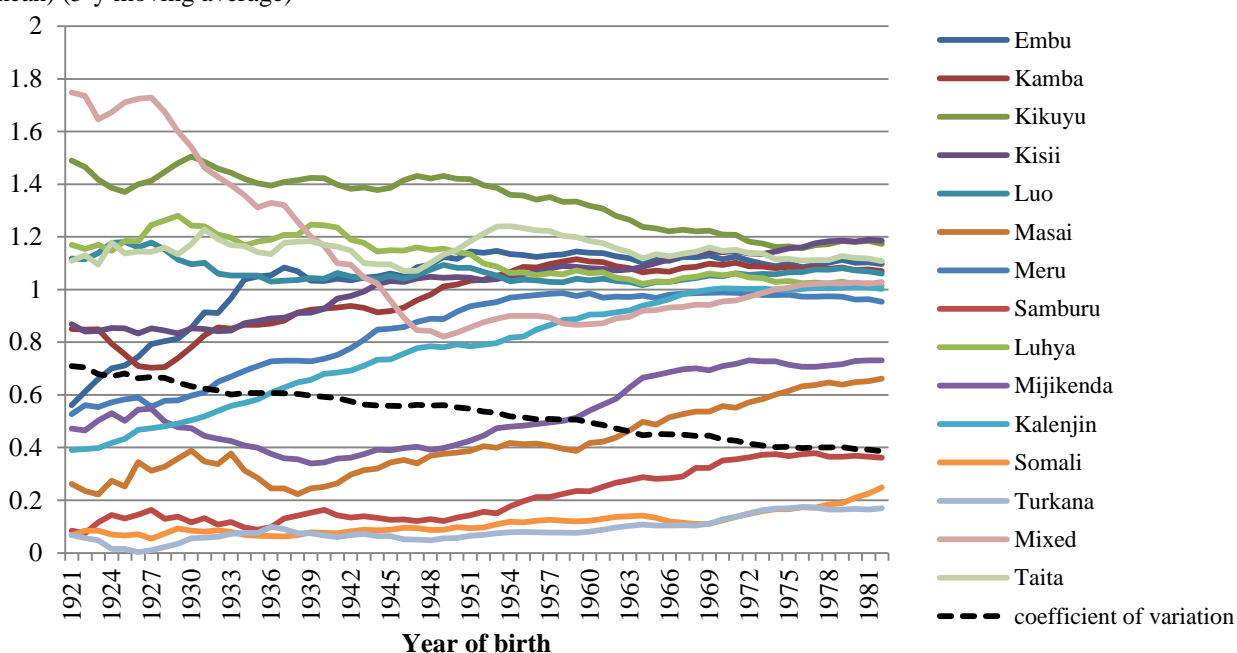
(* p<0.05, **p<0.01)

Sources: Data on missions: Nunn, 2010⁶⁸; schooling, Kenya 2009 census (Minnesota Population Center).

That the colonial distribution of educational facilities should have a long-run persistent effect on ethnic inequalities is perhaps not surprising. But taking as given the existence of educational inequalities pre-dating independence, have such inequalities increased or decreased since independence? Have the wealthier and larger ethnic groups been able to retain or grow their educational advantage and thereby increase their share of public sector jobs indirectly?

Contrary to what might be expected, on an ethnic group basis there has been a strong convergence in educational attainment in both Kenya and Uganda. In the figures below the average years of schooling by birth year and ethnicity is calculated as a multiple of the national mean (i.e., a ratio of 1.5 means that members of the ethnic group have on average 50% more years of schooling than the national average). Kenya’s largest ethnic groups have converged strongly, while a set of laggard groups (Somali, Turkana, Mijikenda, Samburu and Masai) who started the period with an exceptionally low attainment rate continue to lag significantly below the average. The black dotted line shows that the coefficient of variation decreased steadily for cohorts born up until the mid-1970s.

Figure 2. Kenya: Average years of schooling by ethnic group and birth year compared to national mean (1 = mean) (5-y moving average)

