PATRONAGE OR MERITOCRACY? PUBLIC SECTOR EMPLOYMENY IN POSTCOLONIAL KENYA, TANZANIA AND UGANDA

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Rebecca Simson, London School of Economics

R.R.Simson@lse.ac.uk

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Patronage or Meritocracy?
Public Sector Employment in Postcolonial Kenya, Tanzania and Uganda[1]

Rebecca Simson[2]

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Abstract

In many African countries the efficiency of public services deteriorated after independence as governments hired too many employees, allowed earnings to erode and performance standards to decline. Various explanations have been offered for this. Some have focused on the state's role as an employer of last resort of graduates from domestic colleges and universities and its effects on the payroll. Others view public employment as an instrument of patronage, arguing that it was used to reward particular ethnic groups or regions for their political support. Using a binary logistic model this paper analyses the effect of merit-based criteria (education, age/experience) and ascriptive criteria (ethnicity or region of origin) on the probability of holding a public sector job in Kenya, Uganda and Tanzania. 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 identity has 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. Moreover, graduates from peripheral and less developed regions of their respective countries were more likely to enter public employment than their counterparts from prosperous regions, suggesting that graduates from ethnically 'advantaged' backgrounds may in fact have a preference for private rather than public sector careers.

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[2] PhD Candidate in Economic History – r.r.simson@lse.ac.uk: London School of Economics and Political Science, Department of Economic History.

I. Introduction

For much of Africa's postcolonial history public sector employees constituted an important share of the upper-middle class. By the late 1970s public sector workers 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] The fact that these jobs, and by extension, high social status, was distributed politically rather than through market competition led to speculation about the politicisation of public employment in postcolonial Africa. 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.[4] In the 1980s and 1990s theories of clientelism gained influence, which argued that jobs were used instrumentally by political patrons to distribute rents to individuals or groups who could deliver grassroots political support.[5]

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 the extent to which middle class voters depend on the government for their earnings and what social groups they represent also aids our understanding the sources of democratic contestation in Africa.[6] In the wake of structural adjustment and the contraction of the state in many African countries, it is valuable to reconsider who and how people enter the formal labour market.

Using recent census data from Kenya, Tanzania and Uganda, this paper explores the correlates of holding public employment and how they changed over time, using age of the respondent as a proxy for likely year of entry into the public service. It shows 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 have changed. 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 privileged 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 once educational inequalities are considered.

[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] Frantz Fanon, *The Wretched of the Earth* (New York: Grove Weidenfeld, 1963); Robert H. Bates, *Markets and States in Tropical Africa : The Political Basis of Agricultural Policies* (Berkeley and London: University of California Press, 1981); Issa G. Shivji, *Class Struggles in Tanzania* (London: Heinemann, 1976).
[5] For instance: Patrick Chabal and Jean-Pascal Daloz, *Africa Works: Disorder as Political Instrument* (James Currey Publishers, 1999); Daron Acemoglu and James a. Robinson, 'Why Is Africa Poor?', *Economic History of Developing Regions*, 25.1 (2010), 21–50; Pierre Englebert, 'Pre-Colonial Institutions, States, and in Economic Development Tropical Africa', *Political Research Quarterly*, 53.1 (2000), 7–36; Crawford Young, *The African Colonial State in Comparative Perspective* (New Haven: Yale University Press, 1994).
[6] For a discussion of this literature see: Leonardo R. Arriola, 'Capital and Opposition in Africa: Coalition Building in Multiethnic Societies', *World Politics*, 65.2 (2013), 233–72.

Kenya, Tanzania and Uganda were selected because they are reasonably representative of the Anglophone African experience. They are largely agrarian, medium-sized African economies with GDP per capita that puts them in the middle segment of the African income distribution. Furthermore, these countries have unusually comprehensive labour market data (particularly Kenya and Tanzania) and a rich set of publically available household surveys. Because of intentions to form an East African Federation at independence, their public service structures and statistical systems are sufficiently similar to make comparisons possible. From a political standpoint moreover, they offer an interesting degree of variation in level of state involvement in the economy, with Tanzania providing the classic case of African socialism compared to Kenya's pro-capitalist orientation. They also differ in the degree of ethnic polarisation, with ethnic tensions clouding the politics in Kenya and Uganda, while Tanzania's postcolonial leaders have been credited with successfully forging a national identity. In Kenya in particular, ethnic patronage in public employment has been debated frequently in both popular and academic fora.

II. Theory

In the 1960s and 1970s economists studying African labour markets took a critical view of the rapid growth in public employment and presumed wage premia in the public sector. With the Kenyan labour market as their starting point, Todaro (1969) and Harris and Todaro (1970) modelled the heavy hand of the state in the urban labour market as an allocative inefficiency, which led to mismatches in the supply and demand for labour and queuing for jobs in the urban areas.[7] Others have focused more explicitly on the skilled labour market and 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. [8] Some reports even 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.[9] Furthermore, as the fiscal crisis of the 1970s intensified, government employment policies were blamed for growing budget imbalances. With pressure on the state to continue employing the rapidly increasing output of from colleges and universities, it is argued, governments employed more staff than they needed resulting in ballooning wage spending that crowded out more socially productive public investments and placed downward pressure on average earnings.[10] Political economists came to characterise this cosy relationship between higher education and government employment as the means by which the existing elite perpetuated its privilege, with taxes from peasant agriculture providing educational subsidies and high public sector wages to the most privileged members of society.[11]

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[7] Michael P Todaro, 'A Model of Labor Migration and Urban Unemployment in Less Developed Countries', *The American Economic Review*, 59.1 (1969), 138–48; John R. Harris and Michael P. Todaro, 'Migration, Unemployment and Development: A Two-Sector Analysis', *The American Economic Review*, 60.1 (1970), 126–42., also indirectly echoed in the Kenyan 1974 development plan: Republic of Kenya, *Development Plan for the Period 1974 - 1978* (Nairobi: Government Printer, 1974).

[8] Arne Bigsten and Karl Ove Moene, 'Growth and Rent Dissipation: The Case of Kenya', *Journal of African Economies*, 5.2 (1996), 177–98.

[9] World Bank, *Cost-Benefit Analysis in Education : A Case Study on Kenya* (Washington D.C., 1969).

[10] Alan Gelb, John B. Knight and Richard H. Sabot, 'Public Sector Employment, Rent Seeking and Economic Growth', *The Economic Journal*, 101.408 (1991), 1186–99; World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action* (Washington D.C., 1981); Rees Hughes and Kilemi Mwiria, 'An Essay on the Implications of University Expansion in Kenya', *Higher Education*, 19.2 (1990), 215–37.

[11] Paul Collier and Jan Willem Gunning, 'Explaining African Economic Performance', *Journal of Economic Literature*, 37.1 (1999), 64–111; Bates.

However, as the economic crises across much of Africa wore on despite structural adjustment reforms that reduced the size of the state, a different political economy literature gained traction that focused not on policy mistakes and price distortions serving particular interest groups, but on the deep-rooted social fissures in postcolonial African states such as ethnic plurality, regional inequalities and weak national cohesion.[12] It argued that public employment rested on a patronage logic: jobs were a private benefit that politicians distributed to politically useful individuals or social groups in exchange for their political support or that of their communities.[13] Politicians amass political power by gaining control over as many appointments as possible, while clients, individually, have more to lose by challenging the status quo than supporting it. Ethnic fragmentation increases the likelihood of this outcome, according to the theorists, because it limits the ability of those that loose from the system to form alliances that can challenge the political elites who benefit from it.[14] This then, supposedly 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 also had the disadvantage of favouring job creation over more growth-enhancing public investments. Jobs could be more effectively targeted to individual clients and are thus a more effective source of patronage than for instance roads or electricity provision.[15]

Concerns about ethnic inequalities in public employment have a long history in Kenya, Uganda and Tanzania. In Kenya the Africanisation process of the 1960s was derogatorily referred to as 'Kikuyisation' on account of the high share of Kikuyus in the civil service (Kenya's first President, Kenyatta, was Kikuyu, but this ethnic group also had the highest educational attainment of any of the country's groups).[16] In 1968 there was even a debate in the Kenyan Parliament about the merits of establishing a Select Committee to investigate evidence of ethnic favouritism in the civil service.[17] The debate pitted those Parliamentarians who accused the government of 'tribalism' against those that viewed such inequalities as an unfortunate consequence of uneven educational attainment. President Nyerere of Tanzania raised similar concerns in his 1962 inaugural speech stressing that ethnic tensions surrounding employment and education had resulted from uneven missionary penetration.[18]

In more recent years however, there has been a growth in literature that quantitatively examines accusations of ethnic capture, much of it focusing on African countries. While not focused on public employment per se, a number of articles have found evidence that public spending privileges coethnics of the sitting president, suggesting that leaders use public resources to reward their supporters. 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,

[12] Chabal and Daloz; Michael Bratton and Nicolas van de Walle, *Democratic Experiments in Africa: Regime Transitions in Comparative Perspective* (Cambridge: Cambridge University Press, 1997); Englebert.
[13] Acemoglu and Robinson; James A Robinson and Thierry Verdier, 'The Political Economy of Clientelism', *The Scandinavian Journal of Economics*, 115.2 (2013), 260–91; Gelb, Knight and Sabot; Bratton and van de Walle; Bigsten and Moene.
[14] Englebert; Philip Keefer and Stuti Khemani, 'Democracy, Public Expenditures, and the Poor: Understanding Political Incentives for Providing Public Services', *The World Bank Research Observer*, 20.1 (2005), 1–27.
[15] Acemoglu and Robinson; Robinson and Verdier. William Easterly and Ross Levine, 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *Quarterly Journal of Economics*, 1997; Englebert.
[16] Donald Rothchild, 'Ethnic Inequalities in Kenya', *The Journal of Modern African Studies*, 7.4 (1969), 689–711 <http://dx.doi.org/10.2307/159158>.
[17] Rothchild.
[18] Julius K. Nyerere, *Freedom and Unity : A Selection from Writings and Speeches 1952-65* (London: Oxford University Press, 1967).

finding a significant and positive effect.[19] 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.[20] 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.[21] Kramon and Posner, also focusing on Kenya, find that being a coethnic of the President during primary school age increased educational attainment, attendance and completion rates.[22] 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 to his or her ethnic constituency.[23]

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 proportion to the country's ethnic group shares in order to minimize the risk of coups or uprisings.[24] These inclusive ruling coalitions in turn extend the flows of patronage to their respective ethnic clients, ensuring a relatively equitable ethnic distribution of spending.

