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Did colonization matter for growth?
An empirical exploration into the historical causes of Africa's underdevelopment

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Abstract

We investigate the impact of 20th-century European colonization on growth. We find that colonial heritage, as measured by the identity of the metropolitan ruler and by the degree of economic penetration, matters for the heterogeneity of growth performances in Africa. Colonial indicators are correlated with economic and sociopolitical variables that are commonly employed to explain growth and there are growth gains from decolonization. Colonial indicators also add significant explanatory power to worldwide growth regressions and are correlated with the Sub-Saharan Africa and the Latin America dummies. © 2002 Elsevier Science B.V. All rights reserved.

1. Introduction

The disastrous economic performance of Africa represents one of the most challenging puzzles of growth theory. The growth rate of per-capita income of African countries has been below world average throughout the last 50 years: over the 1960–1973 period the average growth rate of their per-capita GDP has been 2.0% while the world average was 3.0% and the OECD average 4.2%; over the 1981–1988 period the picture is even bleaker, with African countries displaying a negative average growth rate (-0.1) as compared to a 2.9% for OECD countries.

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There is a growing literature which has tried to document and understand the reasons behind this failure. Barro (1991) shows that a dummy for Sub-Saharan Africa exerts a significant and negative effect on the average growth of per-capita GDP for the 1960–1985 period.[1] Some progress towards a deeper understanding of Africa's specific problems has been made by Easterly and Levine (1997), who focus on ethnic diversity, by Schmidt-Hebbel (1996), who points to the role of fiscal policies, and by Sachs and Warner (1997), who emphasize the impact of geography. However, with the exception of Rodrik's (1998) analysis of trade policy, the literature has exclusively stressed how Africa as a whole differs from the rest of the world, thus obscuring important heterogeneities within Africa itself. Indeed, despite the overall dramatic picture, important differences emerge across African countries. For example, the average growth rate of Lesotho over the period 1960–1988 has been 6.1% while the average growth rate of Madagascar has been as low as −2.0%.

Our basic conjecture is that colonization may be the reason for both the low average growth rates of per-capita GDP in Africa and, at the same time, for the observed heterogeneities within the continent. Indeed, within the 23 countries in the lowest quintile of the cross country distribution of growth rates of per-capita GDP, sixteen belong to Africa and all of them were colonies while five of the 23 countries in the upper quintile are from the African continent, and three of them were colonies. Africa represents an appropriate setting to analyze the impact of colonial rule on growth because, historically, nowhere else was colonization so far-reaching and homogeneous in nature as in the African experience that began at the end of the 19th century.[2]

More generally, colonization might have affected growth also outside of Africa. However, there are important differences between the colonization experience of Africa and of other continents. For South and Central America, the process of colonization dates back to the 16th century and was essentially terminated at the beginning of the 20th century. Asian colonization showed much less uniformity than the African case, with the unique, early experience of India, the US as an influential newcomer, and the peculiarities of the Japanese colonization of Taiwan and Korea.[3] All these considerations led us to focus our attention primarily on Africa's experience and to limit our attempts to analyze the effect of colonialism on growth around the world.

Within the huge, historically oriented literature on the topic,[4] the prevailing wisdom is probably that colonization was bad for colonial economies. According to the "drain of wealth" thesis, most of the colonial surplus was extracted by the metropolitan countries (in the form of interest payments on loans, repatriated profits, salaries and

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[1] A number of studies extend and confirm Barro's analysis. See Romer (1990), Chhibber and Fischer (1991), Barro and Lee (1994a), Husain and Faruqee (1994) and Elbadawi and Ndulu (1996). See Collier and Gunning (1999a, b) for a recent survey and a critical evaluation of this literature.

[2] See Oliver and Fage (1962), Fieldhouse (1986) and Boahen (1990) for a history of Africa. See also Landes (1998) on the growth performance of the continent.

[3] The development gap between Japan and its colonies was relatively small; also, geographical proximity brought to centerstage strategic and military considerations that shaped Japanese colonial policy towards a more developmental direction; finally, Japanese migration to Taiwan and Korea was substantial.

[4] Classic references are Gallagher and Robinson (1953), Carocci (1979), Davis and Huttenback (1988) and Bairoch (1993).

pensions) and this, by reducing the indigenous capital accumulation process, had a negative effect on the colonies' growth prospects. Direct exploitation also included taxes, tariffs, restrictions on trade and foreign investment, forced labor, and even enslavement of the indigenous population. These distortions furtherly hampered the colonies' growth potential. The impact of the latter two practices, combined with distorting educational policies, may also have created disincentives to human capital accumulation, therefore affecting growth also through this indirect channel. Finally, colonial domination may be responsible for generating societies with dysfunctional institutions, rent-seeking elites and ethic conflict,[5] features which characterize much of Africa's recent history.

An alternative point of view emphasizes the positive development impulses that came from the metropolises. According the "modernization" thesis, colonial rule was legitimized by the fact that it promoted the integration of the colonies into the world economic system, channelled foreign capital and fostered a modernization process in the colonies. Hence, supporters of this hypothesis stress that colonialism was beneficial for growth.

Despite the existence of a large literature studying the reasons for Africa's poor performance, the issue of colonization has received little attention within the economic profession. Exceptions are represented by Lucas (1990) and Grossman and Iyigun (1995), who develop static models of a colonial economy in which the size of foreign intervention is endogenously and optimally determined from the vantage point of the metropolitan country. Bertocchi (1994) develops a dynamic growth model for a colonial economy. La Porta et al. (1999) perform an empirical analysis of legal systems that emphasize colonial heritage. Alam (1994) compares the growth rates of sovereign countries and colonies, but without the inclusion of Africa, while Grier (1999) studies the relationship between the length of colonial rule and growth. Acemoglu et al. (2001) exploit differences in colonial experience to evaluate the impact of institutions on income per capita.

The task of this paper is to empirically identify the channels through which colonialism may have exerted an impact on growth. We are not concerned with directly testing the validity of theories, since data problems make the task formidable. Instead, we are interested in shedding light on four issues: (i) whether colonization exerted an effect on the growth pattern of African countries; (ii) whether colonization in Africa is partially responsible for the heterogeneities in capital and human accumulation rates and in sociopolitical variables typically thought to explain growth; (iii) whether there are economic gains from political independence in Africa; and (iv) whether the pattern between colonization, growth, accumulation of factors and distortions present in colonial Africa also holds for colonies in the rest of the world.