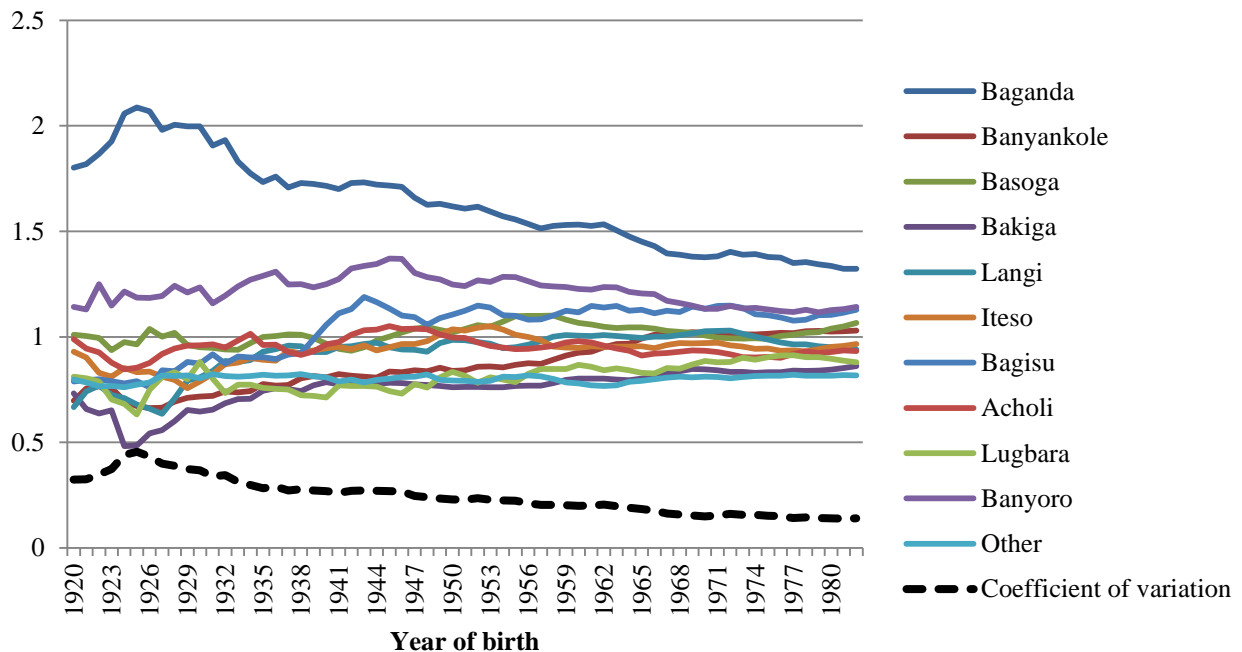


Source: Data from Kenya Population and Housing Census, 2009 (Minnesota Population Center, 2015)

⁶⁸ (Nunn 2010), using Roome (1924) map of the location of Catholic and Protestant mission stations.

The ethnic inequalities in educational attainment in Uganda didn't differ as considerably as they did in Kenya, but they have also undergone strong convergence over the post-colonial era. However, the Baganda, who start the period with the highest educational attainment of any group continue to have a considerable educational advantage into the 1980s.

Figure 3. Average years of schooling by ethnic group and birth year compared to national mean (1 = mean) (5-y moving average)



Source: Data from Uganda Population and Housing Census, 2002 (Minnesota Population Center, 2015)

While patronage considerations may have influenced school investments at the margin,⁶⁹ there was also a strong and persistent convergence effect, with considerable catch-up in average years of schooling in regions with relatively poor attainment at the end of the colonial period. More could be done to examine the nature of this convergence (does it differ by gender?, is the convergence as strong when considering literacy or numeracy rates?). However, for the purpose of this paper where we have already established a clear relationship between public employment and formal educational qualifications, this pattern of convergence suggests that ethnic preference in educational access cannot have been the main driver of ethnic or regional public employment patterns.

⁶⁹ As found by (Kramon and Posner 2012)

VI. Conclusions

Since the 1960s the public services of most postcolonial African states have undergone rapid change: employment grew considerably and then contracted, the educational composition changed and real public sector earnings fell sharply in the 1970s and 1980s, before they began to recover again. While studying its contours in the 2000s therefore leave many questions unanswered, particularly regarding those that left the public employment over this period, it can nonetheless help to confirm or dismiss certain broader claims.

Firstly, the very high probability of holding public employment among the older generation of tertiary educated, and to a lesser extent secondary graduates, supports the fragmentary evidence from tracer and manpower surveys that the public sector has dominated the highly skilled labour market in postcolonial East Africa. In the Kenyan and Tanzanian cases the probabilities of public employment are between 0.6 and 0.7 for the cohorts who would have entered the public service before the rationalisation exercises of the 1990s. Conversely, for graduates in the 25-35 age bracket in the 2000s, below half were employed by the state suggesting a reorientation of skilled labour towards the private sector. This casts doubt on the relevance of a patronage model for explaining access to public employment: it appears that graduates in the 1970s with the appropriate degrees from domestic universities were practically guaranteed public sector jobs.

These probabilities of public employment are even higher for individuals from economically disadvantaged regions. Although speculative, this suggests that the private sector is not simply the fall-back option for graduates who failed to secure public employment. If graduates from the most advantaged parts of the country are more likely to pursue private sector careers, then surely they must also have provided a reasonable rate of return to education.⁷⁰

On the whole the public services of Kenya and Uganda in the 2000s were relatively representative of the ethnic composition of their respective populations. The patterns of ethnic preference found in the distribution of other forms of public resources, particularly in Kenya, is only very weakly visible in the public service. In Kenya the Kalenjin are over-represented in public employment, once education and regional variables are controlled for, but their advantage is not enormous: they command roughly 30% more jobs than the model would have predicted had a Kalenjin not been president from 1978 – 2002. In Uganda there is no obvious bias in favour of coethnics of current or past presidents.

Lastly, while much of the ethnic and regional inequality in employment results from unequal access to education, such inequalities cannot be blamed on East Africa's postcolonial politicians. Educational inequalities at ethnic and regional level varied considerably during the colonial period and since then the trend has been one of convergence towards the mean in both Kenya and Uganda. Educational inequalities may still pose a serious developmental and social challenge, but conditions have improved rather than deteriorated.

