



Effects of European Colonization on Former Colonies Growth Rate

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From the 1500s to the early 1900s European powers set about colonizing the world. Their goals ranged from expanding markets for trade, to procurement of natural resources, to national prestige amongst their European neighbors. Around the 1800s some of these colonies, especially in the Americas, won independence from their European rulers. This trend of light decolonization continued until the end of Second World War when the empire system fell apart, and there was mass decolonization in the middle of the twentieth century (Bertocchi, Canova, 2001).

Since their decolonization these new countries have had different economic performance. This brings up the question of how a country's colonial heritage affects their current economic growth, and specifically if the European nationality of the colonizing power has an impact on current growth of a country. There is debate in the Economic community over whether or not the nationality of a former colonizing power has an impact on the growth of a country after independence.

Grier (1999) found that the nationality of colonizing powers does have a direct and meaningful impact on the growth of countries once they become independent. Former British colonial possessions outperformed French and Spanish ones, and the length of colonization correlated positively with economic success. This paper investigates whether the lower growth experienced by former French and Spanish colonies persist with the advancement of time. In the two decades since 1990 when Grier (1999) data ends, Spain's colonies no longer experience lower growth than Britain while France's former colonies continue to perform poorly. This change in former Spanish colonies growth is attributed to heterogeneous impacts of Globalization.

I. Review of Literature

This section will examine the explanations in growth differences from the literature. The first is from Grier (1999) that the nationality of the colonizing country has an impact on growth. Grier (1999) examined 63 modern nation states that were former European colonies and found that former British colonies had higher average real GDP growth than both Spanish and French colonies from 1961-1990. She finds that longer periods of colonization are correlated with better growth, but cautions that the effect is not necessarily causal. Grier (1999) states that the reasons for the higher growth rates in former British colonies is because of the Britain's better policies in regards to education, trade, and general colonial governing compared to either the French or Spanish.

Education is an important factor in the growth of a country. Grier (1999) finds that former British colonies had a higher level of human capital at the time of independence than French ones. The largest difference between the two systems was language the French system taught in French, but the British system used the native language of the colony. "Overcrowding, poorly qualified teachers, and irrelevant programs characterize both systems, leaving only the language of instruction to explain the divergent attendance rates" (Corbett, 1972: 30). Grier (1999) does not discuss Spanish education, but Lange (2006) explains that the Spanish did not educate native

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in the colonies because of this the British colonies had much higher levels of human capital at the time of independence than the Spanish.

Trade is another important factor to economic growth is openness to trade. Again we see that there was a difference in European policy that could effect growth. Another way that Britain had better policies than their French and Spanish counter parts was the way they dealt with trade. Grier (1999) points out that the Spanish had the most protective Mercantilist system, allowing trade only between the Port of Seville for trade in Spain, and only the Port of Veracruz in Mexico. This monopolistic system greatly benefited the elites in Spain, but was certainly bad for growth in the colonies. The French had a slightly less restrictive mercantilists system than the Spanish; however they still required their colonies to import from France and only sell to France (Grier 1999). While this has important impacts for trade, as seen in Grier (1999) and Lange et al. (2006), it also means that their chief concern was acquiring more gold and silver (Ekelund, Hebert 2014). Because of this Engerman and Sokoloff (2002) point out,

“Indeed, the great value that Spanish policymakers placed on silver and gold meant that areas without mines, such as the colonies in the Caribbean and Argentina, were of secondary interest and were forced to deal with policies that had been framed to support the colonies with mines. This typically meant limitations on shipping and trade that held back development in these outlying areas.” (p 13)

The British on the other hand were far more open to free trade with a free trade doctrine since the 1830s and elimination of special tariffs for British goods in 1846 (Grier 1999). British colonies were exposed to about 100 years of free trade prior to decolonization. This policy could have two implications. First, it could grow the wealth of the colony while under British rule more than a similar French or Spanish colony. Secondly, the English colonies might be less likely to set up restrictive trade policies once they became independent countries. Grier (1999) concludes that it is because of these more flexible policies of the British that their former colonies did better overall then either the French or Spanish.