We begin our investigation in Section 2 by presenting the data and the criteria used to classify countries. We distinguish them according to four criteria: their political

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[5] When colonial domination ended, Africa found herself divided into a number of centralized states whose borders, having being defined by the European powers, had nothing to do with the frontiers that delimited the tribal territories of pre-colonial times. See Davidson (1992) on the effects of colonial rule on institutions in Africa.

status during the colonial period; their metropolitan ruler when they were colonies; the degree of economic penetration they were exposed to, and the kind of institutions they inherited. In Section 3, we analyze the direct and indirect explanatory power of colonial heritage for growth in Africa. We find that, in a bivariate setup, the index for metropolitan ruler and the degree of economic penetration are able to explain differences in the average growth rates of African countries in several samples, when added to a basic growth regression. We also find that the same two indicators explain differences in the investment–output ratio, school attainments rates and the index of ethnic fractionalization. These results are confirmed in a multivariate framework where the effect of other standard economic and sociopolitical variables are also considered. The index for metropolitan ruler and the degree of economic penetration are, once again, significant and add substantial explanatory power in cross-sectional growth regressions in most samples. In addition, these colonial indicators are correlated with measures of human capital accumulations and of political distortions. Hence, the colonization experience in Africa had a significant impact on growth, both directly and indirectly, by altering the accumulation process of factors of production and by producing ethnic distortions and political instabilities.

We show that for some of the countries in the sample there is evidence of a significant structural break in the growth pattern at independence, with post-independence growth rates exceeding pre-independence and forecasted post-independence growth rates. While this suggests that there may be gains from the elimination of the colonial drain, it appears that dependencies were the countries capable of taking maximum advantage of the new political order, while colonies kept paying the consequences of their history even after political independence was achieved. This suggests that the impact of colonization may survive past political independence.

In Section 4, we extend our analysis to colonies around the world. Because of the peculiar homogeneity of African colonial experience, we expected some of the channels through which colonization affected growth to be ineffective in this larger and more heterogenous sample. We still find that the index of metropolitan ruler and the degree of economic penetration are significant when added, one at a time, to a standard multivariate growth regression. Furthermore, the index of political status also becomes significant. However, our colonial indicators only weakly affect the explanatory power of several "core" regressors, suggesting that the indirect channels through which colonization affected growth may be weaker when considering colonies around the world. Nevertheless, we find that colonial indicators are correlated with and influence the size and significance of the Sub-Saharan Africa and the Latin America dummies.

We conclude in Section 5 with a summary of our findings.

2. History, geography, and the data

The assessment of the economic effects of colonization is intrinsically a long-term issue. Only a data set covering the whole "new" colonial era (roughly speaking, from 1880 to 1975) could tell us whether colonialism mattered for growth. Considering the

colonial experience as if it were uniform across continents is likely to cause mis-specifications and biases. Therefore, we concentrate our attention primarily on African countries, where the colonial experience was more homogeneous. Unfortunately, long-term data for Africa are not available. Mitchell (1982) is silent on GDP data for colonial Africa. Maddison (1995) provides estimates of GDP and population for a number of countries back to the past century, but for Africa he reports only data for three countries—Egypt, Ghana and South Africa—in the years 1913 and 1950. Using this information we find that the annual average real GDP growth in these three countries was 1%, slightly below the average rate of Europe (1.2%) and slightly above the one of the UK (0.8%), their metropolitan ruler.

Lacking appropriate data for the analysis, we measure the impact of colonial inheritance using indicators constructed from the mostly "ex-post" Summers and Heston (SH) (1991) data. The quality of the SH data is poor and somewhat dubious, since for some of African countries national accounts were not available until the early 1970s and, in some cases, missing data were reconstructed by interpolation, taking countries at similar stages of development as benchmark. Our basic sample covers the 1960–1988 period, since data from the beginning of the 1950s is available only for nine countries.[6] We also considered four subsamples (independence-1988; 1960–1973; 1974–1980; 1981–1988) in order to check whether the relationship between colonialism and growth changed with the sample. In particular, we are interested in evaluating how quickly the effects of colonization died out, whether there are samples where colonial heritage mattered more, and whether political independence was immediately translated into a structural economic changes.

Table 1 presents summary information about the history of the 46 African countries included in the panel. For each country, we report the political status and, for each colony, the metropolitan country and the year of independence. The political status classification distinguishes between colonies, dependencies and independent countries. Ethiopia and Liberia are the only two countries that we classify as independent.[7] Among dependencies, we include six countries that were not subject to explicit colonial rule, but still had close political and/or economic ties with a metropolitan country (in all cases, the UK). This group includes South Africa, which was a British dominion,[8] the South African enclaves of Lesotho and Swaziland, as well as neighboring Botswana, because their economies had very tight connections with that of South Africa. Zimbabwe is in the same category, since after 1923 it was subject to the same political rules as South Africa. Finally, Egypt is viewed as a dependency even if it became politically independent in 1922, both because of its long colonial history and

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[6] These are Egypt, Ethiopia, Kenya, Nigeria, Morocco, Mauritania, South Africa, Uganda and Zaire.

[7] Ethiopia was conquered by Italy in 1935–1936 and liberated in 1941 but until 1988 it still included Eritrea, which was an Italian colony from 1890 to 1950. Liberia was initially colonized by former slaves sent over by North American philantrophists, but became a sovereign country in 1847.

[8] The political condition of dominion, which essentially meant self-governance, was obtained by those British colonies which had attracted a large flow of white migration from the mother country. South Africa was one of them (from 1919 to 1961), together with Canada, Australia and New Zealand.