Our understanding of the drivers of public employment matter for our outlook on the economic and political future of East Africa. If public employment represents a rent distributed by political patrons to clients who can help them to gain grass roots support, then the undulations in public employment and earnings that have characterised postcolonial African employment history will likely continue

⁷⁰ For Kenya and Uganda, comparing characteristics of formal private sector employees and public sector employees suggests that asset ownership, parental educational attainment and other signifiers of social status are higher among the private sector employees.

into the future. Moreover, the accountability relationship between state employees and citizens is unlikely to be altered by the labour market changes of the past decades.

If, on the other hand, as suggested in this paper, public sector employees in the first decades of independence constituted an educational elite with few alternative career paths, then the changes since structural adjustment constitute a significant break with the past trajectory. Skilled labour markets are today dominated by private employers rather than the public sector, and thus market determined salaries rather than institutionally set earnings. Furthermore, the traditionally most politically vocal segment of the population – those with secondary and tertiary education and some measure of disposable income – are no longer primarily agents of the government. How this will influence patterns of employment and earnings in the future is open to speculation, but it presents the possibility of better accountability relationship between states and citizens going forward, and perhaps a formal labour market less vulnerable to extreme swings in earnings and level of employment.

Table 5. Kenya: Main Results

KENYA		Dependent variable: pubemp = 1													
Independent variables		K.1		K.2		K.3		ILFS 1998 K.4		K.5		K.6		K.7	
	age	0.029	**	0.030	**	0.034	**	0.122	**	0.029	**	0.029	**	0.024	**
	age#age	0.000	*	0.000	*	0.000	**	0.002		0.000	*	0.000	*	0.000	**
	sex (1 = female)	-0.271	**	-0.222	**	-0.101	**	0.645	**	-0.090	**	-0.090	**	-0.092	**
	Education dummies (base = no schooling)														
	Some primary	0.028		0.303		0.264	**	0.703		0.253		0.304		0.267	
	Primary	-0.109		0.204		0.142	*			0.144		0.197		0.155	
	Secondary	0.492	**	0.829	**	0.853	**	0.329		0.856	**	0.908	**	0.865	**
	Tertiary (incl. college)	0.663	**	1.054	**	1.170	**	1.870	**	1.183	**	1.234	**	1.201	**
Individual attributes	age#education interaction (base = no schooling)														
	Some primary	0.004	*	0.002		0.001		0.028	**	0.002		0.002		0.002	
	Primary	0.014	**	0.012	**	0.011	**			0.013	**	0.012	**	0.012	**
	Secondary	0.017	**	0.015	**	0.013	**	0.027	*	0.015	**	0.015	**	0.015	**
	Tertiary (incl. college/diploma)	0.032	**	0.028	**	0.026	**	0.009		0.028	**	0.028	**	0.028	**
	sex#education interaction (base = no schooling)														
	Some primary	-0.030		-0.065				0.012							
	Primary	-0.007		-0.035											
	Secondary	0.183	**	0.155	**			0.637	**						
	Tertiary (incl. college/diploma)	0.353	**	0.326	**			0.571	**						
	% employment in formal sector			0.002											
	Ave years of schooling, cohort born in 1930s			-0.065	**					-0.056	**	-0.055	**	-0.036	**
District/county of birth effects	Distance to capital city (county basis) (km)			0.052	**	0.116	**			0.043	**	0.044	*	0.044	**
	Population density (people per km2) (log)			-0.027	*					-0.031		-0.034	**	-0.038	*
	distance to capita#age					-0.001	**								

Born in a county of predominant ethnicity (47 counties) (ordered by size)	Kikuyu (Kenyatta, Kibaki) (base)														
	Luhya											0.047			
	Kalenjin (Moi)											0.129	**		
	Luo											0.090	**		
	Kamba											0.053	**		
	Somali											0.032			
	Kisii											-0.005			
	Mijikenda											0.051			
	Meru											-0.001			
	Turkana											-0.078			
Embu											0.089	**			
Mixed											0.163	**			
Other											0.091				
Ethnic political groupings	GEMA (base)														
	KAMATUSA											0.117	**		
	Luhya											0.042			
	Luo											0.084	**		
	Kamba											0.045	**		
	Other											0.008			
All the President's men	Mixed											0.168	**		
	Kikuyu dummy											-0.060	*		
	Kalenjin dummy											0.005			
	Kikuyu*era of Kikuyu presidency											0.008			
	Kalenjin*era of Kalenjin presidency											0.104	**		
Clustered errors at province of birth		NO	YES	NO	YES	YES	YES	YES	YES	YES	YES	YES	YES		
Constant		-2.937	**	-3.09	**	-3.52	**	4.264	**	-3.11	**	-3.15	**	-2.58	**
LR Chi2		106186	**	108491	**	106824	**	2043	**	103541	**	**	108135	**	
Pseudo R2		0.237		0.242		0.238		0.258		0.241		0.241	0.241		
N		926005		926005		926005		12190		926005		926005	926005		

(* p<0.05, **p<0.01)

Source: Data from Kenya Population and Housing Census, 2009 (Minnesota Population Center, 2015), Model K.4 from the Kenya Integrated Labour Force Survey, 1998/99