A final difference between the British, French and Spanish was the governing of their colonial empires. The French had a very strict centralized colonial office that set up policies for the whole colonial system. This assumed that policies would work the same for West Africa and Indochina. The Spanish also had a very centralized system, so that they could enforce their trade policy. The British System was more flexible than French system with six different classifications and styles of dealing with colonies. The six classifications were: settlement colonies, mandated territories, dependencies, Caribbean colonies, and India had its own special designation (Grier 1999).

Grier (1999) was not the only author to explore the effects of European colonization in Africa. Bertocchi and Canova (2002) investigate the effect of European nationality on former African colonies. They claim that countries belonging to either France or Great Britain perform better than other European rulers in Africa. They claim that this is because the human capital and physical capital stocks are higher. They also state that African colonization was different because there were more than just economic concerns affecting Europeans’ decisions to colonize.

One of the arguments against Grier’s (1999) theory that European nationality affects their former colonies growth comes from Acemoglu, Johnson, and Robinson (2002). They argue that the

institutions that were set up by Europeans during colonization have a far greater impact than any geographic factor or European nationality. Acemoglu (2002) categorizes these institutions as governmental factors like functioning legal system, governments, property rights, and “way that societies are organized.” They argue that places with higher proportions of European settlers had higher institutional transfers rate than those with a small European elite class. Acemoglu et al. (2002) finds that countries that were rich in the 1500s are poor today and countries that were poor in the 1500s are rich today. The reason for the reversal is that in rich, highly-populated areas there were already institutions and a labor force that could be controlled by the Europeans. If a region was sparsely settled, like North America or Australia, then the settlers had the ability to both settle in large numbers and create a system based off their home country’s legal system, and greatly changing the manner that the society was organized.

Acemoglu et al. (2002) assert that the greater the number of Europeans that settled in a region created more institutions, which in turn created more long run growth, explaining much of the variation of post-colonial growth. However, there are other factors that explain differences in some country’s growth that the Acemoglu model cannot. One counter example to Acemoglu et al.’s (2002) claim that colonizing nationality does not matter is Argentina. Due to Argentina’s low population density and low disease rate, it should have experienced high positive institutional transfer, but it did not. The reason it did not is because it was colonized by Spain, who valued cash crops and precious metals and, as Argentina did not possess these they received little Spanish intervention. Also due to Spain’s immigration policy for its own citizens, few of them immigrated to Argentina. This indicates that Spain’s governmental policies did in fact affect Argentina’s growth.

The importance of cash crops having an impact is explored in Engerman and Sokoloff (2002) focus on the colonial structures of the New World (North and South America), and how these structures are influenced by the climate. They believe that while institutions have an impact on future growth it is in fact the climate of the country that dictates its growth. The Caribbean and South America have favorable climates for growing cash crops like sugar, tobacco, and coffee. These crops dictated what sort of government was formed. These types of crops work well for large plantation type colonies that have a need for large amounts of labor. That is why many of Caribbean colonies had huge African slave populations, and many of the mainland South American colonies had the labor force made up of the native population. This system leads extractive institutions, which were designed to transfer wealth back to the home country, and is believed to be bad for growth. This system did not however lend itself to the northern colonies such as the ones in New England and Canada. Engerman and Sokoloff (2002) argue that because the climate was more suited to the growing of grains than it was to cash crops that economies of scale did not work, and so there were many small farms instead of a few massive plantations.

Another factor separating the regions was the population. In North America there were fewer natives already living there. The lack of natives, along with the fact that most of region’s climates did not justify large slave plantations, meant that there were a greater number of whites. This had an impact on the formation of political power because settlers in these northern colonies were basically all the same race and there was income parity. The parity caused a legal system that had much great equality than those in cash crop climates. Colonies that become independent

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with high racial and income differences are likely to keep these structures after independence, causing Engerman and Sokoloff (2002) to state that government styles are not exogenous.

While they do not cite European nationality as having an impact, they do note that the Spanish had a very restrictive immigration policy on who could come over from Spain. This was partly due to elites in New Spain wanting to keep political power concentrated and partly due to worries of depopulation in Spain (Engerman and Sokoloff 2002). The British had an open immigration policy making it easier for British subjects to move to colonies. The British even allowed for non-British Europeans to settle in UK colonies (Engerman and Sokoloff (2002).