Table 1
Status of the African countries in the sample

Country	Political status	Metropolitan country	Independence
Algeria	C	France	1962
Angola	C	Portugal	1975
Benin	C	France	1960
Botswana	D	UK	1966
Burkina Faso	C	France	1960
Burundi	C	Belgium	1962
Cameroon	C	France	1960
Cape Verde	C	Portugal	1975
Central African R.	C	France	1960
Chad	C	France	1960
Congo	C	France	1960
Egypt	D	UK	1922
Ethiopia	I		
Gabon	C	France	1960
Gambia	C	UK	1965
Ghana	C	UK	1957
Guinea	C	France	1958
Guinea-Bissau	C	Portugal	1975
Ivory Coast	C	France	1960
Kenya	C	UK	1963
Lesotho	D	UK	1966
Liberia	I		
Madagascar	C	France	1960
Malawi	C	UK	1964
Mali	C	France	1959
Mauritania	C	France	1960
Mauritius	C	UK	1968
Morocco	C	France	1956
Mozambique	C	Portugal	1975
Niger	C	France	1960
Nigeria	C	UK	1960
Rwanda	C	Belgium	1962
Senegal	C	France	1959
Seychelles	C	UK	1976
Sierra Leone	C	UK	1961
Somalia	C	Italy	1960
South Africa	D	UK	1961
Sudan	C	UK	1956
Swaziland	D	UK	1968
Tanzania	C	UK	1964
Togo	C	France	1960
Tunisia	C	France	1956
Uganda	C	UK	1962
Zaire	C	Belgium	1960
Zambia	C	UK	1964
Zimbabwe	D	UK	1965

Notes: C stands for colony, D for dependencies and I for independent.

of the heavy economic influence exerted by the UK even after political independence was obtained. [9] The remaining 38 countries are classified as colonies.

We assigned metropolitan countries selecting the colonial power that ruled longer. We divided the former German colonies—Burundi, Cameroon, Rwanda, Tanzania, and Togo—among the countries that took them over after WWI. [10] We also considered the former German colonies as a separate group but failed to find anything peculiar and common among them. Morocco was under the joint protectorate of France and Spain, but we have placed it under France, and Somalia appears under Italy, even if there were (smaller) British and French portions.

When trying to distinguish between colonial and post-colonial regimes one should be aware that political independence does not necessarily coincide with economic independence: the process of economic decolonization may predate the end of political control while features of colonial dependence may persist well past the end of colonial times. Hence independence dates are only suggestive of a median year when economic changes may have occurred.

We use the information contained in Table 1 to construct two measures of colonial heritage: an indicator of political status (Polstat) and an indicator of the metropolitan power governing each colony (Metrul). In Polstat independent countries are given the value of zero, dependencies the value of one, and colonies the value of two. In Metrul, we assign a zero to colonies of the UK, a one to colonies of France and a two to colonies of other countries. [11] Reordering the three groups in the two indices does not change the results. Also, eliminating independent countries from the political status index and subdividing the third group of colonies among Belgium, Portugal and Italy (and/or Germany) does not alter the conclusions we report.

We also construct a third indicator of colonial heritage (Drain) by taking the GNP/GDP ratio in 1960. The discrepancy between GNP and GDP reflects repatriated profits on foreign investment, royalties and direct exploitation activities, and therefore aims at measuring the degree of penetration that the metropolis exerted, roughly, at the end of the colonial period. A value close to 1 indicates lower penetration and a less intense drain. We chose the ratio in 1960 because for many countries this is the first available year. The results we report are unaffected when we group countries into quartile classes of drain (to capture non-linear effects) and when we choose GNP/GDP ratios for dates between 1960 and independence.

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[9] The UK decision not to colonize South Africa and to grant Egypt independence early on was based not on economic, but military and strategic considerations, and linked to the fact that both countries had experienced large British immigration. This rules out potential problems of reverse causation between the political status of dependency and growth, which may distort the results of our analysis.

[10] Burundi and Rwanda appear under Belgium and Tanzania under the UK. Cameroon and Togo were subject to a joint French and British mandate. However, Togo is listed under France only, because currently the country consists of the French portion, while the British part was annexed to Ghana. Cameroon currently includes the portion which went under a French mandate and the Southern portion of the British mandate (the Northern part was annexed to Nigeria). We list it under France since it is currently part of the CFA-franc area.

[11] We have constructed variables this way because degrees of freedom restrictions prevented us from generating dummies with values of zero and one for all categories.

Finally, we use as an indicator of colonial heritage the index of political institutions (Instit) employed by Acemoglu et al. (2001). According to these authors, such index captures the risk of expropriation faced by individuals in the countries. Since this measure focuses on the differences in institutions originating from different types of states and state policies, it should be positively correlated with our measure of economic drain (low values of Instit and Drain indicating highly extractive states) and negatively correlated with our index of metropolitan power, if different countries had different policies for the enforcement of direct investments and for protecting trade.

3. Colonization and growth in Africa

3.1. Bivariate analysis

The basic results of our investigation are presented in Tables 2 and 3. In Panel A of Table 2 we report, for each sample, the regression coefficient, the corresponding t-statistic of the selected colonial indicator and the corrected R^2 of a cross-sectional regression of the average growth rate of income on a constant, the initial level of income in the sample, its square, [12] and the colonial indicator. The first column reports the corrected R^2 for an analogous regression excluding the colonial indicators (Basic). The other columns report results obtained by adding, one by one, the four colonial indicators. [13]

In panel B of Table 2, we report the regression coefficient, the t-statistic of the selected colonial indicator and the corrected R^2 of a cross-sectional regression of a number of economic and sociopolitical variables on a constant and the colonial indicator. The variables we consider are the standard ones used to explain the heterogeneities of average growth rates across countries and include the investment–output ratio (I/Y), the percentage of working age population in secondary school (School), the index of political instability (Polinst), the index of ethnic fractionalization (Fract), the price of investment in deviation from the world mean (Pidev) – all measured in 1960 – and the index of political rights (Pright) – which is measured over the period 60–64. All variables are from Barro and Lee (1994b), with the exception of the schooling measure which is from Mankiw et al. (1992), and the ethnic instability index, which is from Mauro (1995). [14]

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[12] The square of the initial condition is used to account for non-linearities in the relationship and to capture a polarization phenomenon which clearly appears in African data (see also Easterly and Levine, 1997).

[13] We have experimented with GDP per-capita, GDP per-worker and GDP per-equivalent-adult as our basic measure of income on the presumption that, for African countries, this choice could be important as population growth has been accelerating over the last decades and the decision problem of females in African families is very different from that of Western females. It turned out that this was not the case, probably because of the large component of measurement error in all three series. Consequently, we present only results obtained using GDP per-capita.

[14] Results obtained substituting measures of coups, assassinations and revolutions to the index of political instability and other measures of human capital to the school attainment rates are very similar and not reported.