Table 6. Uganda: Main Results

UGANDA		Dependent variable: pubemp = 1												
Explanatory variables		U.1	U.2	U.3	U.4	U.5		U.6*						
	age	0.004	0.002	-0.001	0.002	0.001	**	-0.012						
	age#age	0.000	**	0.000	0.000	0.000								
	sex (1 = female)	-0.331	**	-0.308	**	-0.026	**	-0.316	**	-0.044	**	0.326	**	
	Education dummies (base = no schooling)													
	Some primary	-0.062		-0.017		-0.038		-0.018		-0.036		-0.285		
	Primary	-0.080		-0.006		0.060		0.009		0.031		-0.604	*	
	Secondary	0.687	**	0.785	**	0.996	**	0.794	**	0.942	**	0.005		
	Tertiary (incl. college)	1.573	**	1.671	**	1.966	**	1.680	**	1.919	**	0.650	*	
Individual attributes	age#education interaction (base = no schooling)													
	Some primary	0.004	**	0.004	**	0.006	**	0.004	**	0.005	**	0.004		
	Primary	0.012	**	0.011	**	0.013	**	0.011	**	0.012	**	0.018	*	
	Secondary	0.010	**	0.010	**	0.009	**	0.010	**	0.009	**	0.016	*	
	Tertiary (incl. college/diploma)	0.009	**	0.008	**	0.006	**	0.008	**	0.007	**	0.018	*	
	sex#education interaction (base = no schooling)													
	Some primary	0.037		0.035		0.035		0.047						
	Primary	0.228	**	0.231	*	0.231	*	0.249						
	Secondary	0.563	**	0.562	**	0.562	**	0.578						
	Tertiary (incl. college/diploma)	0.656	**	0.653	**	0.653	**	0.668	**	0.007	**	0.018	*	
District / region of birth effects	average years of schooling (age>17)													
	% employed in formal private employment (wage emp.)													
				0.038	*			0.032						
		Ave years of schooling, cohort born in 1930s		-0.113	**			-0.065	**					
		Distance to capital city (county basis) (km)		0.004		0.077	**	0.050						
		Population density (people per km2) (log)		-0.089	*			-0.074						
	distance to capita#age				0.0003									

Ethnicity (ordered by group size)	Baganda (base)											
	banyankole (Museveni)										0.10	
	basoga										0.16	
	bakiga										0.21	
	langi (Obote)										-0.04	
	iteso										0.15	
	bagisu										0.08	
	acholi										0.22	*
	lugbara										0.19	
	banyoro										0.16	
other										0.09	*	
All the President's men	Langi dummy										0.0581	
	Banyankole dummy										0.0489	
	Langi*era of Langi presidency										0.0659	**
	Banyankole*era of Banyankole presidency										0.0249	
Region of birth fixed effects		NO	YES	NO	YES	YES	NO					
Constant	-1.8	**	-1.3	**	-1.3	**	-1.6	**	-1.9	**	-1.2	**
LR Chi2	68508	**	1324	**	1324	**	68280	**	67556	**	2426.9	**
Pseudo R2	0.272		0.005		0.005		0.279		0.266		0.1503	
N	432971		432964		432964		428954		432971		18810	

(* p<0.05, **p<0.01)

*Kampala and Entebbe only

Source: Data from Uganda Population and Housing Census, 2002 (Minnesota Population Center, 2015)