However, while these theories of clientelism have been very influential in the political economy literature on developing countries,[25] 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. Focusing on this tension in the literature, the rest of this paper seeks to quantitatively analyse the relationship between merit-based criteria (education, age/experience) and ascriptive criteria (ethnicity or region of origin) and how they influenced access to public sector jobs in Kenya, Uganda and Tanzania.

III. Public employment in historical perspective

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.[26] Ironically however, in the late colonial and immediate postcolonial era policymakers' were preoccupied not with the consequences of an overstaffed bureaucracy, but rather with the

[19] Roland Hodler and Paul a Raschky, 'Regional Favoritism', *Quarterly Journal of Economics*, 129 (2014), 995–1033 <http://dx.doi.org/10.1093/qje/qju004.Advance>.
[20] Raphaël Franck and Ilia Rainer, 'Does the Leader's Ethnicity Matter? Ethnic Favoritism, Education, and Health in Sub-Saharan Africa', *American Political Science Review*, 106.02 (2012), 294–325.
[21] Robin Burgess and others, 'The Value of Democracy: Evidence from Road Building in Kenya', *American Economic Review*, 105.6 (2015), 1817–51.
[22] Eric Kramon and Daniel N Posner, *Ethnic Favoritism in Primary Education in Kenya*, 2012.
[23] Elizabeth Carlson, 'Great Expectations: Ethnicity, Performance, and Ugandan Voters', *Working Paper*, 2010, 1–22 <http://cega.berkeley.edu/assets/miscellaneous_files/wgape/18_Carlson.pdf>.
[24] Patrick Francois, Ilia Rainer and Francesco Trebbi, *How Is Power Shared in Africa?*, *NBER Working Paper Series*, 2012.
[25] For a good overview, see: Thandika Mkandawire, *Neopatrimonialism and the Political Economy of Economic Performance in Africa : Critical Reflections*, 2013.
[26] For instance the well-known World Bank Berg report: World Bank, *Accelerated Development in Sub-Saharan Africa: An Agenda for Action*.

shortage of skilled African manpower to replace expatriates in the colonial service.[27] 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.'[28] 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 received an employment guarantee.

But the skills crisis proved less surmountable than anticipated as decolonisation unleashed strong popular demand for education.[29] Over the course of the 1960s secondary enrolment increased three-fold in Tanzania and six-fold in Kenya, a pace well in excess of formal labour market expansion.[30] Already by the early 1970s concerns about open unemployment among secondary school leavers began entering the public discourse.[31] In some cases public sector job creation was an explicit attempt to ameliorate the shortage of formal sector jobs for school graduates: Kenya for instance implemented a series of tripartite agreements between government, business and unions that stipulated a job creation target for the public and private sectors in exchange for wage restraint on the part of the unions.[32] In Tanzania in contrast, the government sought to limit the pace of secondary school expansion in line with expected labour market demand for skilled workers. Other factors also contributed to job growth, particularly the rapid expansion of labour-intensive public services such as schooling and healthcare. In Tanzania the nationalisation of a large share of the industrial sector also increased the share of formal sector jobs under public control.

As a result, public employment per capita roughly doubled between the late 1960s until the 1980s in Kenya and Tanzania,[33] while in Uganda public employment grew rapidly in the 1960s but stagnated short after Idi Amin's coup in 1971.[34] As employment increased, average earnings in contrast declined, leading to a crisis in public sector pay. Starting in the late 1980s-early 1990s, the three governments therefore began to institute employment freezes, redundancy schemes and divestures from parastatals which reduced the share of the labour force in public employment and allowed earnings to recover. By the 2000s the employment levels had returned to the levels of the 1960s. However, in global perspective the public services of East Africa were relatively small, even during the 1980s and 1990s. At its peak around 1990 the public sector employed roughly 700,000 people in

[27] Angus Maddison, *The Contribution of Foreign Skills, Training and Technical Assistance to Economic Development*, Development Centre Studies (Paris, 1965), p. 18.
[28] Kenya, *Development Plan, 1964-1970* (Nairobi, 1964)., Introduction by Prime Minister Kenyatta.
[29] Michael Kpessa, Daniel Béland and André Lecours, 'Nationalism, Development, and Social Policy: The Politics of Nation-Building in Sub-Saharan Africa', *Ethnic and Racial Studies*, 34.12 (2011), 2115–33.
[30] Kenya: Statistical Abstract, various years; Tanzania: Annual Manpower Report to the President, 1975.
[31] Kinyanjui; Currie and Maas; Tanzania, *Tracer Study of Secondary School Leavers*.
[32] (Kenya: Statistical Abstract, 1991; Tanzania: Statistical Abstract, 2011; Uganda: World Bank, 1991)
[33] Kenya. Central Bureau of Statistics. *Statistical Abstract, 1955 – 2014*. (Nairobi, 1955); Tanzania. Bureau of Statistics. *Statistical Abstract, 1964 – 1970*, (Dar es Salaam, 1964); World Bank. *Tanzania: Public Expenditure Review*, Vol. III (Washington D.C., 1989) ; Population estimates from World Development Indicators, 2015.
[34] Uganda, Ministry of Planning and Economic Development. *Statistical Abstract, 1957 – 1974*, (Entebbe, 1957); Population estimates from World Development Indicators, 2015.

Kenya, 500,000 in Tanzania and 270,000 in Uganda, which constituted between 50-70% of all formal sector employment, but only between 4-7% of the total labour force (Table 1).

Table 1. Kenya, Tanzania and Uganda: Structure of labour market, 1990

	Kenya	**Tanzania**	**Uganda**
Population	23 million	24 million	18 million
Labour force	10 million	10 million	7.5 million
Formal sector	1.4 million	750,000	450,000
Public service	700,000	500,000	270,000
Central/general government (% total)	40%	34%	N/A
Local government (% total)	7%	10%	N/A
Teaching force (% total)	30%	20%	N/A
Parastatals / majority control by public sector (% total)	24%	36%	N/A

Sources: Data derived from: Uganda: World Bank, 1991 (projection based on estimate for 1987); Kenya: Statistical Abstract 1991; Tanzania: Statistical Abstract, 2011

Although level of public employment was low as a share of the labour force, the state came to employ a disproportionate share of educated workers however. Over the course of the postcolonial era the skills levels of Kenya, Tanzania and Uganda's public services increased dramatically (Table 2). Half or more of public sector employees in the 2000s had secondary school education – 79% in Kenya, 64% in Uganda[35] and 58% in Tanzania - compared to the educational status of the working population as a whole which stood at 26% in Kenya, 13% in Uganda and 8% in Tanzania. 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).[36]

Table 2. Secondary school completers as a share of employment, 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	**26**	**79**	2009 census
	All formal sector employment	Public sector		All employment	Public admin and education	
Tanganyika / Tanzania	**2**	**8** (upper bound)	1962 high-level manpower survey	**8**	**58**	2006 labour force survey
	All formal sector employment	Public sector and education		All employment	Public services, edu 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 from tracer surveys (designed to understand the career paths of a particular set of graduates) and manpower surveys suggests that the majority of people graduating from higher learning institutions embarked on public sector careers (Table 3). These surveys are rarely

[35] 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.13-14.
[36] Calculated by comparing the total 'new' jobs created between these two years with the growth in the number of secondary graduates in public employment.

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 skilled labour market share. According to these surveys somewhere in the order of 65-90% of all working university and college graduates were employed by the public sectors in Kenya and Tanzania during the 1960s-1980s. 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 postcolonial period the public sector's absorption of secondary school completers was also very high. A Kenyan survey from 1969 found that two-thirds of those secondary school graduates (Form IV) that did not proceed to upper secondary school (Form V) joined the public sector or a public sector training programme (1965-68).[37] In Uganda, among employed secondary school graduates, 66-93% worked for the public sector between 1964-1971.[38] Since the 1970s however the share of secondary school completers entering public employment in Kenya and Uganda fell 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.

Moreover, policy literature from all three counties suggests that entry into the secondary schools and university programmes that fed the public sector was relatively transparent and merit-based. Colleges and universities were state-run and selected applicants on the basis of their results on centrally-administered national examinations.[39] A tracer study from Tanzania in 1984 for instance showed a strong relationship between secondary school exam results and career progression, with the strongest academic performers proceeding to the most prestigious university degrees.[40] While the system may have favoured students from affluent backgrounds as they tended to score better on standardized exams, it did so through a rules-based system rather than the discretionary allocation of school places by political patrons. How then, did this shape the composition of the public sector labour force? To what extend did academic merit alone determine shape employment opportunities, and how might ethnic or regional politics played into the probabilities for holding public employment? The next section examines this question by considering the correlates of holding a public sector job in Kenya, Tanzania and Uganda.

[37] Kinyanjui.
[38] Currie and Maas.
[39] Stephen P Heyneman, *Why Impoverished Children Do Well in Ugandan Schools*, *World Bank Reprint Series*, World Bank Reprint Series, 1979, xv; Kilemi Mwiria, 'Kenya ' S Harambee Secondary School Movement : The Contradictions of Public Policy', *Comparative Education Review*, 34.3 (1990), 350–68; George Psacharopoulos and William Loxley, *Diversified Secondary Education and Development: Evidence from Colombia and Tanzania*, *World Bank* (Baltimore and London: The Johns Hoplins University Press, 1985).
[40] Tanzania, *Tracer Study of Secondary School Leavers*.