Table 2
Growth, sociopolitical variables and colonial indicators

Sample	Basic $\bar{R}^2$	Polstat		Metrul		Drain		Instit	
		Coeff.	$\bar{R}^2$	Coeff.	$\bar{R}^2$	Coeff.	$\bar{R}^2$	Coeff.	$\bar{R}^2$
(A) *Average growth of GDP per-capita*									
Full	0.05	0.36	0.04	−0.56	0.13	0.04	0.03	0.08	0.04
		(0.64)		(−2.16)(*)		(0.63)		(0.60)	
Indep	−0.02	0.48	−0.04	−0.79	0.04	0.10	−0.03	0.17	−0.02
		(0.56)		(−2.02)(*)		(0.98)		(0.96)	
60–73	−0.01	0.81	−0.01	−0.56	0.01	−0.14	0.00	−0.07	−0.05
		(1.17)		(−1.73)		(−1.55)		(−0.48)	
74–80	0.01	1.59	−0.02	−0.52	0.04	0.38	0.05	0.17	−0.05
		(1.19)		(−0.78)		(2.13)(*)		(0.52)	
81–88	0.15	−0.97	0.28	−0.60	0.28	0.34	0.36	0.55	0.43
		(−0.91)		(−1.13)		(2.44)(*)		(2.69)(*)	
(B) *Sociopolitical variables*									
I/Y		2.70	0.01	−2.91	0.14	−0.47	0.05	0.75	0.03
		(1.33)		(−2.84)(*)		(−1.80)(*)		(1.61)	
School		0.61	0.01	−0.61	0.11	−0.05	0.00	0.01	−0.02
		(1.29)		(−2.50)(*)		(−0.82)		(0.16)	
Pright		0.02	−0.02	0.12	−0.02	0.06	0.02	0.04	−0.03
		(0.05)		(0.43)		(1.32)		(0.45)	
Polinst		−0.03	0.14	0.01	−0.02	−0.004	0.01	−0.001	−0.08
		(1.73)(*)		(0.81)		(−1.07)		(−0.20)	
Fract		−3.83	−0.01	−3.79	0.00	−2.12	0.06	−0.78	−0.02
		(−0.49)		(−0.97)		(−1.96)(*)		(−0.44)	
Fert		−0.02	−0.02	−0.04	−0.02	0.002	−0.02	0.02	−0.02
		(−0.11)		(−0.41)		(0.08)		(0.44)	
Pdev		−0.15	−0.00	0.11	0.00	−0.009	−0.02	−0.10	0.09
		(−0.79)		(1.19)		(−0.36)		(−2.29)(*)	
G/Y		−0.01	−0.02	−0.008	−0.01	−0.0007	−0.02	−0.0009	−0.03
		(−0.47)		(−0.59)		(−0.20)		(−0.16)	

Notes: *Basic* refers to a model where average growth rates are regressed on a constant, the initial conditions in the sample and the square of the initial conditions. *Polstat* is an index capturing whether a country was independent, a colony or a dominion; *Metrul* is an index capturing whether the colony was ruled by France, the UK or other countries; *Drain* is the GNP/GDP ratio in 1960 and *Instit* is the index of expropriation. *I/Y* is the investment–output ratio in 1960; *School* is the percentage of the working population in secondary school in 1960; *Polinst* is an index of political instability in 1960; *Pright* is an index of political rights over the period 1960–1964; *Fract* is an index of ethnic fractionalization in 1960; *Fert* is the fertility rate in 1960; *G/Y* is the government expenditure–output ratio in 1960 and *Pdev* is the price of investment in 1960 in deviations from the sample mean. In parenthesis *t*-statistics. (*) indicates significance at, at least, 10% level.

Four major conclusions can be drawn from Table 2. First, although the relationship between colonial indicators and growth is unstable, two of the indicators of colonial heritage, Metrul and Drain, are relevant in explaining differences in the average growth rates of African countries: the corrected R^2 increases substantially relative to the basic model in the full and post-independence samples when Metrul is added and in the 1974–1980 and 1981–1988 samples when Drain is added.

A large body of historically oriented, descriptive literature has claimed that colonial policies of metropolitan powers differed considerably in many dimensions: the degree of economic penetration, the intensity of the exploitation of natural resources and indigenous labor, local educational policies, and the kind of political institutions established in the colonies. In particular, Portuguese and Belgian dominations are believed to have been particularly detrimental because of the extreme forms of exploitation employed; while the "indirect ruling" of British dominations is thought to have favored the creation of a stronger local ruling class with beneficial consequences for post-independence political stability, and France contributed more than any other colonizer to the development of infrastructure. However, previous work [15] has been unable to detect any differential pattern in economic performance along the metropolitan dimension. Our results are therefore important because they confirm that alternative colonial policies may have had an impact on GDP growth rates once the initial conditions are taken into account. For example, British colonies grew at 1.1% over the full sample, about 0.2% more than French colonies and about 0.5% more than the remaining colonies. Hence having the UK or France as the colonizer did make a difference for growth.

There is some evidence supporting the conjecture that the lower the degree of economic penetration was in 1960, the higher was the growth rate of GDP over the later part of the sample. Point estimates of the coefficients on Drain in the 1974–1980 and 1981–1988 subsamples indicate that increasing by 1% the GNP/GDP ratio increases the growth rate of GDP per-capita by 0.3%. In general, colonies with low or no penetration (GNP/GDP ratio above 0.99) had an average growth rate which was up to four times larger than the average growth rate of countries with higher level of penetration (GNP/GDP ratio below 0.94) for the 1960–1988 period. Interestingly, over the 1981–1988 period low-drain countries grew at the rate of about 0.3%, which is only slightly smaller than the growth rate of OECD countries.

Second, the index of political status (Polstat) has no explanatory power for growth in Africa in any of the samples, while the index of political institutions (Instit) adds significant explanatory power only in the 1981–1988 sample. Despite the fact that the Polstat index is insignificant, one should note that the average growth rate of dependencies is about three times larger than the one of former colonies or independent countries in both the full and the post-independence samples. These differences are economically significant, especially for some of the very poor former colonies. For example, the 3% average growth rate obtained by dependencies implies that the average per capita income in 1988 was 3.5 times larger than the one of 1960. On the other hand, the average growth rate of 1% per year obtained by colonies implies an average per capita income in 1988 only 1.6 times larger than the one of 1960. At first glance, our results appear to be in contrast with the findings in Acemoglu et al. (2001), who show that institutions matter for economic performance. However, their results are at least in part driven by the inclusion of the "white colonies" (US, Canada, Australia, etc.), which do not really fit the characterization of colonies we have explored here. In fact, the correlation between the Drain and the Metrul series with the Instit index

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[15] See von der Mehden (1969) and Barro (1996).

is low for African countries (0.13 and −0.28, respectively) suggesting that this index does not capture the peculiarities of colonial experience in Africa.