This idea that European governmental policies have an effect is discussed at length in Lange et al. (2006). Lange et al. (2006) agrees with the underlying premise of Acemoglu et al (2001 and 2002) that it is the institutions that were set up during colonization that matter and that there has been a reversal of wealth, but differ with them in the belief that that European nationality does not have an important impact. He argues that liberal countries, such as Great Britain, preferred to settle in sparsely populated areas like North America, and Mercantilist, like Spain, preferred to settle in places that would give short term boosts to the home country. Lange et al. (2006) shows that British possession that received the greatest amount of colonization were sparsely populated regions, and that Spain had the heaviest colonization in densely populated regions.

Acemoglu et al (2001 and 2002) correctly state that the places with the highest growth were settler colonies set up in a Neo-Europe style with a high degree of institutional transfer. The Spanish had colonies like Argentina where they could have set up settler colonies, but did not. The British, on the other hand, did set up Neo-Europe style colonies meaning that positive institutional transfer is linked to European governmental policy.

Djankov et al (2003) also explain why we see differences in the growth of countries with similar institutional transfer, but different colonizing powers. Some of the variation can be explained in the legal system set up. While legal systems are one of the institutions that others cite as important, Djankov et al (2003) illustrates the differences between legal systems. They find that the greater the formalism of a court system, the more ineffective it will be, and will slow growth as the effectiveness of a court system and GDP growth are linked (Djankov 2003). Djankov et al (2003) finds that the French left an especially ineffective court system behind in their colonies. They also find that common law countries have a much lower formalism than civil law countries, and therefore are more effective. The common law legal system is unique to Britain and her former colonies, so this can help explain why we see differences in different colonies with similar institutions.

II. Theory

All of these papers point out the importance of institutions and government policies for long run growth. Authors have different ideas on the effect of different institutions and why they cause long run growth. Grier (1999) discusses the importance of education and trade differences. Both Acemoglu et al (2002) and Engerman and Sokoloff (2002) focus on the importance of property rights and how that encourages legal systems and investment, which in turn leads to higher long run growth. Djankov et al (2003) also points out how the legal setup court system can lead to growth. Finally Lange et al (2006) reinforces Grier's belief that openness to trade has a large

impact on the growth, and that more liberal colonizers like Great Britain prefer to set up colonies in sparsely populated areas.

A. Long run growth

To explain this idea that government policies have an effect on long run growth the neoclassical Endogenous Growth Model will be used.

$$y = Ak$$

y represents the output per worker, A is productivity level and k is capital per worker. Grier (1999) states that much of the growth variation can be explained by differences in education systems in English and French colonies. This makes sense in light of endogenous growth model because the higher education would cause a higher productivity or A . The theories of Lange et al. (2006) and Acemoglu et al. (2002) state that colonies that had more and stronger institutions will fare better in the long run because fair property laws encourage investment as investors have confidence that their investment will be protected by laws. This, in turn, should increase the capital stock of a country and increase K .

Conversely, factors that could inhibit long run growth would be the setting up of institutions that benefitted the elites and did not encourage investment. Also places where a small elite class of people held control over the population would slow productivity growth because these systems discourage educating the masses. Therefore, places where these negative structures were set up will have lower growth because there will be lower productivity workers with lower capital between them.

III. Empirical Model and Data

The data for the empirical model comes from the Penn World Tables 7.1 and historical data on colonization. Grier (1999) used the Penn World Table v.5 that encompasses the years 1961-1990. This paper will use the Penn World Table v.7.1 that encompasses the years 1961-2010. In Grier's paper 63 ex-colonial countries were examined, and all of the countries looked at were British, French, or Spanish colonies.¹ This model is designed to test the differences between European systems and not how colonized countries perform compared to non-colonized countries. One major change between the two data models besides the 20 year extension of data is how Penn World Tables are measured. Two of the most important changes in 7.1 relating to this analysis are how GDP is measured and how governments' share of GDP is calculated.