Table 3. Summary of tracer and manpower survey results, Kenya, Tanzania and Uganda

Country	Source	Type	Year	Sample / coverage	Size, response rate	Results
Kenya	Kabiru Kinyanjui, 'Education, Training and Employment of Secondary School Leavers in Kenya', in *Education, Society and Development: New Perspectives from Kenya*, ed. by David Court and Dharam P. Ghai (Nairobi: Oxford University Press, 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	Rees Hughes, 'Revisiting the Fortunate Few : University Graduates in the Kenyan Labor Market', *Comparative Education Review*, 31.4 (1987), 583–601.	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, *An Overview Report of National Manpower Survey 1986-88*, 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, *National Manpower Survey Basic Report 2010/11* (Nairobi, 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, *Annual Manpower Report of the President* (Dar es Salaam, 1971). *Annual manpower report of the President*	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, *Tracer Study of Secondary School Leavers*	Tracer survey	1982	Secondary, Form IV leavers	500 from 7 schools (public only)	

	(Dar es Salaam, 1984).					
Tanzania	Cited in: Brian Cooksey, Daniel Mkude and Lisbeth A. Levey, *Higher Education in Tanzania: A Case Study* (Oxford: James Currey Publishers, 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, *Where Has All the Education Gone in Tanzania?*(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: John B. Knight, 'The Determination of Wages and Salaries in Uganda', *Bulletin of the Oxford University Institute of Economics & Statistics*, 29.3 (1967), 233–64.	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., *High Level Manpower Survey 1967 and Analyses and Requirements, 1967-1981* (Entebbe: Government Printer, 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	Janice Currie and Jacob van L. Maas, 'Uganda's Secondary School Graduates: Postponement of Labour Market Entry', *Manpower and Unemployment Research in Africa:*	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%

	A Newsletter, 7.1 (1974), 14–31.					
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, *Manpower Assessment and Planning Uganda: Project Findings and Recommendations* (Geneva, 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%)

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

i. 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), as well as a range of labour force survey and household surveys.[41] These datasets are used to construct a binary logistic model that investigates the correlates of the probability of holding a public sector job in East Africa in the 2000s. The model specifies the (log) odds of holding a public sector job, conditional on the following variables:

$$\log(P(y = 1)/ P(y = 0)) = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} \ldots + \beta_k x_{ki} \qquad (1)$$

y: Public employee (1 = yes, 0 = no)
x_1: Level of education (0 = none, 1 = some primary, 2 = primary, 3 = secondary, 4 = tertiary)
x_2: Age (in years)
x_3: Sex (1 = female, 0 = male)
x_4: Developmental indicators for the respondent's county/district of birth
x_5: Ethnicity (dummy by ethnic group)

In addition interaction terms for age*education and sex*education are added to see how educational attainment influences public employment opportunities for different sub-groups.

ii. Data

[41] These samples are made available by the Minnesota Population Center (2015), who curate a database of Integrated Public Use Microdata Series (IPUMS), made available by the national statistical agencies of each respective country.

The sample is restricted to Kenyan/Ugandan-born individuals and in the Tanzanian case citizens (Mainland only) 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 ≈ 900,000); the Tanzanian sample is from 2002 and covers roughly 11% of the population (n≈ 700,000); and the Ugandan sample, also from 2002, covers 10% of the population (n≈ 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 and 2014 labour force surveys. These surveys are considerably smaller (Kenya: n ≈ 12,000; Tanzania: n ≈ 15,000) but contain more detailed questions about employment.

The dependent variable (Y) is set to 1 if the individual is a public sector employee and 0 if not. The Kenyan 2009 census recorded respondents by sector of employment thus we have a precise public employment dummy. The Tanzanian and Ugandan censuses lack a sectoral breakdown of employment 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, which are used as proxies for public employment. These proxies therefore exclude parastatal employees and some construction and agricultural workers in public sector, while including 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.[42] While not a perfect measure therefore, it is nonetheless a decent proxy for general government employment. Alternative data sources[43] suggest that of those respondents falling into these industrial classifications, 70-80% do genuinely work in the public sector, with the remainder are in private schools and hospitals (see Appendix). In the case of Tanzania moreover, the smaller 2000 and 2014 labour force surveys, which contains a precise indicator on sector of employment, are used to corroborate the main results.

The first set of independent variables relate to characteristics of the individual respondent: age, sex and educational attainment. As job requirements tend to be based on educational qualifications the educational variable measures the respondent's highest level of educational attainment rather than years of schooling (see Appendix A for details). 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, survey data suggests that people tended to join the public service relatively young. The tracer studies identified in Table 2 are usually conducted within two years of the cohort completing its education and suggest that most graduates were absorbed into public employment within a year or two of completing their schooling. Certain labour force surveys also contain questions about a respondent's years in employment. In Kenya in the 1994, the average age at which public sector employees had entered their current employment was 25; among secondary school leavers and diploma holders it was even lower at 24.[44] In Tanzania (ILFS 2014) the average age of entry was 24. Age and year in current employment are correlated (Kenya: R=0.76; Tanzania: R=0.86). For the

[42]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, *Human Resources for Health Country Profile: Uganda*, 2009, pp. 30–35.
[43] Tanzania 2000 & 2006 ILFS, Uganda 2002 household budget survey.
[44] Kenya, Welfare Monitoring Questionnaire, 1994. Most of the outliers are people with no or little education, most likely casual employees.

Tanzanian 2014 model moreover, we run a robustness check by using an additional specification that replaces age with years in employment.

The second set of variables relate to characteristics of the respondent's district or region of birth.[45] 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 region increase or reduce the likelihood of public employment? The model uses 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. The share of the working population in private, formal sector employment (wage employment), provides 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.[46] 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.[47] 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.[48]

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

Unfortunately the Kenyan census sample does not include an ethnic variable so the basis of location of birth is used to construct a proxy.[49] 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 excluded from the ethnic group analysis (see Appendix A for details).[50] Most counties are quite ethnically homogenous: of those with a majority ethnic group, that group on average constitutes 83 percent of the county population. The dummy covers 12 different ethnic categories and one smaller residual group. 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).

[45] Kenya has 47 counties and 157 districts (some indicators on district basis, other on county basis), Uganda 57 districts and Tanzania 21 regions.
[46] While this indicator is strongly correlated with educational attainment today, it cannot be said to be a product of the postcolonial political settlement.
[47] 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.
[48] See for instance: Yusuf Bangura, *Ethnicity , Inequality and the Public Sector : A Comparative Study*, 2006; Mahmood Mamdani, *Define and Rule: Native as Political Identity* (Cambridge and London: Harvard University Press, 2012).
[49] 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.
[50] Data on county ethnic composition taken from: Dominic Burbidge, *Democracy versus Diversity: Ethnic Representation in a Devolved Kenya*, 2015. This approach is similar to that employed by Burgess et al., 2013 and Tobin, 2015.

Table 4. Summary statistics

KENYA

	Full Sample					Public sector employees (dep. variable)				
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 km2) (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.

UGANDA

	Full Sample					Public sector employees (dep. variable)				
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

	Full Sample					Pub sector employees (dep. variable)				
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 logit results confirm the fragmentary evidence from the 1960s to 1980s that a large share of East Africa's educated labour force pursued public sector careers. The full results tables (5-8) are found on pp.28-31. Models K.1, U.1 and T.1 look at the effect of 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 tertiary-educated Kenyan born in the mid-1950s, the probability of holding public employment in 2009 was 0.58; for a Tanzanian of the same age-cohort the probability of general government employment was roughly 0.57 (2002), and for a Ugandan roughly 0.54 (2002) (fitted probabilities are given in Figure 1). This compares to the probability of public employment for a secondary graduate of 0.19, 0.48 and 0.22, and a primary school graduate of 0.04, 0.12 and 0.06 respectively. The results from the Tanzanian 2000 and 2014 labour force surveys suggest that the inclusion of parastatal employees would raise the probabilities even further for those with tertiary education. For certain skill segments of the East African labour market then, the likelihood of working in the public sector has historically been very high. While Tanzania would be expected to have a large state sector given its socialist orientation after independence, it is interesting to note that for tertiary graduates at least, the Kenyan and Ugandan probabilities are of the same order of magnitude.

In the Kenyan and Tanzanian cases the likelihood of holding public employment increased significantly with age. 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 fell from over 60% among those born in early 1950s, to 40% for those born in the mid-1970s. The Tanzanian secondary school completers also have a very high probability of public employment, at over 50% for the 1950s cohort, which reflects Tanzania's restricted secondary school expansion which was set in line with the expected rate of growth in labour market demand. The Kenyan 1998/99 labour force survey and Tanzanian 2000 & 2014 labour force survey corroborate these findings and in the Tanzanian case place the public employment probabilities even higher, although the smaller samples increase the confidence intervals considerably. The labour force surveys suggest a more strongly quadratic relationship between age and public employment probabilities, with probabilities plateauing for respondents born before c.1955. As a robustness check the age variable was replaced by years in employment for the Tanzanian 2014 dataset, as this is the only survey that collected data on years in employment (T.7). This gives similar results, albeit with higher confidence intervals as the sample size falls further.

Presuming that respondents born in the 1950s started their public sector careers in the 1970s, these findings suggest that in the first two decades of independence the public sector employed the majority of the tertiary educated labour force and a large share of the secondary school output. The subsequent fall in the public sector's share of the skilled labour market supports the hypothesis that as the fiscal crisis intensified and structural adjustment reforms were implemented in the 1990s, governments' ability to absorb graduates declined, pushing skilled workers into the private sector.

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

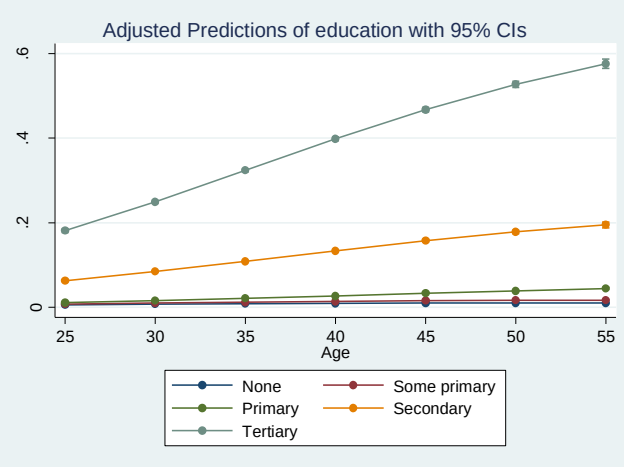
process in Uganda after President Museveni came to power in 1986 which resulted in large-scale redundancies.[51] This created space for recent graduates to advance, reflected in the lower average age of Ugandan government employees than in Kenya or Tanzania.[52]

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.

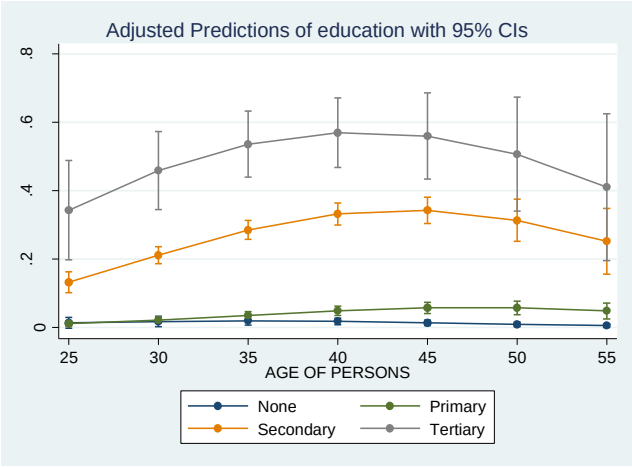
Such high probabilities of holding a public sector job for those with higher education limits political discretion in determining which graduates gained employment. Skilled public sector employment then, appears consistent with an emphasis on formal, paper qualifications rather than ascriptive criteria. 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 politicking in the distribution of the now 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?