Third, the results obtained in the full sample and in the post-independence sample are similar, suggesting that if colonial rule had a direct impact on growth, it may have not immediately vanished with the gain of political independence. We will return on this issue in the next section were we explicitly try to measure growth gains from political independence.

Finally, Metrul and Drain appear to be significant in explaining differences in the level of some important economic and sociopolitical variables in Africa (see Panel B). In particular, the investment–output ratio and school attainment are significantly related to our index of metropolitan ruler, while the investment–output ratio and the index of ethnic fractionalization and our Drain measure are significantly negatively correlated. In general, British and French colonies display higher levels of the investment–output ratio (13.7 and 14.1) and human capital (2.1 and 2.4, respectively) than other colonies. Also, countries with low penetration (GNP/GDP ratio above 0.99) have investment–output ratios which are twice as large as those with high penetration (GNP/GDP ratio below 0.94) while their index of ethnic fractionalization is 30% lower. This evidence is consistent with data provided by Svedberg (1981) on enforcement ratios for foreign direct investments and for trade in Africa in 1938, the year that marks the peak of the colonial epoch:[16] enforcement ratios, which reflect the degree of monopolization by the metropolis, were lowest for the UK (2.1 and 2.2, respectively) followed by France (4.2 and 2.7), with Portugal performing at the bottom (with 9.6 and 29.8).

3.2. Multivariate analysis

Our results support the conjecture that colonial rule may be the third factor behind the relationship between average growth rates of income and some crucial economic and sociopolitical variables in Africa. However, the evidence so far provided is based on a bivariate analysis. Therefore, we next turn to examine whether colonial indicators are important in a more conventional multivariate framework. In particular, we look for two types of effects. First, we would like to know whether selected indicators of colonial heritage are important to explain the cross sectional differences in growth performance in Africa, once standard economic and sociopolitical indicators are accounted for. Second, we would like to know whether the inclusion of colonial variables reduces the significance of some of the variables found to be important for growth.[17] As mentioned, colonization may have affected human capital accumulation and be responsible for the currently low level of literacy rates because of forced labor practices and distorting educational policies, while the high degree of political instability and of ethnic conflicts can also be viewed as a legacy of colonization. Hence the presence of these

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[16] Enforcement ratios report the metropolitan country shares of foreign direct investment and trade in African colonies relative to the metropolitan country shares in the continent and take into account the fact that larger economies tends to have larger shares of overall foreign investment and international trade.

[17] Levine and Renelt (1992) have shown that most of the variables associated with growth have a tenuous explanatory power, indicating that they proxy for a variety of effects not captured in the empirical specification.

two effects would provide a stronger support for the hypothesis that colonialism matters for income growth both directly and indirectly.

The regressions we run for each sample are of the form

$$\bar{y}_i = \beta x_i + \gamma z_i + u_i, \tag{1}$$

where $\bar{y}_i$ is the average growth rate of GDP per-capita of country i in the sample, x_i is a set of "core" variables and z_i are variables capturing colonial heritage. In Table 3 we report, for each subsample, the regression coefficients, the t-statistics and the corrected R^2 obtained in two types of specifications: one which includes only core variables and one where the Metrul index and the Drain index are added one at a time. [18] We experimented with many combinations of the core variables, leading to a total of more than one hundred regressions. We selected the combination of economic and sociopolitical variables which has the best explanatory power for the average growth of GDP per-capita in Africa for the entire period. Such a combination includes a constant, the log of GDP per-capita at the beginning of the sample ($\log Y_0$), the squared log GDP per-capita at the beginning of the sample ($\log Y_0^2$), a dummy for oil producing countries (Oil), the index of political rights (Pright), the investment–output ratio (I/Y), the percentage of working age population in secondary school (School) and the index of ethnic fractionalization (Fract). [19] Note that since we use explanatory variables dated in 1960 or calculated as averages over the 1960–1964 period, endogeneity problems are likely to be minor. In fact, in regressions where the average growth rate of GDP per-capita is calculated from 1965 to 1988 (as opposed to 1960) no qualitative changes emerged.

There are several interesting conclusions to be drawn from Table 3. [20] First, our indicators of colonial heritage are significant and add substantial explanatory power in cross-sectional growth regressions in four of the five samples. In particular, the index of metropolitan rulers is significant in the post-independence sample and in the 1981–1988 sample, while the Drain measure is significant in the 1974–1980 and the 1981–1988 samples. Since the coefficient on Metrul is negative and the one on Drain is positive, other things equal, African countries which had either a very high GNP/GDP ratio (i.e., low drain) or were colonies of the UK or France did comparatively better in the continent.

Second, our proxies for colonial heritage are correlated with some core regressors. The coefficient on human capital accumulation drops in all but one samples and becomes insignificant in the full and post-independence samples when Metrul is included. The coefficient on the index of ethnic fractionalization becomes smaller and loses significance when Drain is included. A similar pattern also appears for the investment–output ratio coefficient even though in no case does the coefficient become insignificant.

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[18] Polstat and Instit turn out to be insignificant in the regressions in all samples. Therefore, we omit these results from the table.

[19] We do not directly consider the index of political instability here because it is highly collinear with included variables. Regressions substituting the index of political rights with the proxy for market distortions (Pidev) gave substantially similar results, which we do not report.

[20] For reasons of space we omit from Table 3 the coefficients on the first four core variables, as they are invariant to the addition of colonial indicators.