Three sets of regressions will be run. The first will look at the effects of colonial nationality using dummy variables for French and Spanish descent. Then a variable will be added to see the effects of the length of colonial rule. The final set will test to see the effects of colonization when only looking at African colonies.

¹ One of the states that was examined was the island of Reunion, which is still a region of the French Overseas Department and so is still a colony of France. Because of this it will be dropped as an observation. It is also worth noting that Hong Kong was included both in Grier's model and this one. Despite the fact that Hong Kong was technically a British settlement until 1997 they enjoyed a high degree of autonomy and the literature on the subject counts Hong Kong as its own country.

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(1) Average real GDP growth = $\beta_0 + \beta_1$ Initial RGDP per-capita + β_3 Population Growth + β_4 Inflation + β_5 Government consumption + β_6 French + β_7 Spanish + β_8 Length of colonial rule

Grier (1999) first calculates averages for each variable for a five year time period. The same will be done in this model. The extended year range will increase the total to ten periods. Grier does not explicitly explain why this is done, but it is likely to smooth for shocks, and allow for the creation of a standard deviation of inflation variable.

(1) *Initial Real GDP per capita*. This is GDP per capita in 1960. The theory behind this is because less developed countries will have higher growth rates than highly developed countries and according to the neo-classical model we will converge assuming that there are diminishing returns to investment.

(2) *Population Growth*. This variable represents how quickly a country has grown or shrunk over the time period. Grier and other scholars have predicted that population growth is proportional to income growth. Though it is not a perfect equivalent of labor force growth, this is accepted and good proxy for it (Grier 1999).

(3) *Standard Deviation of Inflation*. This is the standard deviation of inflation in each 5 year period. The standard deviation measures how stable a country's monetary policy is. If there is a large amount of change in the period due to say hyperinflation, then it will slow the growth of a country (Grier 1999)

(4) *Government Consumption*. This is one variable that will be different than Grier's (1999) model. Using Penn World Tables 5 she was able to separate government consumption from government transfers and government investment. Instead, this model will use the percent of a country's GDP that government spending accounts for.

(5) *Colonizing country*. These are dummy variables that represent which European power colonized the country. Great Britain is the omitted factor.

(6) *Time*. This variable represents the length of colonial rule, or the number of years between first colonization and independence. This measurement is inherently tricky due to the nature of colonization. While the date of independence is clear, the start of colonization is much harder to pin down. I used the dates provided in Lange et al. (2006) and Price et al. (2003), as they are not provided in Grier (1999). As Grier states there is not a consensus on what the effect of this should be. The time variables will act as a proxy of the ability for a European country to set up institutions.

IV. Econometric Results

Due to concerns of correlated shocks within a country over time, I estimate all models in the paper using feasible GLS, controlling for country-specific autocorrelation. The model includes period fixed effects, but those coefficients are not reported to save space.

Table 1: Effect of Colonizing Nationality on GDP Growth

	(1)	(2)	(3)	(4)	(5)
	Grier 1999 Results	Grier results rerun	PWT 7.1 1960-1990	PWT 7.1 1960-2010	Post 1990
	growth	growth	growth	growth	growth
Initial RGDP	-0.0015 (0.043)	0.00256 (0.07)	0.0347 (0.85)	-0.0342 (-1.94)	-0.0212 (-1.12)
Population growth	0.643*** (4.77)	0.618*** (4.59)	1.503*** (8.78)	1.131*** (8.35)	1.239*** (9.16)
Government	-0.05* (2.19)	-0.0491* (-2.12)	-0.0766** (-3.05)	-0.0604** (-3.09)	-0.0542** (-2.74)
SD of inflation	-0.0536*** (5.24)	-0.0499*** (-4.87)	-0.0357*** (-5.67)	-0.0394*** (-6.27)	-0.0383*** (-5.92)
Spanish	-.829*** (3.31)	-0.798** (-3.16)	-1.781*** (-6.05)	-1.007*** (-4.02)	-1.561*** (-5.14)
French	-1.62*** (4.43)	-1.585*** (-4.40)	-2.143*** (-5.42)	-2.116*** (-6.44)	-2.246*** (-5.82)
Spanish post 1990					1.394** (2.92)
French post 1990					0.332 (0.54)
_cons	4.01*** (8.35)	4.011*** (8.49)	4.351*** (8.32)	5.161*** (10.93)	5.213*** (10.92)
N		378	378 370	618	618

t statistics in parentheses

* p<0.05 ** p<0.01 *** p<0.001

[1] These are the results that Grier reported in her paper and are reported here for reference

[2] These are the results I that I was able to replicate using some data that Professor Grier sent to me. The purpose of this was to understand how exactly she ran her model.