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

KENYA 2009 CENSUS

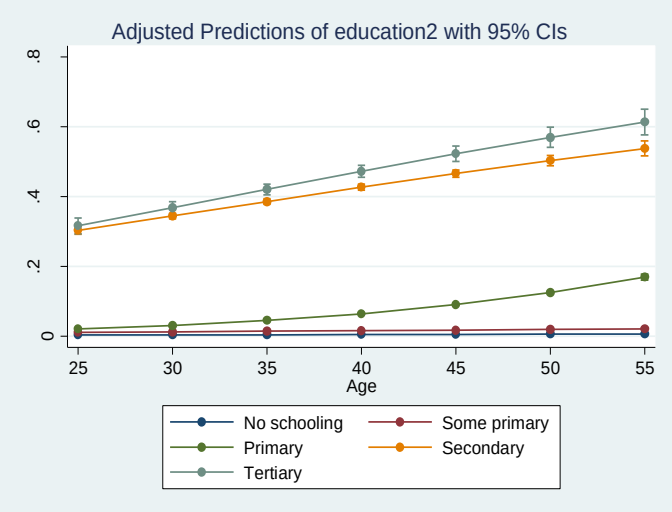


KENYA 1998/99 ILFS

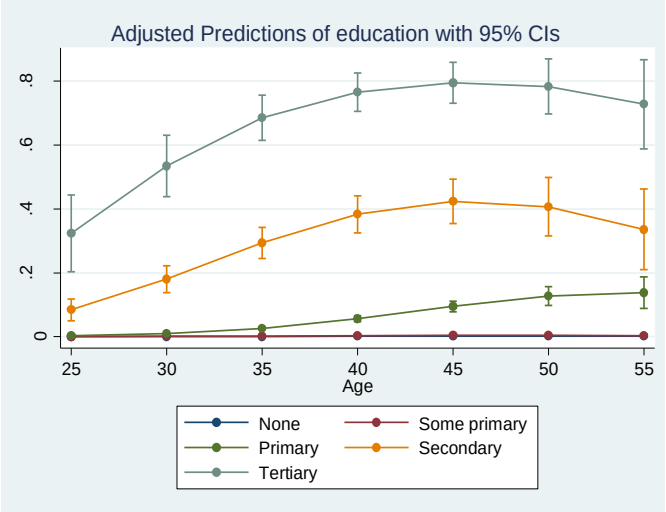


[51] The Ugandan 2014 population census is due to be released in late 2015 and would make it possible to test whether the age trends have changed since 2002.
[52] Mary Goretti Sendyona, 'Public Service Restructuring and Pay Reform', in *Uganda's Economic Reforms: Insider Accounts*, ed. by Florence Kuteesa and others (Oxford: Oxford University Press, 2010), pp. 89–102.

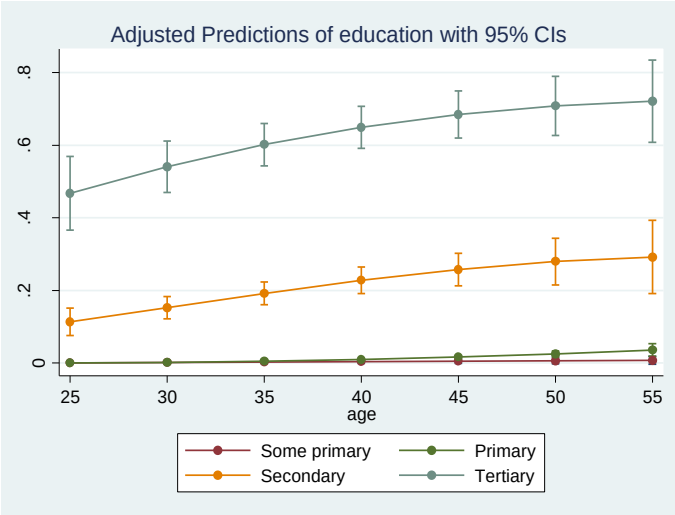
TANZANIA 2002 CENSUS



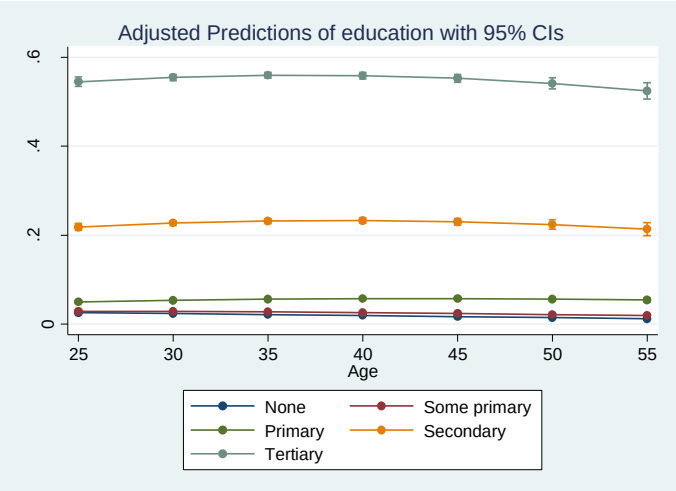
TANZANIA 2000 ILFS



TANZANIA 2014 LIFS



UGANDA 2002 CENSUS



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

ii. Where do public sector employees come from?

Models K.2, U.2 and T.2 introduce district of birth variables in order to understand how skill level interacts with the economic conditions in which an individual was raised. 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 shaped by the place where they grew up, we would 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 above, four measures of subnational development are introduced to capture long-run differences in level of economic development between geographic regions.[53]

In Kenya and Uganda the probability of holding a public sector job is higher for people from less developed parts of the country, once their education is controlled for. In Kenya the four coefficients pull in the same direction: controlling for education, age and sex, 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 negative but 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 0.05, compared to 0.02 if born in a district with developmental indicators 1 standard deviation above the mean ($p<0.01$; other variables set to the mean). Furthermore, this effect increases in strength with the level of education: secondary and tertiary graduates from disadvantaged regions are overrepresented while the bias disappears for those with less than a primary school degree. Although the effect is 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).

In Uganda the results are similar although the distance from Kampala coefficient is insignificant and 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.[54] 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 0.06, compared to 0.04 for a person born in a district with developmental indicators 1 standard deviation above the mean ($p<0.01$). As in Kenya, the effect is strongest for those with secondary and tertiary education. 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.

In Tanzania the relationship between public employment density and local development is more ambiguous; distance from the capital increases employment likelihood, but population density and private employment opportunities also increase it. The predicted probabilities for those from a region one standard deviation below the developmental averages is 0.05, compared to 0.06 for those a standard deviation above ($p<0.01$). The weak impact of region on employment may partly be a data

[53] 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 a change in political regime.
[54] 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

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.[55] However, Tanzania liberalized its economy first in the 1990s, and the 2002 census may also be reflecting the fact that private sector opportunities remained scarce even for graduates from the most developed parts of the country. The 2014 labour force survey suggests that this may have changed over the proceeding decade. Although the null hypothesis cannot be rejected for most of the variables, the 2014 labour force survey is consistent with the Kenyan and Ugandan pattern; the probability of public employment is higher for regions with developmental indicators below the average (T.5). As in Kenya and Uganda, this effect is strongest amongst the younger cohorts (T.6).

This pattern of public employment may be the result of both push and pull factors: 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. 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 affirmative action by lowering the bar into public sector training programmes for candidates from more remote and underserved regions of the country.[56] As suggested by Francois et al., it may also reflect an active attempt to distribute resources widely across all ethnic homelands. Lastly, network effects and ethnic favouritism may be higher in the private sector than public sector, privileging ethnic groups from more developed regions and pulling them away from the public sector. Several studies, primarily from the US, have shown ethnic or racial discrimination in earnings to be lower within the public than private sector.[57]

The higher probabilities of public employment for people from remote and historically disadvantaged regions has had the effect of reducing regional inequalities in access to public sector jobs and works against common presumption that public employment was dominated by 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 several decades of salary declines in the Kenyan, Tanzanian and Ugandan public sectors which have led younger graduates from more privileged, urban backgrounds to look to the private sector for employment.

iii. Ethnic preference in public sector employment?

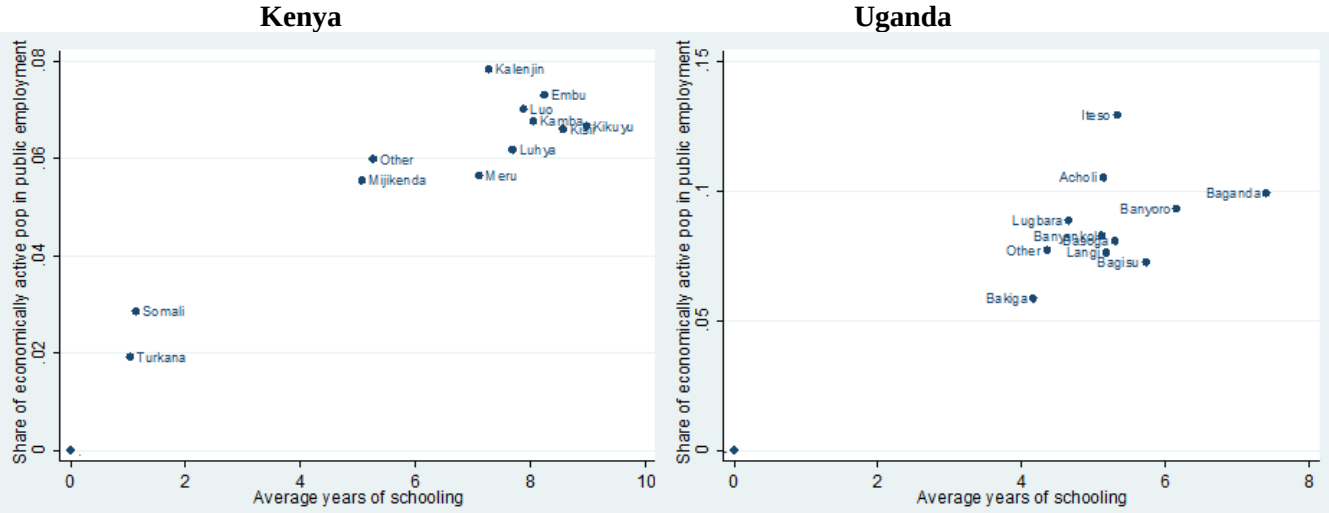
Are certain ethnic groups are favoured or penalized in the Kenyan and Ugandan public sector recruitment system? A last set of regressions examine public employment shares by ethnic group in Kenya and Uganda.[58] Given that ethnic groups are geographically concentrated, the results are already foreshadowed by the analysis above which shows that more economically and educationally disadvantaged areas, and thus ethnic homelands, are overrepresented compared to their educational

[55] Overlaying the regional public employment rates (adjusted for education) with current poverty levels however does show a positive correlation.
[56] 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.)
[57] For a summary of this literature, see: Robert G. Gregory and Jeff Borland, 'Recent Developments in Public Sector Labor Markets', in *Handbook in Labor Economics*, ed. by O. O. Ashenfelter and D. Card, 1st edn (Elsevier, 1999), pp. 3573–3630.
[58] When comparing the Kenyan and Ugandan results it is important to 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.

attainment. However, given that educational access may itself be a product of the preferential access of some ethnic groups to educational opportunities, the determinants of educational inequalities must also be considered.