Table 3
Multivariate growth regressions

Sample	I/Y	School	Fract	Metrul	Drain	$\bar{R}^2$
Full	0.10	0.36	−0.01			0.35
	(2.76)(*)	(2.03)(*)	(−1.82)(*)			
	0.09	0.29	−0.02	−0.32		0.35
	(2.18)(*)	(1.55)	(−2.02)(*)	(−1.02)		
	0.11	0.35	−0.01		0.06	0.31
	(2.65)(*)	(1.94)(*)	(−1.37)		(0.73)	
Indep	0.18	0.49	−0.02			0.36
	(3.49)(*)	(2.13)(*)	(−1.77)(*)			
	0.15	0.35	−0.03	−0.67		0.39
	(2.76)(*)	(1.51)	(−2.20)(*)	(−1.81)(*)		
	0.16	0.47	−0.01		0.08	0.30
	(3.11)(*)	(2.18)(*)	(−1.20)		(0.84)	
60–73	0.11	0.29	0.00			0.12
	(2.35)(*)	(1.36)	(0.33)			
	0.11	0.31	0.00	0.07		0.09
	(2.22)(*)	(1.32)	(0.36)	(0.18)		
	0.11	0.32	−0.00		−0.09	0.14
	(2.31)(*)	(1.46)	(−0.11)		(−0.92)	
74–80	0.05	0.38	−0.06			0.10
	(0.56)	(0.83)	(−2.65)(*)			
	0.03	0.26	−0.07	−0.49		0.09
	(0.28)	(0.53)	(−2.70)(*)	(−0.65)		
	0.02	0.15	−0.04		0.44	0.21
	(0.28)	(0.36)	(−1.81)(*)		(2.48)(*)	
81–88	0.08	0.63	−0.02			0.38
	(1.04)	(1.64)	(−1.23)			
	0.02	0.35	−0.03	−1.32		0.45
	(0.25)	(0.92)	(−1.76)	(−2.22)(*)		
	0.11	0.58	−0.01		0.28	0.41
	(1.28)	(1.54)	(−0.61)		(1.80)(*)	

Notes: All regressions are also run with a constant, the level of income and the squared level of income at the beginning of the sample and an index of political rights (*Pright*), not reported here since they are essentially unaffected by the use of colonial indicators as regressors. *I/Y* is the investment–output ratio; *School* is the percentage of working age population in secondary school; *Fract* is an index of Ethnic fractionalization; *Metrul* is an index capturing whether the colony was ruled by France, the UK or other countries and *Drain* is the GNP/GDP ratio in 1960. In parenthesis *t*-statistics. (*) indicates significance at, at least, 10% level.

Third, confirming the results of Table 2, there are no differences in the significance of core variables in the full and in the post-independence sample. The relationship between growth in GDP per-capita and the core variables is highly unstable over time. For example, the investment–output ratio is significant in the 1960–1973 sample which more closely captures the last phase of the colonial era and the associated

economic and political turmoil; the index of ethnic fractionalization is significant in the 1974–1980 sample, while in the 1981–1988 sample neither the investment–output ratio, the schooling measure nor the index of ethnic fractionalization are significant. This instability denies the existence of a single "cause" for Africa's poor growth performance over the last thirty years and suggests that different variables matter for different stages of development. In the initial stage investment in physical capital appears to be the most important factor, while later on human capital accumulation and colonial heritage, in the form of institutions and political rights, appear to become crucial for growth.

These three conclusions taken together are consistent with the idea that colonial heritage may indeed have been an exogenous third factor causing cross-sectional co-movements of growth rates and of variables typically used to explain them, and that, in general, colonial influence persisted in its effect on institutions way after African countries reached political independence.

3.3. Measuring the gains from political independence

The process of economic decolonization in many British colonies began as early as in the aftermath of WWI and was almost completed by the end of WWII. By 1960, 22 of the 38 colonies of our sample were politically independent. With the collapse of the Portuguese empire in the mid-1970s the process reached its end. The economic consequences of decolonization are difficult to measure. First, political and economic independence rarely coincided: sometimes the process of economic decolonization started long before the end of political domination and in other cases the high degree of enforcement of direct investments and trade persisted long after political domination ended. Second, phenomena such as corruption, distorting government policies, political instability and ethnic conflict, which are important in explaining the heterogeneity of Africa's growth, can also be viewed as a legacy of the colonial era. Third, some historians claim that there was little economic rationality on the part of the colonizers behind the decision to liberate Africa. Most colonies were set free when they were economically more dynamic than in any period since 1920, hinting that the motive for decolonization was mainly political. Moreover, the relative violence of the liberation process, disrupting part of the existing physical capital stock, may have altered the natural growth developments of the post-colonial era.

Despite all these caveats, we attempt to measure the gains from decolonization by examining the growth pattern in the years before and after political independence. Since data on GDP per-capita for many countries start in 1960, we are forced to drop all countries which acquired independence before 1960 and since we require data for six years before independence in order to make comparisons meaningful, our panel includes only 18 countries, five of which were dependencies.[21]

To quantify the effects of decolonization we proceed in three steps. We begin by computing the average growth rates for six years before and after independence

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[21] These are Angola, Botswana, Capo Verde, Gambia, Guinea Bissau, Kenya, Lesotho, Malawi, Mauritius, Morocco, Mozambique, Nigeria, Swaziland, South Africa, Uganda, Zaire, Zambia, and Zimbabwe.

for each of the eighteen countries and test their equality. Second, we calculate the cross-sectional average growth rate over the same period and test the equality before and after independence. In both cases we assess differences using a χ^2 test of the form $X = (m_i - m_j)(var_i + var_j - 2\,cov_{i,j})^{-1}(m_i - m_j)$ where $m_i\,(m_j)$ is the mean growth rate before (after) independence, $var_i\,(var_j)$ is the variance of the growth rate before (after) independence, and $cov_{i,j}$ is their covariance. Finally, we assess the presence of a structural break in the mean growth pattern after independence using the cross-sectional information in the years before independence. The forecasting model has the form

$$y_0^i = \alpha_0^i + \sum_{t=1}^{4} \alpha_t y_{-t}^i + e_t^i, \quad i = 1, 2, \ldots, 18, \tag{2}$$

where $t = 0$ is independence time. We construct estimates of α_0^i and α_t and forecasts $\hat{y}_t^i$, $t = 0, 1, \ldots, 4$, using simple recursive prediction formulas based on the information at $t=0$. We allow the intercept to be country-specific, since forcing homogeneity creates heteroskedasticity in the residuals. With this set-up residuals appear to be close to a white noise process.

Table 4 presents those six countries for which statistically significant growth differences between the pre-independence and post-independence samples exist. Note that, in all cases, there is at least a 4% difference in the growth rate across subperiods. Moreover, four of the six countries were dependencies, suggesting that these were the countries immediately capable of taking advantage of the new political order. Over the cross section, the average growth rates for the twelve years surrounding independence display interesting features. First, in the three years before independence the average GDP growth was negative, indicating that conflicts for political independence may have temporarily hampered growth. Second, after independence, growth rates were positive and increasing, peaking at about 6% in the sixth year after independence. Third, there is a declining cross sectional variability of growth rates after independence, with a trough in the third year.