[3] As the PWT changed how they have measured certain metrics these results are from the same regression used as column 2 and the same years as used in Grier's paper but are using PTW 7.1

[4] Column 4 is using the same regression as Column 2 and 3, and using PWT 7.1. This column expands the years that are investigated by 20. This gives 4 new periods observations. These extra 20 years are the primary focus of this paper, and give a better look at how post-colonial countries have fared.

[5] This column uses the same data and time period as column 4 but adds a dummy interaction. The dummy interaction reports how French and Spanish colonies have grown compared to British ones from 1990-2010.

Column one shows the results reported in Grier (1999). Column 2 shows the closest results I was able to recreate using some data that she provided to me. The differences between the two are likely caused by changes in statistical software modeling in the past 17 years. As Professor Grier sent me the data, I do not know if it is the final data set that was used in her paper if there is a data difference then it would also explain the small differences. Running this allowed me to find

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the correct specification of the model in STATA. Column 3 is the same model with the same years as column 2, but uses PWT 7.1 instead of the PWT 5.0 data that Grier provided.² Using the same time period but with new data adds robustness to updated data and the new Government variable. The big differences between the 5.0 results and the 7.1 are overall larger betas coefficients at higher confidence levels. Both the negative effects of French and Spanish variables increase significantly with Spanish colonies going from -.798% to -1.781% and French colonies from -1.585% to -2.143%. Column 4 is the PWT 7.1 data with observations from 1961-2010. While most of the results are very similar to column 3, with the exception of the Spanish variable, the extension significantly reduces the effect of being a Spanish colony. The Spanish colonies go from being 1.781% to 1.007% worse than British colonies. This change indicates that something has happened to former Spanish colonies in the last 20 to greatly increase their growth rates. To examine this change another regression was run which added a dummy interaction that accounts for French and Spanish countries in the past 20 years. These results are shown in column 5. As expected, the results show that there is not a significant difference in the past 20 years for former French colonies, but there is for Spanish ones. Former Spanish colonies experienced huge growth over the past 20 years, and only grew only .167% slower than English colonies.

The change is surprising with this huge reversal of former Spanish colonies and needs an explanation. The huge increase in growth is likely due to globalization. Kim and Shin (2002) found that South American countries have increased trading more than African ones. They also found that trade between countries in South America has dramatically increased. Kim and Shin (2002) note that a possible reason for Africa's low intra-regional trade is the heterogeneity of region in regard to language and religion. Using this logic, we can explain the larger increase in trade partly by the extreme homogeneity in South America. The Homogeneity of Catholicism and the Spanish language are direct effects of Spanish colonization.

The next set of tables includes a variable that measures the length of colonial rule. Grier (1999) suggested that because time was positive in her model, it created questions about "extraction hypothesis," but that there is still questions about causality³. Scholars like Acemoglu suggest that an important factor is the transfer of institutions. Therefore the length of colonial rule could work for a proxy for this, as the longer the length of colonial rule the greater the ability for the formation of beneficial intuitions.

² The Penn World Tables version 5.0 is no longer available because the current stewards of them the University of Groningen only provide back tables to 5.6.

³ As noted in Engerman and Sokoloff (2002) some colonization is known to set up extractive institutions, and it is hypothesized that the longer they were in place the greater the drain on the colony.