Public employment shares do vary across ethnic groups, although these differences are not enormous (Figure 2). Most of Kenya's ethnic groups are clustered at shares of 0.055 to 0.08, and in Uganda between 0.075 and 0.1. Moreover, the correlation with average years of schooling shows that these differences are at least in part explained by differential access to education. What then, drives differential access to education?

Figure 2. Correlation between public employment shares and years of schooling by ethnic group



Source: Derived from Kenya Housing and Population Census 2009 and Uganda Housing and Population Census 2002, Minnesota Population Center, 2015.

Many of Africa's newly independent states in the 1960s inherited significant regional and ethnic inequalities in educational attainment, often stemming from the patterns of missionary penetration, which continue to affect development indicators today.[59] This point was aptly made by Julius Nyerere, who in is 1962 inaugural speech chose to highlight the challenge of educational inequalities in Tanganyika:

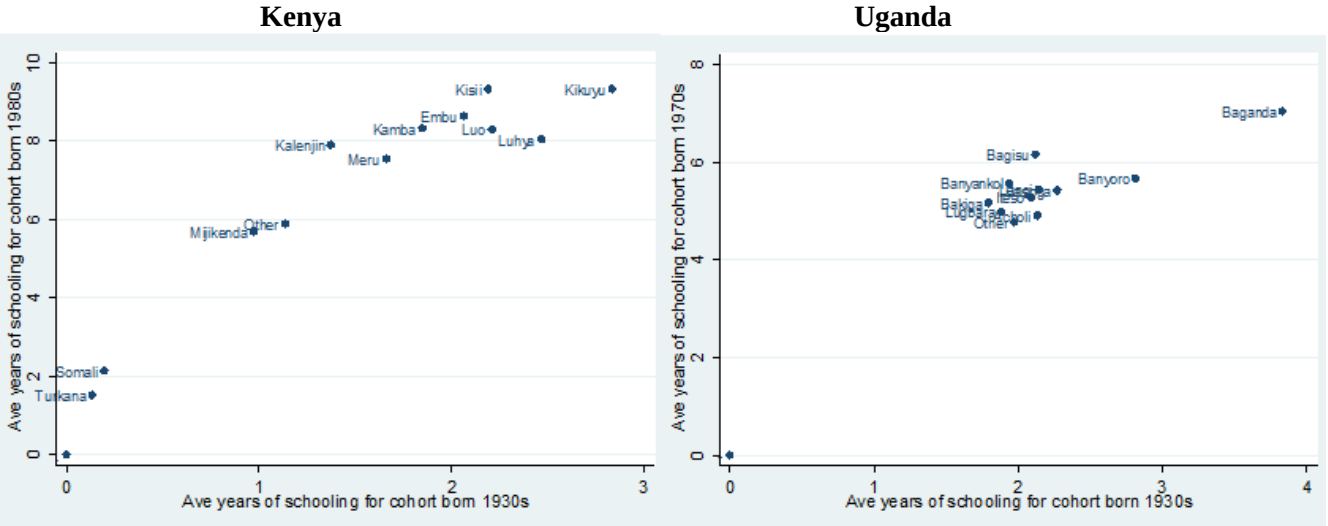
> *'You will discover that the missionaries did not build their schools all over Tanganyika, but only in certain areas. And as a result of this not only are the majority of educated Africans today likely to be Christians, but a very large proportion of them are draw from the Wahaya, Wanyakyusa, and Wachagga peoples. So those who would strike at our unity could equally well exploit this situation to stir up animosity between the tribes. (…)'*[60]

While the persistence of such educational inequities may be a failing on the part of postcolonial governments, it cannot be regarded as an outcome of postcolonial patronage policies themselves. A simple scatter plot shows that most of the current variation in educational attainment on an ethnic group basis is indeed explained by the historical legacy of unequal educational access. Figure 3 compares the average educational attainment of the cohort born in the 1930s (which would have been educated 1940s and 1950s) with that of the cohort born in the 1970s or 1980s. In Kenya there is a

[59] Jutta Bolt and Dirk Bezemer, 'Understanding Long-Run African Growth: Colonial Institutions or Colonial Education?', *Journal of Development Studies*, 45.1 (2009), 24–54.
[60] Nyerere.

clear persistence in educational inequalities, although with some convergence amongst the largest ethnic groups, for whom the average years of schooling for children born in the 1980s varied between roughly 8 and 9.5. The main laggards, the Somali and Turkana, have considerable pastoral populations which may in part explain their poor educational progress. In Uganda in contrast the educational inequalities were never as large to begin and have remained relatively small, albeit with a continued advantage for the Baganda. Thus while differences in educational attainment, particularly for the older cohorts of Kenyans and Ugandans, may influence ethnic shares in the public service, this by and large reflects the persistence of colonial-era inequalities rather than an orchestrated postcolonial effort to favour particular groups.[61]

Figure 3. Correlation between average years of schooling by age cohort and ethnic group



Source: Derived from Kenya Housing and Population Census 2009 and Uganda Housing and Population Census 2002, Minnesota Population Center, 2015.

In the last set of regression results therefore, the effects of education, age and gender are examined on an ethnic group by ethnic group basis, to see if there are obvious divergences in public employment determination across groups. Estimated probabilities for a 40-year old man are presented by level of education and ethnic group by way of illustration.

The results by ethnic group show more similarity than divergence: for Kenya the educational dummies are strong and significant in all cases and the models have a relatively good fit, with the pseudo R^2 ranging from 20% to 35% (Table 9). For a 40-year old man with no education the probabilities are extremely low across all groups, but range only between 0.6 and 1.2%, with most groups at around 1%. For those with primary education the variation is also quite low, albeit with two outliers, the Somali and Turkana, for whom a considerably larger share of primary educated workers are employed by the state (reflecting the exceptionally low educational attainment rate and thus small pool of primary completers from which to select public sector workers in those localities). Amongst secondary school leavers and tertiary graduates the public employment rates vary quite considerably across groups, but again, it is those ethnic groups with relatively low educational attainment that have comparatively high employment probabilities. The most educated group, the Kikuyu, are significantly under-represented amongst secondary and tertiary graduates, while the Kalenjin, Somali and Turkana

[61] This doesn't rule out the possibility of some ethnic preference at the margin (as found by Kramon and Posner.), but it is certainly not the main driver of educational inequalities.

are over-represented. Figure 4 contrasts the public employment probabilities by ethnic group against average years of education and shows a clear correlation.

For Uganda the results are similar (Table 10). The models have pseudo R^2s ranging from 20% to 35%, and the educational coefficients follow the same pattern across ethnic groups. For an economically active uneducated 40-year old man, the probability of holding a public sector job ranges from 1.1% to 4.2%, but most groups are clustered around 1.5 – 2%. The main outliers with unusually high probabilities of holding low skilled public sector jobs are the Teso and Acholi; there are no obvious reasons why these groups would have been favoured politically. As in Kenya there is more variability in rates amongst the secondary and tertiary graduates, but the most educationally-advanced group, the Baganda, are considerably under-represented (much like the Kikuyu in Kenya). The variability in public employment probabilities are not as clearly correlated with educational attainment as in Kenya (see Figure 5), but the particularly low public employment probabilities amongst the Baganda, Bagisu, Basoga and Banyoro, do seem related to their comparatively strong educational performance.

Much of the ethnic patronage literature presumes that co-ethnics of the President are favoured in access to public resources such as jobs. However in Kenya the Kikuyu, who are co-ethnics of President Kenyatta (1964-78) and President Kibaki (2002-2013), are significantly under-represented when controlling for their educational attainment. The Kalenjin on the other hand, co-ethnics of President Moi (1978-2002), do appear to have relatively high public employment probabilities, although this is partially explained by their historical educational disadvantage. Moreover, the Kalenjin advantage is not enormous. Making the crude assumption that all additional jobs allocated to Kalenjin above the average mean across ethnic groups and education levels, suggests that the Kalenjin share is 18% higher than it would otherwise have been, which represents less than 2% of all public sector jobs in total.

In Uganda President Museveni's ethnic group, the Banyankole, are on the whole under-represented in relation to their educational achievement, while the Langi, who are co-ethnics of Milton Obote (1964 – 71; 1980 – 86), are over-represented, primarily amongst tertiary graduates. However, as in the Kenyan case, the effect of this on the overall pie is minimal; the share of Langi jobs that exceed the ethnic group mean constitute only around 0.5% of all public sector jobs in Uganda in 2002.

VI. Conclusions

Various theories have been offered for the rapid expansion of the public services in Africa after independence and the decline in pay, motivation and discipline that followed. But while political economists in the early independence era blamed the state for protecting and promoting the interests of the urban educational elite, later theorists deemed patronage politics to be behind the excessive state expansion. Patronage is by definition non-meritocratic: jobs are distributed on the basis of identity (ethnic, religious, social) and political influence, rather than on the basis of the skills and experience required for the job.

However, an examination of who actually held public sector jobs in Kenya, Tanzania and Uganda in the 2000s throws doubt on the relevance of patronage models for explaining public sector recruitment practices. 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 graduates from the right colleges and degree programmes had easy, if not automatic, access to public sector jobs. In the Kenyan and Tanzanian cases between 50-80% of the economically active graduates who entered the labour market prior to the 1990s structural

adjustment reforms held public sector jobs. Assuming that politicians sought to deliver patronage through the distribution of jobs, this emphasis on formal educational criteria severely limited their choice of candidates. Although they may still have retained some discretion at the margins, politicians in all three countries chose to uphold a public employment system that significantly limited their discretion in the allocation of mid and high-level posts. In fact, a strong emphasis on transparent and institutionalised hiring criteria may well have been put in place precisely to reduce accusations of ethnic favouritism in hiring decisions.[62]

Furthermore, in Kenya and Uganda at least, the probabilities of public employment are higher for individuals from economically disadvantaged regions, suggesting that graduates from more privileged backgrounds (and presumably with more political connections) may well have a preference for private sector careers. A secondary school graduate from a less developed region in Kenya such as Turkana or Garissa, is much more likely to enter the public sector than a graduate from Nairobi or Mombasa. As a result, public sector jobs are more equitably distributed on a regional and ethnic basis than what would be as predicted by educational attainment alone.