Table 7. Tanzania: Main Results

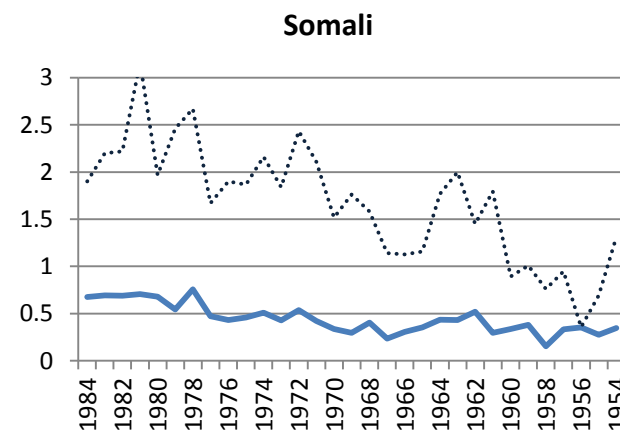
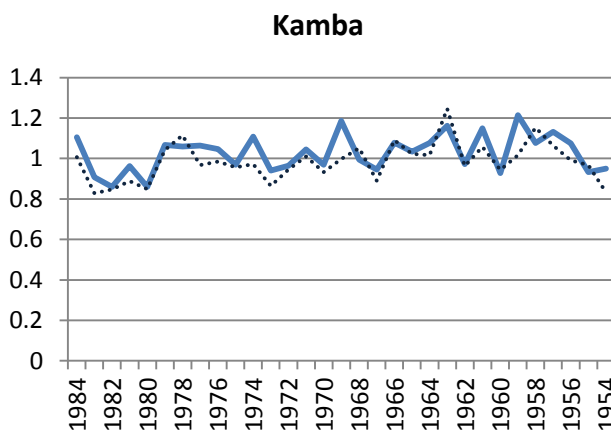
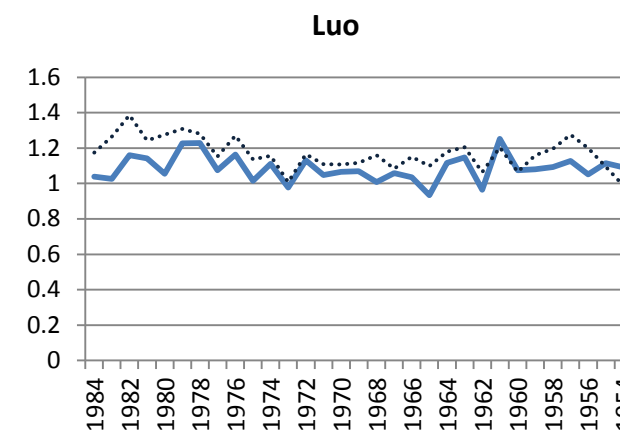
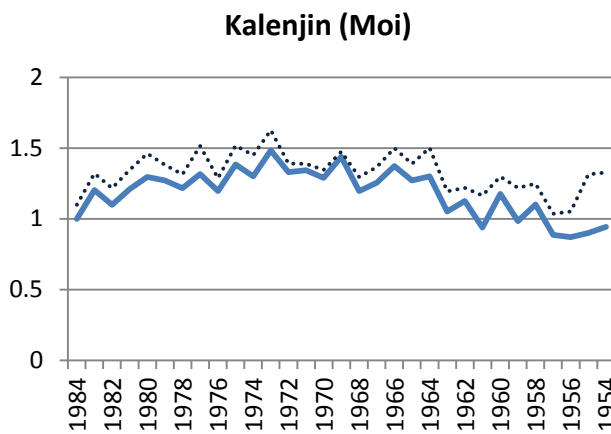
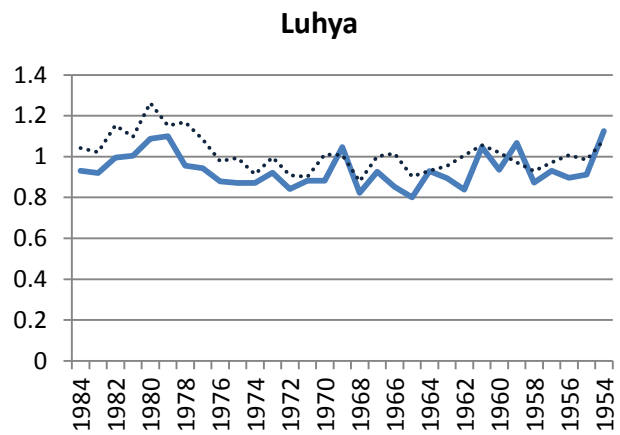
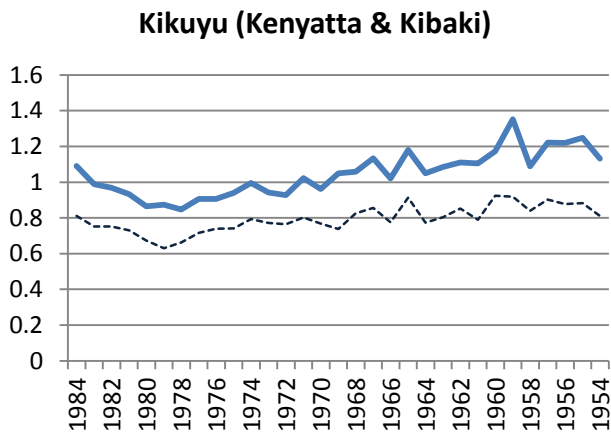
TANZANIA		Dependent variable: pubemp = 1					
					ILFS 2000		
Explanatory variables		T.1		T.2		T.3	
	age	0.023	**	0.023	**	0.158	**
	age#age	0.000	**	0.000	**	-0.002	**
	sex (1 = female)	-0.453	**	-0.451	**	-0.595	*
	Education dummies (base = no schooling)						
	Some primary	0.392	**	0.239	**	1.100	
	Primary	-0.418	**	-0.453	**	-0.135	
	Secondary	1.170	**	1.102	**	1.945	*
	Tertiary (incl. college)	1.683	**	1.622	**	2.865	**
Individual attributes	age#education interaction (base = no schooling)						
	Some primary	0.000		0.004	*	-0.015	
	Primary	0.030	**	0.032	**	0.030	
	Secondary	0.018	**	0.021	**	0.006	
	Tertiary (incl. college/diploma)	0.017	**	0.019	**	-0.001	
	sex#education interaction (base = no schooling)						
	Some primary	0.096		0.099	**	-0.208	
	Primary	0.489	**	0.495	**	0.481	
	Secondary	0.795	**	0.837	**	0.620	**
	Tertiary (incl. college/diploma)	0.509	**	0.470	**	0.858	**
District / region of birth effects	% employed in formal private employment (wage emp.)						
				0.023	**		
		Ave years of schooling, cohort born in 1930s		-0.016	**		
		Distance to capital city (county basis) (km)		0.003	**		
	Population density (people per km2) (log)		-0.026	**			
Region of birth fixed effects		NO		NO		NO	
Constant		-2.8849	**	-2.9439	**	-6.244	**
LR Chi2		120165	**	877338	**	1840	**
Pseudo R2		0.254		0.253		0.3662	
N		926005		926005		16127	

(* p<0.05, **p<0.01)