In terms of forecasting ability, it is clear that the model fails out-of-sample despite its satisfactory in-sample fit (adjusted R^2 is about 0.95): on average, the actual mean growth rate exceeded the forecasted one by 1–2% percentage points, uniformly over the four forecasting horizons. One should be aware that the model's forecasts reflect, in part, the negative growth reported in the three years before independence. However, the presence of a structural break in the growth pattern of these countries at independence is also evident when we compute recursive forecasts using information present in the first two years after independence. In this case, the discrepancy between actual and forecasted values decreases.

In conclusion, for one-third of the countries considered, there is evidence of a significant structural break in the growth pattern at independence. Post-independence growth rates exceed pre-independence and forecasted post-independence growth rates; there is an acceleration of the growth rate with a peak four–six years after independence and a relative decline of the cross sectional variability of the distribution of growth rates of GDP per-capita.

Table 4
Growth statistics before and after independence

Country	Growth rate before independence	Growth rate after independence	Test of equality significance
South Africa	0.23	4.46	0.00
Botswana	2.20	11.51	0.05
Capo Verde	−5.98	8.11	0.06
Zimbabwe	−1.41	3.16	0.09
Lesotho	8.61	2.36	0.10
Malawi	−0.27	4.99	0.10

Year to independence	Mean growth rate	Standard deviation growth rate
−6	1.89	7.78
−5	4.32	6.43
−4	0.86	5.94
−3	−0.14	5.69
−2	−2.42	10.41
−1	−0.43	8.05
Independence	1.11	8.39
1	1.28	13.64
2	2.82	8.82
3	2.69	3.55
4	3.66	6.34
5	1.03	8.13
6	6.24	9.85

Notes: The "Significance" column reports the significance level of a χ^2 test for a statistic of the form $X = (m_i - m_j)(var_i + var_j - 2\,cov_{ij})^{-1}(m_i - m_j)$, where m_i and m_j are the mean growth rate before and after independence, var_i and var_j their variance and $cov_{i,j}$ their covariance.

4. Colonization and growth around the world

The colonial experience of Africa is much more homogeneous than the one of other continents and historical differences may create biases in measuring the effects of colonial heritage on growth around the world. Bearing this in mind, in this section we would like to examine whether the relationship among colonization, growth, accumulation of factors of production and distortions we found for colonial Africa also holds for colonies in the rest of the world. In addition, we would like to know whether the inclusion of colonial indicators drive away the significance of the Sub-Saharan Africa and the Latin America dummies, which are typically used to single out these two growth experiences from the rest of the world.

Our sample includes 98 countries, thirty of which are from the African continent. For this sample we construct a new series of political status attributing a value of zero to independent countries, a value of one to dependencies and a value of two to colonies. We also construct a new Metrul series assigning a zero to colonies of the

Table 5
Correlation matrix, world variables

Variables	Prim	Sec	I/Y	G/Y	Rev	Assas	Pidev	Fert	Polstat	Metrul
Sec	0.09									
I/Y	0.25	0.34								
G/Y	−0.44	−0.41	−0.09							
Rev	−0.01	0.10	0.007	0.04						
Assas	0.10	0.30	−0.03	−0.14	0.37					
Pidev	−0.13	−0.03	−0.34	0.10	−0.18	−0.10				
Fert	−0.25	−0.81	0.00	0.19	−0.05	−0.04	−0.09			
Polstat	−0.56	−0.16	−0.35	−0.04	−0.02	0.13	−0.02	0.14		
Metrul	−0.22	0.33	0.28	−0.01	−0.30	0.19	0.12	−0.10	−0.14	
Drain	−0.19	0.14	−0.26	−0.17	0.20	0.13	−0.10	−0.02	0.08	−0.14

Notes: *Prim* and *Sec* represent primary and secondary education attainments, *G/Y* the government expenditures to output ratio, *I/Y* the investment–output ratio, *Rev* the number of revolutions and coups per year, *Assas* the number per million of population of political assassinations per year, *Pidev* the deviation of the price of investment from the sample mean, *Fert* the fertility rate. *Polstat* is a dummy capturing whether a country was independent, a colony or a dominion; *Metrul* is a dummy capturing whether the colony was ruled by France, the UK or other countries; *Drain* is the GNP/GDP ratio in 1960.

UK, a one to colonies of France and a two to colonies of other countries.[22] Finally, we construct a Drain series for the entire world by taking the GNP/GDP ratio in the 1960 for all countries. The results of multivariate regressions are presented in Table 6.[23]

To start with we first replicate a standard growth regression (from Barro, 1991, regression 29) using our data set, and then show the effects of including our proxies for colonial heritage in the regression. The additional variables—Primary (Prim) and Secondary (Sec) education, Revolutions (Rev) and Assassinations (Assas) are from Barro and Lee (1994b).[24] In the basic regression, and consistently with Barro's evidence, we find that convergence is slow (1.0% a year) and that the size of the government sector relative to GDP (*G/Y*) and the investment–output ratio are the only two significant core variables. Both the Latin America and the Sub-Saharan Africa dummies have a negative coefficient, even though the size of the coefficient on the Latin America dummy is smaller and less significant.

Adding colonial variables produces three important alterations. First, all colonial variables are significant in the regressions when added one at a time. Second, the

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[22] We have also experimented with a series where colonies of the UK had a value of zero, colonies of France had a value of one, colonies of Spain had a value of two and colonies of all other countries had a value of three, and a series where African colonies of the UK had a value of zero, African colonies of France had a value of one, the rest of African colonies had values of two and colonies of the rest of world had a value of three. We do not report results obtained because these two series are by construction very highly correlated with the Latin American and the Sub-Saharan Africa dummies.

[23] The Instit index was insignificant in all regressions. Therefore we omit from Table 6 the results obtained with this specification.

[24] The fertility rate is omitted from the regressions since it is highly correlated with the education variables (see Table 5).

adjusted R^2 of the regression increases when Polstat and Drain are included. Third, the significance of several coefficients in the basic regression changes: with the introduction of the political status series, the initial condition loses significance, while the coefficient on secondary education increases and becomes significant at the 10% level (see Variant 1). Our index of political status captures influences which are similar to those associated with the Sub-Saharan African dummy, since the size of this coefficient is halved and its significance reduced. The introduction of the Metrul series in the regression (Variant 2) makes several regression coefficients smaller, and some become insignificant (in particular, the initial conditions and the G/Y ratio). However, the most interesting phenomenon is that the Metrul series drives away the significance of the Latin America dummy and reduces the importance of the Sub-Saharan Africa dummy. Note that the Metrul series is correlated with many of the core variables (see Table 5) and does not add independent explanatory power to the regressions. Finally, the introduction of the Drain series (Variant 3) produces small changes in the size and significance of the coefficients of the core variables, except for the assassination variable whose coefficient is now significant. Interestingly, the inclusion of the Drain variable drives away the significance of the Latin America dummy but increases the significance of the Sub-Saharan Africa dummy. We have also run regressions omitting the Sub-Saharan Africa and the Latin America dummies from the latter three specifications and examined whether the adjusted R^2 of the regressions including colonial variables was affected. If colonial variables embed the same influences as these two dummies, the overall explanatory power of the regressions should not change. Results available on request show that while this is approximately true, there are variations in the two dummies which are not entirely captured by the colonial variables.