Table 2: Effect of the Length Colonial Rule

	(1)	(2)	(3)	(4)	(5)
	Grier 1999 Results	Grier results rerun	PWT 7.1 1960-1990	PWT 7.1 1960-2010	late interaction
	growth	growth	growth	growth	growth
Initial RGDP	0.011 (.30)	-0.0084 (-0.26)	0.0764* (2.00)	-0.0277 (-1.42)	-0.0109 (-0.53)
Population growth	.85*** (5.96)	0.760*** (6.31)	1.496*** (8.89)	1.102*** (8.11)	1.208*** (8.99)
Government	-.051* (2.27)	-0.0453* (-2.01)	-0.0779** (-3.12)	-0.0622** (-3.17)	-0.0569** (-2.87)
SD of inflation	-.49*** (4.95)	-0.0461*** (-4.61)	-0.0379*** (-5.83)	-0.0413*** (-6.49)	-0.0408*** (-6.17)
Spanish	-1.9*** (4.24)	-1.516*** (-5.09)	-1.341*** (-3.71)	-0.541 (-1.39)	-1.110** (-2.73)
French	1.31*** (3.73)	-1.283*** (-3.68)	-2.447*** (-5.52)	-2.252*** (-6.54)	-2.547*** (-6.24)
Time	.006** (3.0)	0.00544*** (3.97)	-0.00381 (-1.69)	-0.00316 (-1.54)	-0.00376 (-1.87)
Spanish post 1990					1.571** (3.27)
French post 1990					0.607 (0.99)
Constant	2.7*** (4.4)	2.781*** (5.47)	5.026*** (7.14)	5.722*** (9.66)	5.946*** (10.02)
N	378	378	370	618	618

t statistics in parentheses

* p<0.05 ** p<0.01 *** p<0.001

^[1] These are the results that Grier reported in her paper and are reported here for reference

^[2] These are the results I that I was able to replicate using some data that Professor Grier sent to me. The purpose of this was to understand how exactly she ran her model.

^[3] As the PWT changed how they have measured certain metrics these results are from the same regression used as column 2 and the same years as used in Grier's paper but are using PTW 7.1

^[4] Column 4 is using the same regression as Column 2 and 3, and using PWT 7.1. This column expands the years that are investigated by 20. This gives 4 new periods observations. These extra 20 years are the primary focus of this paper, and give a better look at how post-colonial countries have fared.

^[5] This column uses the same data and time period as column 4 but adds a dummy interaction. The dummy interaction reports how French and Spanish colonies have grown compared to British ones from 1990-2010.

The layout of the table is the same as table one with column one and two using Grier's data, column three and four using PTW 7.1 with different time ranges, and column five has the addition of the dummy interaction for the 1990-2010 period.

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When Grier accounted for length of colonial rule, the effect of nationality greatly changed with the Spanish having a more negative effect than France, and length of colonial rule has a positive effect on growth. As noted in the data section of the paper, my time variable was created with data from Lange et al. (2006) and Price et al (2003), and so the years might not be a perfect match. However, column 2 is still extremely close to Grier's (1999) reported results.

Using PWT 7.1, the time variable becomes negative but insignificant. It is surprising to see this dramatic change and it is likely due to how the PWT measures GDP. As Grier (1999) states, her finding that time had a significant impact did not prove that longer colonies reigns improved growth. When she added time it also made Spanish descent more negative than French descent, she claims that this is because Spain had a much longer average length of colonial rule compared to France and Britain.⁴ The results from PWT 7.1 indicate that her findings were possibly spurious correlation. In column 4, when time is included in the regression, the variable for Spain becomes insignificant. The reason that it is statistically insignificant is that the high growth from 1990-2010 and the previous low growth skew the results in different directions. When the dummy interaction is added, the effect it goes back to being negative and significant. In the model in column 5, we see that in the period from 1990 to 2010 former Spanish colonies actually grew .411% more than former English colonies.

The final table is the same regressions as above, but with the data limited to African countries. The reason for this is to help control for any missing variables that could be Africa specific. Also, as previously stated, the British had certain types of colonies that were unique and these settlement colonies (Australia, Canada, New Zealand, and the United States) experienced very high rates of growth). Using only African colonies removes these from the sample and so this will also show if these colonies are overly biasing the difference between the two.