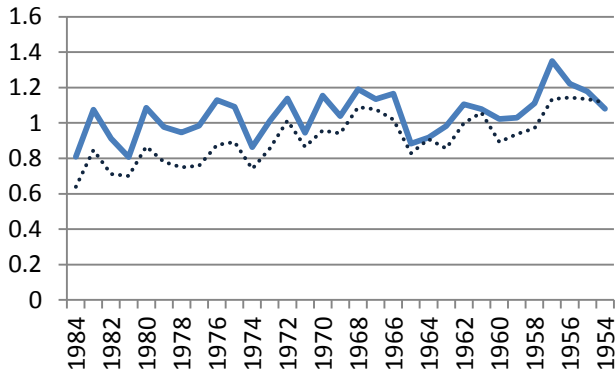
Source: Data from Tanzania Population and Housing Census, 2002 (Minnesota Population Center, 2015), Model T.4 from the Tanzania Integrated Labour Force Survey 2000/01

Figure 4. Kenya: Public employee share to population share by year of birth (>1 ethnic group over-represented in public employment; <1 under-represented)

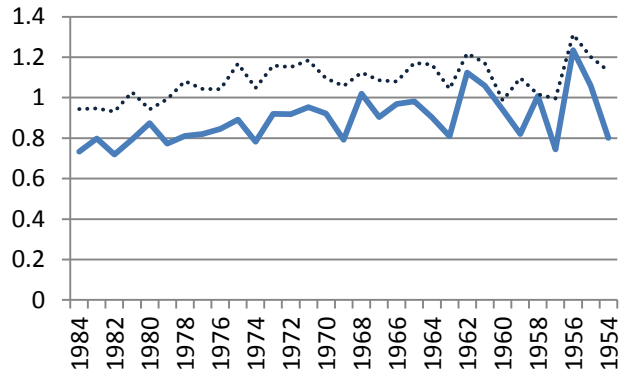
— All adults Secondary educated only



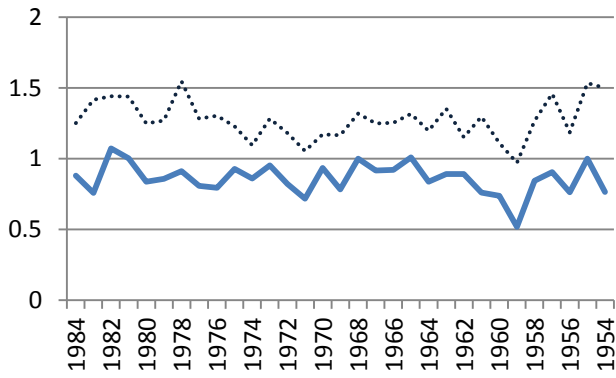
Kisii



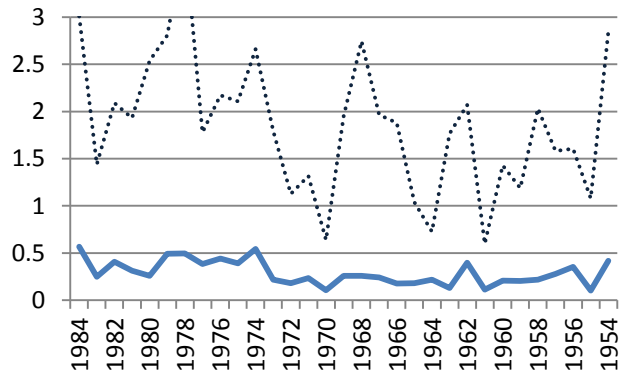
Meru



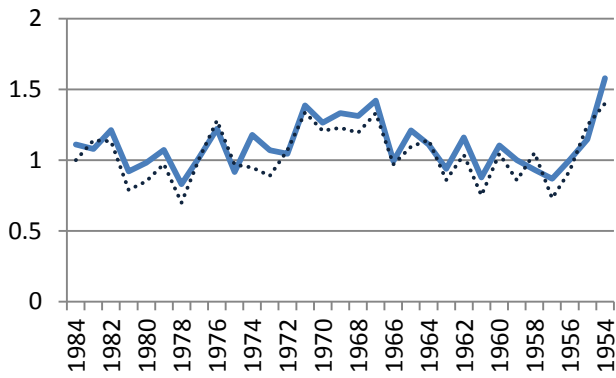
Mijikenda



Turkana



Embu



Mixed (Nairobi)