Evidence of favouritism of co-ethnics of past and present Presidents is only weakly visible in Kenya and Uganda. While former President Moi's ethnic group, the Kalenjin in Kenya, and former President Obote's group, the Langi in Uganda, are over-represented in relation to their educational attainment, this advantage is relatively small. Roughly calculated it represents at most 2% of jobs in Kenya and 0.5% of jobs in Uganda. Moreover, educational attainment itself is primarily dictated by a colonial legacy of unequal education and does not seem to be indirectly benefitting co-ethnics. In fact, the average years of schooling across ethnic groups appears to be converging in both countries.

Numerous political scientists have taken for granted that the distribution of public sector jobs in exchange for political support is critical to the governance of African countries. These jobs are supposedly the glue that ties the populous to the political elite, thus discouraging people from organising politically along economic interests rather than inherited identity. Yet the composition of the Kenyan and Ugandan public services do not find support for such discretionary distribution of jobs. Access to public sector jobs is in large part determined by basic economic variables. Educational attainment, and the availability of other economic opportunities in one's locality, strongly predicts the likelihood of entering public employment.

This finding matters for the economic and political outlook on East Africa. If public employment is 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 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 argued 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 marks 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 disposable income – are no longer as likely to be agents of the government, particularly in the main cities. How this will

[62] As suggested by Rothchild, 1969.

influence patterns of employment and earnings in the future is open to speculation, but it may present an opportunity for a better accountability relationship between states and citizens going forward.

Table 5. Kenya: Main Results

VARIABLES	(K.1) pubemp	(K.2) pubemp	(K.3) pubemp	(K.4) ILFS 1998/99
age	0.0850***	0.0895***	0.105***	0.247***
	(0.00655)	(0.0219)	(0.0228)	(0.0744)
age#age	-0.000843***	0.000819***	0.000869***	-0.00350***
	(6.94e-05)	(0.000218)	(0.000225)	(0.000830)
sex (1 = female)	-0.748***	-0.634***	-0.696***	-1.574***
	(0.0632)	(0.0421)	(0.0337)	(0.565)
Education dummies (base = no schooling)				
Some primary	0.114	0.748*	0.742	
	(0.171)	(0.437)	(0.531)	
Primary	-0.140	0.578	0.544	-2.465*
	(0.154)	(0.470)	(0.567)	(1.421)
Secondary	1.535***	2.307***	2.267***	0.164
	(0.148)	(0.556)	(0.621)	(1.306)
Tertiary (incl. college/diploma)	2.139***	3.025***	2.948***	1.950
	(0.148)	(0.564)	(0.608)	(1.494)
age#education interaction (base = no schooling)				
Some primary	0.00807*	0.00434	-0.000485	
	(0.00414)	(0.00617)	(0.00902)	
Primary	0.0301***	0.0257***	0.0208**	0.0851**
	(0.00372)	(0.00694)	(0.0102)	(0.0365)
Secondary	0.0252***	0.0207**	0.0151	0.0599*
	(0.00357)	(0.00897)	(0.0113)	(0.0344)
Tertiary (incl. college/diploma)	0.0430***	0.0362***	0.0314***	0.0429
	(0.00358)	(0.00934)	(0.0114)	(0.0393)
sex#education interaction (base = no schooling)			(0)	
Some primary	-0.0450	-0.132	-0.0928	
	(0.0764)	(0.125)	(0.110)	
Primary	0.0700	-0.00166	0.0410	0.277
	(0.0681)	(0.0667)	(0.0603)	(0.635)
Secondary	0.585***	0.513***	0.562***	1.657***
	(0.0651)	(0.0522)	(0.0402)	(0.577)
Tertiary (incl. college/diploma)	0.889***	0.823***	0.870***	1.389**
	(0.0651)	(0.0428)	(0.0359)	(0.686)
Place of birth effects				
Distance to capital city (county basis) (km)		0.104***	0.287***	
		(0.0141)	(0.0368)	
Population density (people per km2) (log)		-0.0558**		
		(0.0251)		
Ave years of schooling, cohort born in 1930s		-0.132***		
		(0.0195)		
% employment in formal sector		-0.00316		
		(0.00612)		
Distance to capital#age interaction			-0.00353***	
			(0.000972)	
Constant	-6.390***	-6.750***	-7.777***	-7.564***
	(0.178)	(0.596)	(0.757)	(1.797)
Clustered errors at province of birth	NO	YES	YES	NO
Observations	926,005	926,005	926,005	12,190
Pseudo R^2	0.2366	0.2435	0.2408	0.2251

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 6. Uganda: Main Results

VARIABLES	(U.1) pubemp	(U.2) pubemp	(U.3) pubemp
age	0.00883	0.00361	0.00312
	(0.00813)	(0.0298)	(0.0263)
age#age	-0.00043***	-0.000353	-0.000360
	(0.000100)	(0.000330)	(0.000333)
sex (1 = female)	-0.820***	-0.776***	-0.828***
	(0.0454)	(0.181)	(0.222)
Education dummies (base = no schooling)			
Some primary	-0.206	-0.111	-0.224**
	(0.126)	(0.236)	(0.109)
Primary	-0.263**	-0.110	-0.226
	(0.122)	(0.288)	(0.208)
Secondary	1.240***	1.446***	1.325***
	(0.121)	(0.282)	(0.219)
Tertiary (incl. college/diploma)	2.686***	2.905***	2.768***
	(0.117)	(0.281)	(0.260)
age#education interaction (base = no schooling)			
Some primary	0.0112***	0.0115***	0.0125***
	(0.00343)	(0.00363)	(0.00267)
Primary	0.0284***	0.0282***	0.0293***
	(0.00330)	(0.00754)	(0.00701)
Secondary	0.0246***	0.0241***	0.0253***
	(0.00328)	(0.00714)	(0.00755)
Tertiary (incl. college/diploma)	0.0228***	0.0215***	0.0229***
	(0.00316)	(0.00667)	(0.00703)
sex#education interaction (base = no schooling)			
Some primary	0.118**	0.117	0.164
	(0.0572)	(0.111)	(0.115)
Primary	0.598***	0.606***	0.654**
	(0.0551)	(0.215)	(0.254)
Secondary	1.216***	1.217***	1.262***
	(0.0533)	(0.141)	(0.186)
Tertiary (incl. college/diploma)	1.342***	1.348***	1.393***
	(0.0521)	(0.165)	(0.220)
Place of birth effects			
Distance to capital city (county basis) (km)		0.0160	0.166***
		(0.0761)	(0.0162)
Population density (people per km2) (log)		-0.174**	
		(0.0857)	
Ave years of schooling, cohort born in 1930s		-0.217***	
		(0.0791)	
% employment in formal sector		0.0695*	
		(0.0360)	
Distance to capital#age interaction			-0.000254
			(0.00160)
Constant	-3.249***	-2.196***	-3.531***
	(0.173)	(0.257)	(0.544)
Clustered errors at region of birth	NO	YES	YES
Observations	432,971	428,961	428,961
Pseudo R2	0.2716	0.2767	0.2753

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 7. Tanzania: Main Results

VARIABLES	(T.1) pubemp	(T.2) pubemp	(T.3) ILFS 2000	(T.4) ILFS 2014
age	0.0365***	0.0386***	0.439***	0.0674*
	(0.0111)	(0.0111)	(0.0841)	(0.0383)
age#age	-0.000199*	-0.000225*	-0.00471***	-0.000583
	(0.000118)	(0.000118)	(0.000845)	(0.000448)
sex (1 = female)	-1.188***	-1.192***	-1.726**	-0.260
	(0.102)	(0.102)	(0.875)	(0.343)
Education dummies (base = no schooling)				
Some primary	1.002***	1.011***	1.639	
	(0.282)	(0.282)	(2.849)	
Primary	-0.0679	-0.0789	-0.138	-0.636
	(0.239)	(0.239)	(2.095)	(0.678)
Secondary	3.684***	3.588***	5.289**	1.596**
	(0.243)	(0.244)	(2.101)	(0.660)
Tertiary (incl. college/diploma)	3.799***	3.750***	6.334***	2.635***
	(0.274)	(0.276)	(2.149)	(0.696)
age#education interaction (base = no schooling)				
Some primary	0.00157	0.000980	-0.00645	
	(0.00658)	(0.00659)	(0.0647)	
Primary	0.0547***	0.0540***	0.0737	0.0245*
	(0.00565)	(0.00566)	(0.0487)	(0.0137)
Secondary	0.0122**	0.0129**	-0.00541	0.00122
	(0.00579)	(0.00581)	(0.0492)	(0.0136)
Tertiary (incl. college/diploma)	0.0205***	0.0202***	-0.00505	0.00142
	(0.00664)	(0.00667)	(0.0503)	(0.0145)
sex#education interaction (base = no schooling)				
Some primary	0.361***	0.352***	-1.052	
	(0.128)	(0.128)	(1.152)	
Primary	1.167***	1.165***	1.387	-0.162
	(0.104)	(0.104)	(0.891)	(0.358)
Secondary	1.845***	1.831***	1.525*	0.457
	(0.106)	(0.107)	(0.902)	(0.358)
Tertiary (incl. college/diploma)	1.308***	1.297***	2.642***	0.627*
	(0.120)	(0.120)	(0.930)	(0.371)
Place of birth effects				
Distance to capital city (county basis) (km)		-0.0257***		
		(0.00311)		
Population density (people per km2) (log)		-0.0627***		
		(0.0147)		
Ave years of schooling, cohort born in 1930s		-0.0124		
		(0.0163)		
% employment in formal sector		0.0464***		
		(0.00610)		
Constant	-5.930***	-5.853***	-15.47***	-4.248***
	(0.299)	(0.301)	(2.453)	(0.920)
Clustered errors at province of birth	NO	NO	NO	NO
Observations	877,338	877,338	16,127	13,485
Pseudo R2	0.2482	0.2497	0.3759	0.4261

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8. Tanzania: Main Results, continuation.