⁴ The Average rule for Spanish colonies was 285.6 years, 144.5 for Great Britain, and 104.5 for France.

Table 3: The effects of colonizing nationality in Africa

	(1)	(2)	(3)	(4)	(5)
	Grier 1999 Results	Grier results rerun	PWT 7.1 1960-1990	PWT 7.1 1960-2010	late interaction
	growth	growth	growth	growth	growth
Initial RGDP	-0.0002 (0.64)	0.000141 (0.47)	0.475 (1.52)	0.0939 (0.98)	0.0971 (1.03)
Population growth	0.304 (1.43)	0.140 (0.61)	0.877* (2.51)	1.099*** (5.14)	1.068*** (4.89)
Government	-0.24 (0.62)	-0.0133 (-0.35)	-0.185*** (-4.46)	-0.0493 (-1.86)	-0.0497 (-1.87)
SD of inflation	-0.026 (1.23)	-0.0324 (-1.52)	-0.0292*** (-3.78)	-0.0320*** (-4.24)	-0.0324*** (-4.21)
French	-1.38*** (3.73)	-1.476*** (-4.17)	-2.295*** (-4.41)	-1.786*** (-4.40)	-1.938*** (-3.79)
Time	.015*** (3.56)	0.00486 (1.36)	-0.0134** (-2.71)	-0.00911* (-2.05)	-0.00956* (-2.17)
French post 1990					0.338 (0.43)
Constant	3.15*** (3.77)	3.904*** (4.84)	6.785*** (5.60)	5.657*** (6.00)	5.828*** (5.93)
N	192	186	190	314	314

t statistics in parentheses

* p<0.05 ** p<0.01 *** p<0.001

^[1] These are the results that Grier reported in her paper and are reported here for reference

^[2] These are the results I that I was able to replicate using some data that Professor Grier sent to me. The purpose of this was to understand how exactly she ran her model.

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^[5] This column uses the same data and time period as column 4 but adds a dummy interaction. The dummy interaction reports how French and Spanish colonies have grown compared to British ones from 1990-2010.

The layout of the table is the same as table two with column one and two using Grier's data, column three and four using PTW 7.1 with different time ranges, and column five with the addition of the dummy interaction for the 1990-2010 period.

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When I ran the regression reported in column 2 it was the same as the previous regressions, but with only African countries as observations. However, even using the data Grier provided me with I could not replicate the time variable's impact or significance. One factor affecting this is that Grier (1999) reports using 31 African countries over 6 observation periods, but reports 192 observations in her African model, indicating that an additional county has been added.

Controlling for Africa does not greatly change the effects of French colonization. While it slightly diminishes the negative impact of being a French colony compared to a British one, former French colonies have 2.95% lower growth rates compared to their British counterparts in Africa using the same time range as Grier (1999). Extending the data and using the dummy interaction column 5 shows that Africa French colonies in Africa continue to have lower growth than English ones. These regressions indicate that there was something about French governing style was significantly worse than their British counterparts.

In all of the regression other than column 2 the time variable is now statistically significant, and negative. This is likely because Africa colonies were primarily used for their natural resources and therefore the longer a European country had access to them the more resources they would take.

V. Conclusion and Discussion

The original paper "Colonial legacies and economic growth" (Grier 1999) laid out some interesting ideas, and helped inform the debate on the issue of the effects of nationality on colonization. Updating the data in and using Grier's (1999) model leads to some interesting results, and the expanded research on the topic helps explain them. The biggest change using the expanded data is that the negative effect of being a Spanish colony has diminished. The reason for this growth is believed to be because of Globalization. Kim Shin (2002) found that heterogeneous countries are more likely to trade with one another. The vast majority of South America speaks Spanish and are Catholics creating a heterogeneous environment that is conducive to trade. This indicates that the recent growth experienced by Latin American countries is due to their shared colonial history. Despite that fact that Spain set up negative institutions that hurt growth for an extended period of time, former Spanish colonies are now experiencing a positive benefit from their colonial past. However more research is need into the causality of Latin Americas increase in trade before concluding that this effect of Spanish colonization has helped. Regardless, it took over 100 years and a new global trend to override the negative effects of Spanish colonization.