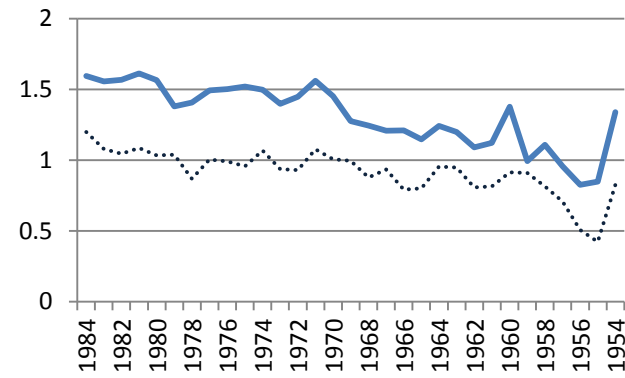
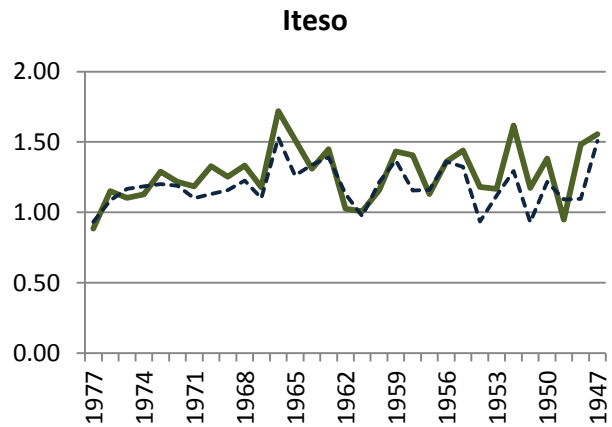
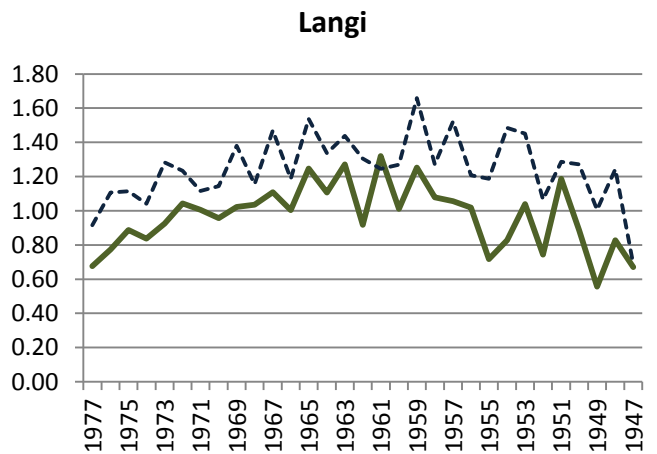
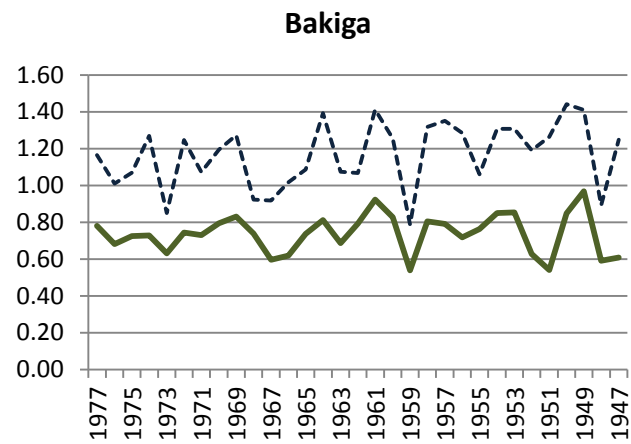
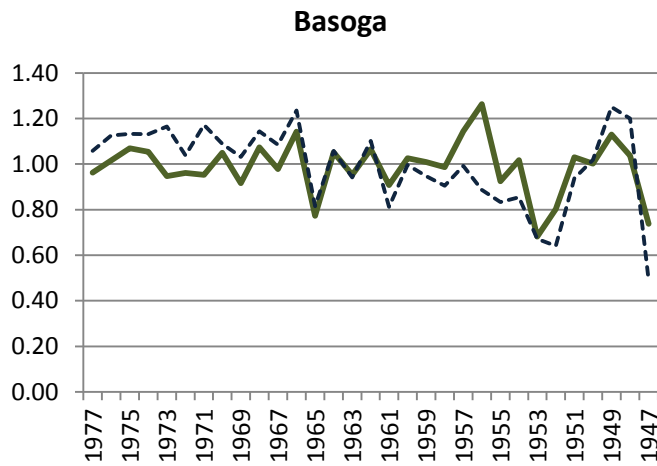
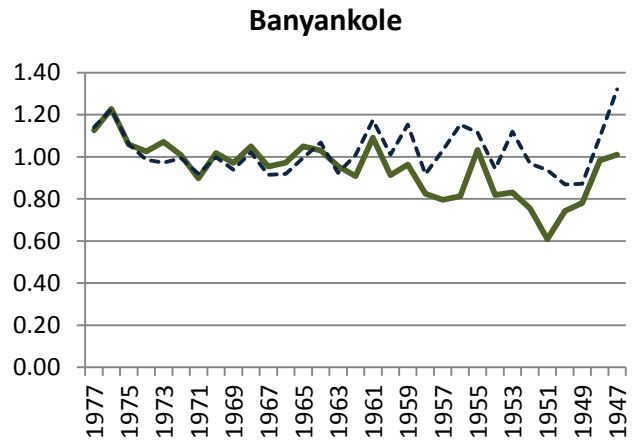
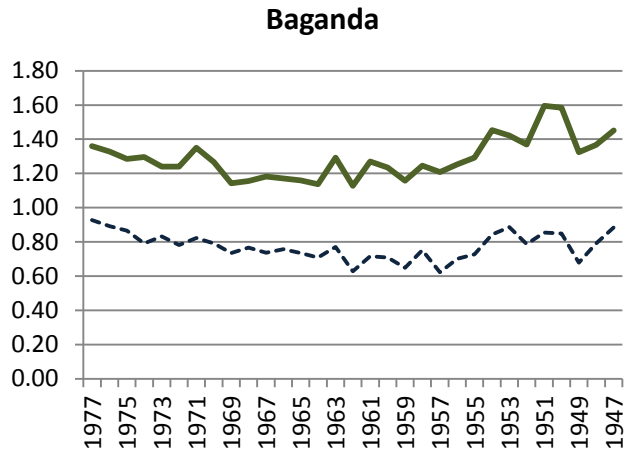
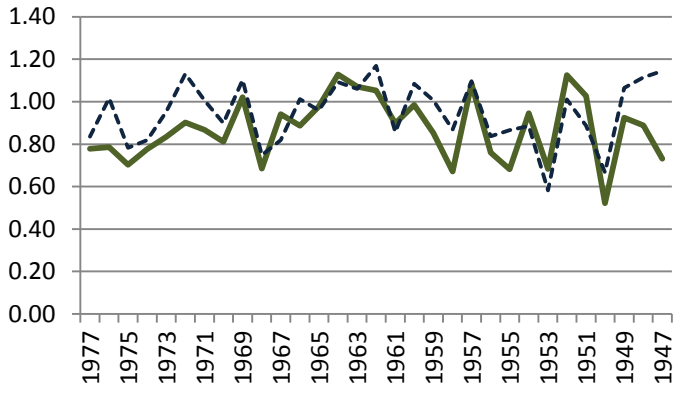