Several conclusions emerge from these results. First, since two of the three colonial variables add independent explanatory power to the growth regressions, we confirm that colonial past may be important for growth even from a worldwide perspective. Second, although colonial variables appear to be correlated with core regressors, the indirect effect of colonial past on growth is much weaker than the one found in Africa. This confirms that the peculiarities of Africa's colonization experience may be an important cause of its underdevelopment. Third, colonial variables are correlated with the Sub-Saharan Africa and the Latin America dummies, suggesting that colonial history may also be at the root of the differential growth behavior of Latin America.

5. Conclusion

This goal of this paper was to empirically highlight the channels through which colonial heritage might have affected growth. In particular, we found evidence that colonization did exert a direct effect on the growth pattern of African countries and that it also affected physical and human capital accumulation and the sociopolitical factors typically thought to explain growth. These conclusions are supported by the fact that, in a bivariate setup, two indicators of colonial heritage, the index for metropolitan ruler and the degree of economic penetration, are able to explain differences in the average growth rates of African countries in several samples, and by the fact that these two colonial indicators explain differences in crucial variables like the investment–output

Table 6
World growth regressions sample 1960–1988

Regressors	Basic	Variant 1	Variant 2	Variant 3
Constant	0.089	0.074	0.043	−0.065
	(3.97)(*)	(3.64)(*)	(1.43)	(−1.15)
$\log Y_0$	−0.009	−0.003	−0.002	−0.008
	(−3.52)(*)	(−0.88)	(−0.57)	(−2.85)(*)
Sec	0.0004	0.0005	−0.00008	0.0001
	(1.60)	(1.83)(*)	(−0.31)	(1.71)
Prim	−0.00003	0.00002	−0.0001	−0.00001
	(−0.42)	(0.22)	(−1.16)	(−0.02)
G/Y	−0.071	−0.065	−0.028	−0.059
	(−2.14)(*)	(−2.00)(*)	(−0.61)	(−2.39)(*)
Rev	−0.002	0.0004	−0.004	−0.001
	(−0.80)	(0.12)	(−0.36)	(−0.41)
Assas	0.001	0.002	0.008	−0.026
	(0.29)	(0.45)	(2.25)(*)	(−2.89)(*)
Pidev	−0.001	−0.0009	−0.003	−0.0003
	(−0.83)	(−0.49)	(−1.53)	(−0.22)
I/Y	0.086	0.090	0.052	0.081
	(3.72)(*)	(3.89)(*)	(2.04)(*)	(3.89)(*)
Africa	−0.017	−0.009	−0.016	−0.016
	(−3.64)(*)	(−2.24)(*)	(−2.81)(*)	(−4.16)(*)
Latin	−0.009	−0.014	−0.003	−0.006
	(−2.44)(*)	(−2.93)(*)	(−0.20)	(−1.56)
Polstat		−0.003		
		(−1.72)(*)		
Metrul			−0.005	
			(−2.54)(*)	
Drain				0.001
				(2.32)(*)
$\bar{R}^2$	0.46	0.47	0.45	0.56
Observations	77	77	61	71

Notes: $\log Y_0$ represents initial conditions, *Sec* and *Prim* secondary and primary education attainments, G/Y the government expenditures to output ratio, I/Y the investment–output ratio, *Rev* the number of revolutions and coups per year, *Assas* the number per million of population of political assassinations per year, *Pidev* the deviation of the price of investment from the sample mean. *Africa* is a dummy for Sub-Saharan Africa and *Latin* a dummy for Latin and South America, excluding Mexico. All these variables are from Barro (1991). *Polstat* is a dummy capturing whether a country was independent, a colony or a dominion; *Metrul* is a dummy capturing whether the colony was ruled by France, the UK or other countries; *Drain* is the GNP/GDP ratio in 1960. The Basic regression corresponds to regression 29 of Barro (1991) for our data set. In parenthesis *t*-statistics. (*) indicates significance at, at least, 10% level.

ratio, school attainment rates and the index of ethnic fractionalization. Our results are confirmed in a multivariate framework, where the index for metropolitan ruler and the degree of economic penetration are significant, add substantial explanatory power in cross-sectional growth regressions in most samples, and are correlated with measures of human capital accumulation and political distortions.

We also establish that, for a restricted number of countries, there is evidence of a significant structural break in the growth pattern at independence, with post-independence growth rates exceeding pre-independence and forecasted post-independence growth rates. While this suggests that there may be gains from the elimination of the colonial drain, it appears that dependencies were the countries capable of taking maximum advantage of the new political order, while colonies kept paying the consequences of their history even after political independence was achieved.

Finally, we extended our analysis to colonies around the world. For this new sample, we still find that the index of metropolitan ruler and the degree of economic penetration are significant when added, one at a time, to a standard growth regression. Furthermore, the index of political status also becomes significant. However, because of the differences in the colonial experiences around the world, some of the indirect channels which we show to be present in Africa appear to be ineffective in this larger sample. In particular, the introduction of colonial indicators only weakly affect the explanatory power of standard "core" regressors. However, they appear to correlated with and influence the size and significance of the Sub-Saharan African and of the Latin America dummies.

In sum, we interpret our results as indicating that the peculiarities of Africa's colonization experience may be an important cause of its underdevelopment, that the identity of the metropolitan ruler is relevant to explain the heterogeneity of growth experiences within Africa, and that colonial history may also be at the root of the differential growth behavior of Latin America. One alternative explanation, which emphasizes the endogeneity of colonization with respect to growth, could also be entertained. While potentially important to explain the earlier experience of Asia and South America, we believe it would only weakly contribute to an understanding of 20th-century colonization since, as stressed by historians, it was strategic and military considerations, more than economic conditions, that triggered the scramble of Africa.

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