If it took 150 years for former Spanish colonies to start to catch up to British colonies then it is not surprising that French colonies lag behind. While the decisions that the Spanish Government made several hundred years ago may finally have stopped slowing their former colonies growth, former French possessions are still performing worse than English ones. However, Bertocchi and Canova (2002) state that former British and French colonies still performer better than other former European colonies. Future research should expand the sample size to see if these other negative trends continue or if they change similar to former Spanish colonies. This paper has successfully shown that by extending the years investigated that there has been a change in growth trends of former European colonies when looking at them by colonizing power.

Appendix A: List Colonies by colonizing powers

List of English Colonies	Start of colonization	Independence
AUSTRALIA	1788	1901
BARBADOS	1625	1966
BOTSWANA	1885	1966
CANADA	1610	1867
EGYPT	1882	1922
GAMBIA	1765	1965
GHANA	1874	1957
GUYANA	1814	1966
HONG KONG	1842	1997
INDIA	1757	1947
JAMAICA	1655	1962
KENYA	1885	1963
LESOTHO	1867	1966
MALAWI	1891	1964
MALAYSIA	1786	1957
MAURITIUS	1715	1968
NEW ZEALAND	1840	1907
NIGERIA	1861	1960
PAKISTAN	1757	1947
SEYCHELLES	1810	1976
SIERRA LEONE	1787	1961
SINGAPORE	1819	1959
SRI LANKA	1796	1948
SWAZILAND	1902	1968
TANZANIA	1920	1963
U.S.A.	1607	1783
UGANDA	1885	1962
ZAMBIA	1891	1964
ZIMBABWE	1890	1965

European Colonization

Former French Colonies	Start of colonization	Independence
ALGERIA	1830	1962
BENIN	1909	1960
CENTRAL AFR.R.	1880	1960
CHAD	1900	1960
CONGO	1897	1960
GABON	1839	1960
GUINEA	1898	1958
HAITI	1625	1804
IVORY COAST	1843	1960
MADAGASCAR	1885	1960
MALI	1898	1959
MAURITANIA	1903	1960
NIGER	1861	1960
REUNION ⁵	1665	1990
SENEGAL	1783	1959
TOGO	1914	1960
TUNISIA	1881	1956

Former Spanish Colonies	Start of colonization	Independence
ARGENTINA	1580	1819
BOLIVIA	1538	1825
CHILE	1541	1818
COLOMBIA	1536	1819
COSTA RICA	1524	1821
ECUADOR	1534	1822
EL SALVADOR	1524	1821
GUATEMALA	1524	1821
HONDURAS	1524	1821
MEXICO	1521	1821
NICARAGUA	1523	1821
PANAMA	1519	1821
PARAGUAY	1537	1811
PERU	1533	1824
PHILIPPINES	1565	1898
URUGUAY	1625	1828
VENEZUELA	1528	1821

⁵ This state is dropped in all regression other than replicating Grier's results.

Appendix B

List of English Colonies	Start of colonization	Independence
BOTSWANA	1885	1966
EGYPT	1882	1922
GAMBIA	1765	1965
GHANA	1874	1957
KENYA	1885	1963
LESOTHO	1867	1966
MALAWI	1891	1964
MAURITIUS	1715	1968
NIGERIA	1861	1960
SEYCHELLES	1810	1976
SIERRA LEONE	1787	1961
SWAZILAND	1902	1968
TANZANIA	1920	1963
UGANDA	1885	1962
ZAMBIA	1891	1964
ZIMBABWE	1890	1965

Former French Colonies	Start of colonization	Independence
ALGERIA	1830	1962
BENIN	1909	1960
CENTRAL AFR.R.	1880	1960
CHAD	1900	1960
CONGO	1897	1960
GABON	1839	1960
GUINEA	1898	1958
IVORY COAST	1843	1960
MADAGASCAR	1885	1960
MALI	1898	1959
MAURITANIA	1903	1960
NIGER	1861	1960
REUNION	1665	1990
SENEGAL	1783	1959
TOGO	1914	1960
TUNISIA	1881	1956

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