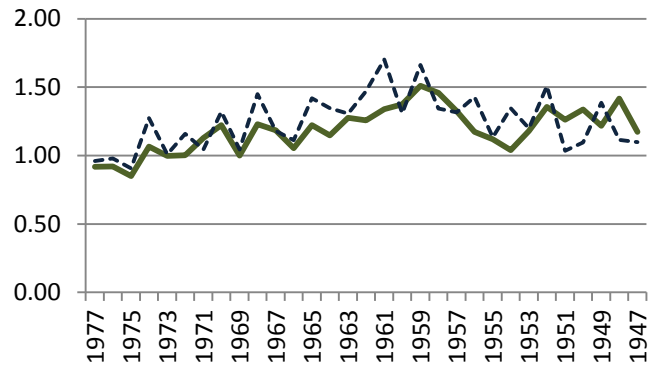
Figure 5. Uganda: Public employee share to population share by year of birth (>1 ethnic group over-represented in public employment; <1 under-represented)



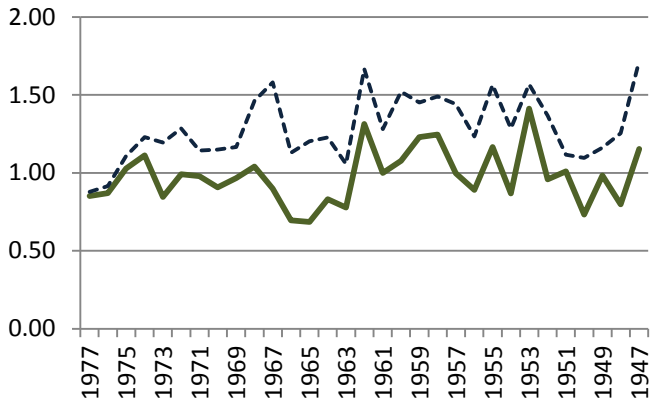
Bagisu



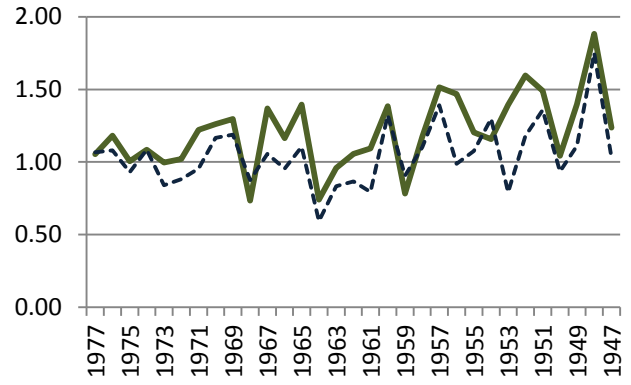
Acholi



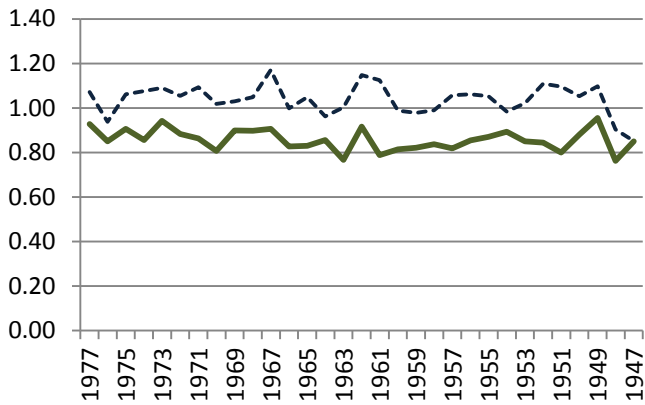
Lugbara



Banyoro



Other



VII. Data sources

The author wishes to acknowledge the statistical offices that provided most of the underlying data that made this research possible: National Bureau of Statistics, Kenya; National Bureau of Statistics Tanzania; and the Uganda Bureau of Statistics.

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Distance from capital calculated using distance calculator:
http://distancecalculator.globefeed.com/Country_Distance_Calculator.asp

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