VARIABLES	(T.5) ILFS 2014	(T.6) ILFS 2014
Controls:		
Age & Age#age	YES	YES
Sex	YES	YES
Education	YES	YES
Education#age	YES	YES
Education#sex	YES	YES
Place of birth effects		
Population density (people per km2) (log)	-0.100***	
	(0.0331)	
Ave years of schooling, all adults	-0.0202	-0.399***
	(0.0481)	(0.133)
% employment in formal sector	0.0178**	
	(0.00809)	
Age#ave years of schooling interaction		0.00935***
		(0.00333)
Constant	-3.719***	-1.382
	(0.959)	(1.209)
Clustered errors at province of birth	NO	NO
Observations	12,967	12,967
Pseudo R2	0.4250	0.4236

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

VARIABLES	(T.7) ILFS 2014
Years in employment	0.0529**
	(0.0215)
Yrs in emp#yrs in emp	0.000183
	(0.000510)
sex (1 = female)	0.233***
	(0.0834)
Education dummies (base = primary)	
Secondary	1.852***
	(0.218)
Tertiary (incl. college/diploma)	2.687***
	(0.223)
age#education interaction (base = primary)	
Secondary	-0.0365***
	(0.0119)
Tertiary (incl. college/diploma)	-0.0348***
	(0.0128)
Constant	-2.573***
	(0.233)
Clustered errors at province of birth	NO
Observations	3,638
Pseudo R2	0.3040

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9. Kenya: public employment determinants by ethnic group

VARIABLES	Dependent variable: public employee = 1, other employment = 0										
	Kikuyu	Luhya	Kalenjin	Luo	Kamba	Somali	Kisii	Mijikenda	Meru	Turkana	Embu
Education dummies (base = no schooling)											
Some primary	0.191	0.225**	0.920***	0.516***	0.468***	1.736***	0.135	0.786***	0.430**	1.79***	0.681*
	(0.125)	(0.104)	(0.133)	(0.161)	(0.161)	(0.179)	(0.207)	(0.137)	(0.197)	(0.229)	(0.377)
Primary	0.687***	0.851***	1.830***	1.512***	1.091***	2.340***	1.126***	1.572***	1.195***	2.63***	1.057***
	(0.117)	(0.099)	(0.126)	(0.152)	(0.154)	(0.116)	(0.189)	(0.121)	(0.185)	(0.200)	(0.367)
Secondary	2.330***	2.601***	3.630***	3.361***	2.770***	3.742***	2.788***	3.314***	3.209***	4.31***	2.891***
	(0.116)	(0.096)	(0.123)	(0.150)	(0.152)	(0.096)	(0.185)	(0.115)	(0.179)	(0.177)	(0.361)
Tertiary (incl. college/diploma)	3.748***	4.171***	5.199***	4.663***	4.280***	4.378***	4.693***	4.404***	4.866***	5.18***	4.259***
	(0.116)	-0.0962	-0.123	(0.150)	(0.152)	-0.106	-0.185	-0.12	(0.179)	-0.18	-0.361
Age	0.118***	0.0791***	0.233***	0.0744***	0.129***	0.129***	0.135***	0.0775***	0.171***	-0.0365	0.173***
	(0.011)	(0.014)	(0.016)	(0.016)	(0.017)	(0.042)	(0.022)	(0.029)	(0.025)	(0.069)	(0.038)
age#age	-0.00078***	-0.00047***	-0.0023***	-0.00037*	-0.00096***	-0.0013**	-0.00094***	-0.000437	-0.0015***	0.00098	-0.0016***
	(0.0001)	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0005)	(0.0003)	(0.0004)	(0.0003)	(0.0009)	(0.0005)
sex (1 = female)	-0.0487**	-0.158***	-0.229***	-0.107***	-0.0554*	-0.652***	-0.279***	-0.105*	-0.136***	-0.491***	-0.162**
	(0.019)	(0.025)	(0.028)	(0.030)	(0.030)	(0.091)	(0.040)	(0.057)	(0.043)	(0.139)	(0.063)
Constant	-7.944***	-6.877***	-10.57***	-7.361***	-8.246***	-7.524***	-8.672***	-7.063***	-9.478***	-5.230***	-8.962***
	(0.242)	(0.279)	(0.321)	(0.337)	(0.358)	(0.788)	(0.447)	(0.564)	(0.508)	(1.279)	(0.790)
Pseudo R2	0.199	0.246	0.295	0.253	0.227	0.311	0.273	0.238	0.307	0.346	0.232
Observations	200,985	142,516	104,933	93,248	88,631	33,420	59,373	35,547	53,647	18,057	18,011
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1											
Estimated probabilities for 40 year old male, by education level (percentage terms)											
No education	1.1%	1.1%	0.7%	0.7%	1.0%	1.2%	0.8%	0.9%	0.7%	0.6%	1.0%
Some primary	1.4%	1.4%	1.7%	1.1%	1.6%	6.6%	0.9%	2.0%	1.0%	3.5%	2.0%
Primary	2.3%	2.6%	4.1%	3.1%	2.9%	11.5%	2.5%	4.4%	2.2%	7.7%	2.8%
Secondary	10.6%	13.5%	20.6%	16.7%	13.7%	34.5%	11.9%	20.7%	14.3%	30.8%	15.5%
Tertiary	33.0%	42.8%	55.5%	42.4%	41.7%	49.8%	47.6%	43.6%	46.7%	51.4%	41.8%

Table 10. Uganda: public employment determinants by ethnic group

VARIABLES	Dependent variable: public employee = 1, other employment = 0										
	Baganda	Banyankole	Basoga	Bakiga	Langi	Iteso	Bagisu	Acholi	Lugbara	Banyoro	Other
Education dummies (base = no schooling)											
Some primary	0.117	0.353***	0.327***	0.627***	0.720***	0.418***	0.287*	0.795***	1.023***	0.175	0.325***
	(0.0887)	(0.089)	(0.083)	(0.097)	(0.120)	(0.146)	(0.086)	(0.163)	(0.124)	(0.153)	(0.0454)
Primary	0.716***	1.039***	1.124***	1.472***	1.394***	0.984***	0.998***	1.589***	1.791***	1.175***	1.131***
	(0.085)	(0.083)	(0.093)	(0.124)	(0.146)	(0.090)	(0.159)	(0.120)	(0.156)	(0.198)	(0.0451)
Secondary	2.037***	2.580***	2.869***	3.246***	3.484***	2.351***	2.924***	3.493***	3.743***	2.707***	2.597***
	(0.084)	(0.082)	(0.090)	(0.122)	(0.144)	(0.090)	(0.155)	(0.121)	(0.152)	(0.196)	(0.0449)
Tertiary (incl. college/diploma)	3.580***	3.913***	4.471***	4.806***	5.018***	3.655***	4.637***	4.140***	5.057***	4.104***	3.949***
	(0.083)	(0.077)	(0.090)	(0.114)	(0.141)	(0.086)	(0.150)	(0.120)	(0.149)	(0.193)	(0.0432)
Age	-0.0168	-0.0225	0.00481	0.00468	0.153***	0.0892***	0.0834**	0.0992***	0.0373	-0.0151	0.0162
	(0.016)	(0.024)	(0.027)	(0.034)	(0.034)	(0.027)	(0.038)	(0.033)	(0.039)	(0.042)	(0.0152)
age#age	0.000131	0.000158	-0.00017	-0.00006	-0.002***	-0.001***	-0.001**	-0.001***	-0.00042	0.000284	-0.00034*
	(0.0002)	(0.0003)	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0005)	(0.0004)	(0.0005)	(0.0006)	(0.000199)
sex (1 = female)	0.465***	0.012	0.220***	-0.335***	-0.279***	-0.160***	0.352***	-0.210***	0.0179	0.097	-0.241***
	(0.027)	(0.042)	(0.048)	(0.064)	(0.070)	(0.051)	(0.068)	(0.065)	(0.079)	(0.075)	(0.0285)
Constant	-3.48***	-3.33***	-4.13***	-4.56***	-7.27***	-4.76***	-6.06***	-5.76***	-5.30***	-3.86***	-3.82***
	(0.302)	(0.439)	(0.501)	(0.625)	(0.642)	(0.511)	(0.725)	(0.616)	(0.734)	(0.798)	(0.282)
Pseudo R2	0.2179	0.2646	0.2967	0.3483	0.3692	0.2392	0.3357	0.2697	0.3458	0.2728	0.2533
Observations	77,013	45,293	37,937	33,811	28,800	23,345	21,525	19,397	17,463	12,450	115,930
Standard errors in parentheses											
*** p<0.01, ** p<0.05, * p<0.1											
Estimated probabilities for 40 year old male, by education level (percentage terms)											
No education	1.9%	1.8%	1.5%	1.1%	1.2%	4.2%	1.2%	2.1%	1.1%	1.8%	2.4%
Some primary	2.1%	2.6%	2.0%	2.1%	2.5%	6.2%	1.5%	4.6%	3.0%	2.1%	3.3%
Primary	3.8%	5.0%	4.4%	4.7%	4.9%	10.5%	3.1%	9.7%	6.3%	5.6%	7.1%
Secondary	13.0%	19.8%	20.9%	22.7%	29.2%	31.5%	17.9%	41.9%	32.2%	21.4%	24.7%
Tertiary	41.0%	48.4%	56.8%	58.2%	65.7%	62.8%	54.8%	57.9%	63.9%	52.4%	55.9%

Figure 4. Kenya: Probability of holding public sector employment for 40-year old male, against years of education by ethnic group in 2009

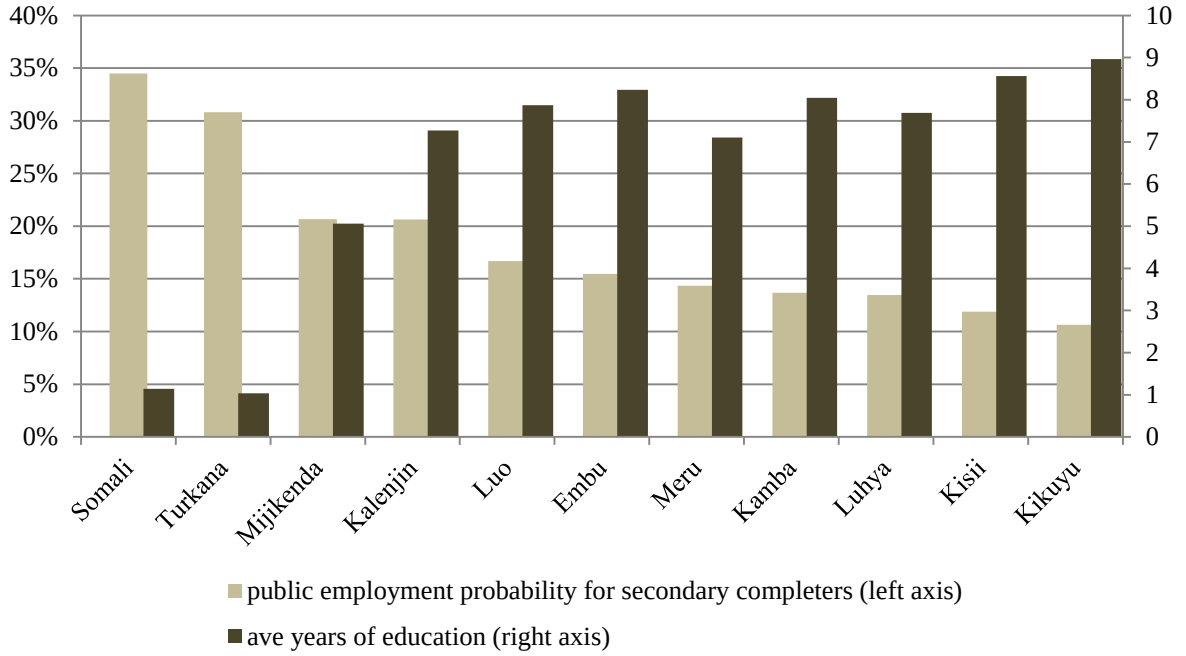
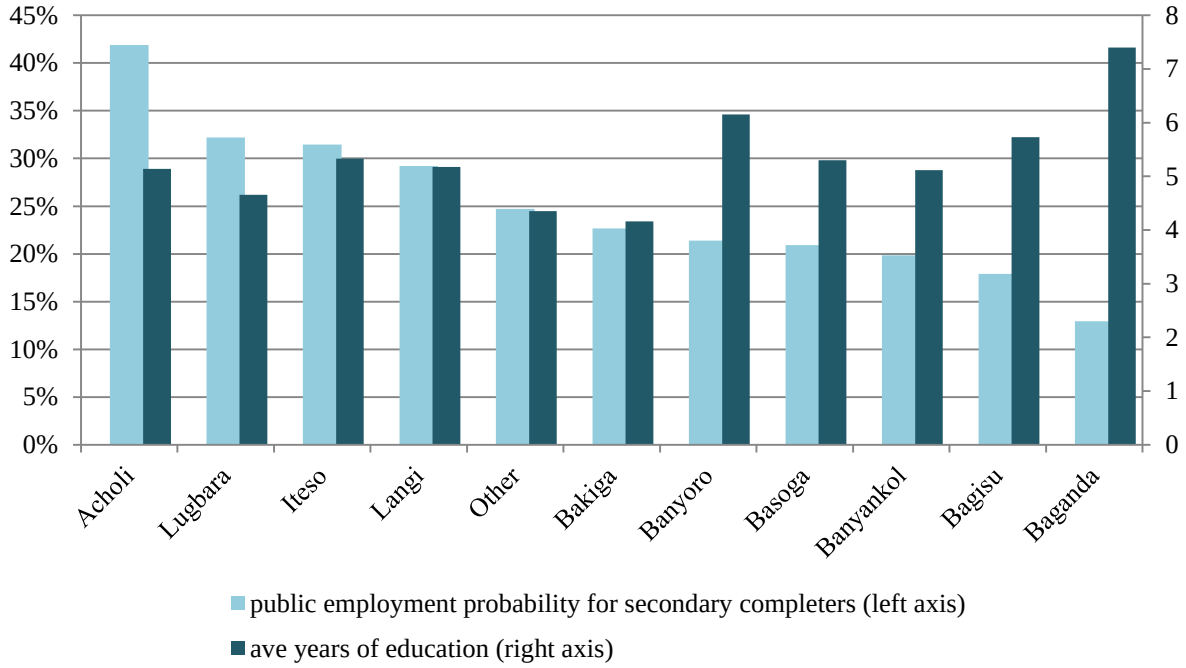


Figure 5. Uganda: Probability of holding public sector employment for 40-year old male, against years of education by ethnic group in 2002



VII. Appendix A. Construction of variables

Public employment

The public employment variable is constructed from the IPUMS sector of employment variable for Kenya, and industry variables for Tanzania and Uganda, as per the table below.

	Kenya	**Tanzania**	**Uganda**
IPUMS VARIABLE	**KE2009A_EMPSECT**	**TZ2002A_IND**	**UG2002A_IND**
Pubemp (Y = 1)	Central government Local authorities Teachers service commission State-owned enterprise	Public administration and education	Public service Education Health
Not in pubemp (Y = 0)	All other sectors of employment	All other industries of employment	All other industries of employment
Other inclusion criteria	Kenyan born, 25-55	Tanzanian citizens, 25-55	Ugandan born, 25-55

Education

Educational attainment is classified somewhat differently in the three countries. The following categories were created, drawing from the national classifications as described in the table below. Of importance for this study is the classification of all college diploma or certificate holders (primarily teachers) as tertiary educated. As this group is particularly prominent in the public service, the results are sensitive to whether they are included in the secondary or tertiary category. Furthermore, to differentiate those with some further post-secondary education, even those who never completed university are categorized under tertiary. In all three cases however, all respondents classified as tertiary educated report at least 14 years of schooling (the highest years of schooling category available).

	Kenya	**Tanzania**	**Uganda**
IPUMS VARIABLE	**educke**	**edattand**	**educug**
No education	None	No schooling	None Primary 1 not completed
Some primary	Standard 1-6	Some primary Primary (if yrschl = 1-6)	Standard 1-6
Primary	Standard 7-8 and Form 1-3	Primary(if yrschl = 7-8) Lower secondary	Primary 7, technical grade 1-3, Secondary grade 1-3
Secondary	Form 4-6	Secondary general track	Secondary grade 4-6, vocational incomplete
Tertiary	College University, undergrad University, Masters or PhD	Some college complete University complete	Vocational certificate Vocational diploma University, no degree Incomplete university Completed university

Harmonization of the Administrative Divisions of Kenya

Prior to the 2013 constitution, Kenya was divided into 8 provinces, which were further subdivided into districts. Under President Moi and President Kibaki the number of districts in Kenya proliferated, and as a result the censuses contain an increasing number of districts (69 in 1999, 158 in 2009).

However, a High Court ruling in 2009 deemed 210 of the then existing 256 districts illegal, and reverted the administrative structure back to the 46 districts and Nairobi as set out in the Districts and Provinces Act of 1992. When the 2010 Constitution came into effect in 2013, these districts were converted into 47 counties, which form the basis for the devolution envisaged under the new constitution.

Thankfully, districts in each census map cleanly onto the present-day counties, and thus where necessary, the census divisions have been recoded to match the current county divisions.

However, where I use indicators constructed from within the dataset itself (e.g., public servant to population share), the 2009 district divisions are used in order to maximize the number of units of analysis.

Kenya geographic variables:

Distance to capital city (county basis) (km)	Distance from Nairobi to the county capital (47 counties) (from http://distancecalculator.globefeed.com)
Population density (people per km2) (log)	District basis (158 districts)
Ave years of schooling, cohort born in 1930s	District basis (158 districts)
% employment in formal sector	District basis (158 districts)

Constructing Kenyan ethnic dummies

Ethnicity and place of birth are strongly correlated, as the original district divisions were shaped by the location of ethnic homelands. Tobin (2015),[63] using 1989 census data, estimates that the mean share of the main tribe at district level is 73%, rising to 80% at division level and 89% at sublocation level.

The 2009 census collected data on ethnic identity, with respondents self-reporting their ethnic identity. While ethnic data was not released as part of the microdata sample, the socio-economic atlas of Kenya, reproduced by Burbidge (2015), reports ethnic shares by county drawing from the 2009 census.

Respondents are coded as belonging to the dominant ethnic group in their county of birth, where the ethnic group share in that county exceeds 50%. All respondents in counties where no ethnic group exceeds 50% of the population are coded as 'mixed', or excluded from the analysis. These respondents are primarily born in Nairobi or Mombasa and are therefore a somewhat anomalous group. Only the ten largest ethnicities are included and all smaller groups are classified as 'Other'.

County of birth and ethnic classification (based on Burbidge, 2015)

County	**Largest ethnic group**	**Share of largest ethnic group in county population**	**People born in county, ethnic classification for regression analysis**
Baringo	Kalenjin	92%	Kalenjin
Bomet	Kalenjin	96%	Kalenjin
Bungoma	Luhya	83%	Luhya
Busia	Luhya	57%	Luhya

[63] Lara Tobin, 'Essais Sur L'urbanisation En Afrique Subsaharienne' (Paris School of Economics, 2015), p. 95.

Elgeyo Marakwet	Kalenjin	93%	Kalenjin
Embu	Embu	50%	Embu
Garissa	Somali	80%	Somali
Homa Bay	Luo	88%	Luo
Isiolo	Borana	37%	Mixed
Kajiado	Kalenjin	41%	Mixed
Kakamega	Luhya	94%	Luhya
Kericho	Kalenjin	88%	Kalenjin
Kiambu	Kikuyu	81%	Kikuyu
Kilifi	Mijikenda	86%	Mijikenda
Kirinyaga	Kikuyu	95%	Kikuyu
Kisii	Kisii	97%	Kisii
Kisumu	Luo	89%	Luo
Kitui	Kamba	97%	Kamba
Kwale	Mijikenda	83%	Mijikenda
Laikipia	Kikuyu	63%	Kikuyu
Lamu	Swahili	30%	Mixed
Machakos	Kamba	91%	Kamba
Makueni	Kamba	98%	Kamba
Mandera	Somali	100%	Somali
Marsabit	Gabra	28%	Mixed
Meru	Meru	92%	Meru
Migori	Luo	60%	Luo
Mombasa	Mijikenda	30%	Mixed
Murang'a	Kikuyu	91%	Kikuyu
Nairobi	Kikuyu	29%	Mixed
Nakuru	Kikuyu	52%	Kikuyu
Nandi	Kalenjin	77%	Kalenjin
Narok	Maasai	51%	Other
Nyamira	Kisii	97%	Kisii
Nyandarua	Kikuyu	96%	Kikuyu
Nyeri	Kikuyu	94%	Kikuyu
Samburu	Samburu	79%	Other
Siaya	Luo	95%	Luo
Taita Taveta	Taita	62%	Taita
Tana River	Pokomo	28%	Mixed
Tharaka Nithi	Meru	66%	Meru
Tranz Nzoia	Luhya	52%	Luhya
Turkana	Turkana	94%	Turkana
Uasin Gishu	Kalenjin	58%	Kalenjin
Vihiga	Luhya	92%	Luhya
Wajir	Somali	99%	Somali
West Pokot	Kalenjin	95%	Kalenjin

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