

Settler Mortality, Colonisation Strategies and Institutional Creation: A Qualitative Recourse to Acemoglu, Johnson and Robinson's (2001) Quantitative Treatise¹

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April 2007, revised August 2007

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Abstract

In “The Colonial Origins of Comparative Development: An Empirical Investigation” (2001) authors Acemoglu, Johnson and Robinson (AJR) argue that former colonies’ institutional development was determined by colonising strategies as an outflow of expected European mortality. The method of colonising implemented since the 1500’s is shown as being dependent on the expected mortality of settlers in these new territories, with unfavorable health conditions prompting the establishment of extractive institutions as opposed to settlement-oriented institutions. A caveat in their analysis is the lack of qualitative historical accounts regarding actual colonisation strategies employed in different expected mortality areas. In their empirical exploration of the determinants of economic strength, AJR (2001) instrument for initial institutions with expected mortality rates without explicitly analysing the link between the two variables – colonial strategy. This paper examines the actual strategies followed in sixty five colonies. Its findings are that 1) AJR’s narrow, two-option definition of colonisation options can be broadened into eight alternatives, and 2) that these actual colonial strategies cannot uniformly be aligned with low, moderate or high mortality rates. This indicates a fallacy in the assumption that expected settler mortality was strongly influential in colonial strategies, questioning the empirical validity of expected mortality as an instrumental variable for institutional creation. The finding illuminates the value of qualitative research in economic history, even where quantitative processes appear to be sufficient.

¹ I would like to express my gratitude towards William Rowe and the participants of the Spring 2007 Economic Geography seminar at Louisiana State University for their remarks and insights, as well as to Russell Fielding and Todd Bourque for their assistance. My thanks to Dieter Von Fintel and Marinè de Milander for proofreading and commenting on my shortcomings, as well as to Henk Janse van Vuuren and Daan Steenkamp for their enlightening contributions.

1. Introduction

“... the interaction between animals and humans, the consequent patterns of immune system development, and the devastating consequences of exposure to pathogens that were not a part of the original environment have all played a major part in the distribution of human activity.”

Douglass C. North (2005: 87)

An oft used blame for underdevelopment, colonial heritage appeared to have fallen from disgrace in the 1990's as the world realised that heterogeneous third world nations had achieved diverse economic growth results. Until then it was expected that economic growth was inevitable for former colonies, though Asian successes were not mirrored by African outcomes (Landes 1998: 433). The Institutionalist school of social science responded by looking at the importance of institutions - informal “unwritten taboos, customs and traditions” along with formal processes that influence transaction costs and property rights (Aron 2000: 103) - in explaining economic performance. These institutions act as incentives for economic excellence, with economic performance fundamentally linked to the social infrastructure they create (Martin 2003: 78).

Acemoglu, Johnson and Robinson (henceforth referred to as AJR) proposed in their seminal 2001 paper that geography and climate has an indirect influence on economic performance via the institutions that humans create in response to their environment. They used actual mortality rates for clerics, soldiers and sailors in European colonies from the 17th to 19th century to illustrate that the prevalence of these “anti-resources” (termed by Lemon & Pollock 1980) would determine how European people were expected to institutionally respond to health risks. They find empirically that where expected settler mortality was low, current economic development is high, while high mortality rates were associated with poor current economic performance at present. They argue that high expected mortality would lead to colonisation strategies that created extractive institutions, persisting with severe economic repercussions to the present. This has become known as the institutions hypothesis for explaining economic growth in which AJR (2001) use expected European mortality as a proxy for initial institutional formation.

In a discussion on this view, Levine (2005) names Glaeser, La Porta, Lopez-de-Silanes (2004), Olsson (2004) and Albouy (2004, revised 2006) as quantitative challenges to AJR's (2001) findings. These studies find issues with the data generation and econometric robustness of AJR's mortality indicators and estimates. Albouy (2006: 18) concludes that his paper "does not

disprove AJR's theoretical hypothesis that potential European settler mortality rates had a strong effect on property rights institutions, or that these rights in turn had a large impact on economic performance." This study aims to put forward evidence against the former through qualitative research.

The strategic colonisation options available to European powers in AJR's review are limited to "good" and "bad" in nature, characterising economic sustainability and success. Osterhammel (2005) discusses eight versions of colonial expansion that represent a more explicit definition of colonisation methods, making classifications of different strategies more holistic. Many combinations of settlement volumes, extractive policies and oppression of native populations are given in these definitions that would make analysis of mortality variables much more informative.

The major caveat in AJR's research is the lack of exploring the link between mortality rates and colonial strategy. They accept an implied relationship, motivated by logic and reasoning, without geographic or historical research into the colonial practices followed in different areas. This potentially indicates a problem with their use of mortality data to represent initial institutions, as an apparent outflow of colonisation strategies, in empirical estimates. Without these facts the theoretical link between colonial strategies and institutional structures is not enough to support the quantitative proxy of expected mortality for initial institutions. This possibly leaves a large qualitative fissure in AJR's work.

The goal of this paper is to determine whether the mortality data used by AJR to proxy initial institutional structures can reliably be linked to actual, more broadly defined colonial strategies. Firstly it examines the core premises and shortcomings in AJR (2001). Secondly, a much broader array of possible colonial strategies put forward by Osterhammel (2005) is revealed. Thirdly, the actual settlement policies followed by Europeans in their colonies, sourced from historical texts, will be linked to eight different colonial strategies. Finally, it will be assessed whether the identified groups of similar colonial strategies can be uniformly linked to the mortality ratios, as AJR (2001) proposes.

2. Understanding AJR (2001) and its shortcomings

AJR (2001: 1369) asked an age old question plaguing social scientists: Why are there fundamentally large differences in per capita income across countries and what are the causes of

this phenomenon? This issue has received rejuvenated attention in economics since Robert W. Fogel and Douglass C. North received the Nobel Prize in Economics in 1993 for analysing the importance of institutions in economic development. To estimate the influence of institutions on economic performance AJR search for an exogenous shock to established institutions. They identify this shock as the arrival of European settlers on foreign shores and the resulting changes in formal and informal institutional structures. Their research is based on several theoretical premises.

Firstly, AJR theorize and later empirically show that different types of colonisation create different sets of institutions, persisting to this day and which greatly influences current economic performance. This argument has been accepted into economic literature as a rule of thumb, and is established as general economic theory. Note that AJR (2001) do not give adequate definitions of what colonies, colonisation and colonialism is. In sum, Osterhammel (2005: 4-5) defines “colony” as a particular sociopolitical organisation representing a certain geographic area, “colonialism” as a system of domination and management of a colony, and designates “colonisation” as a process or endeavor of territorial acquisition where a minority settler group interacts with a majority native population by settling its own government. These economic interpretations are similar to those of sociology and geography found in De Bijl, Murphy and Fouberg (2007: A-19). AJR (2001: 1370) remark in a footnote that “colonial experience” does only imply to direct control by European powers but also to influence and direction in a general sense – a fact also acknowledged by De Bijl et al (2007: A-20).

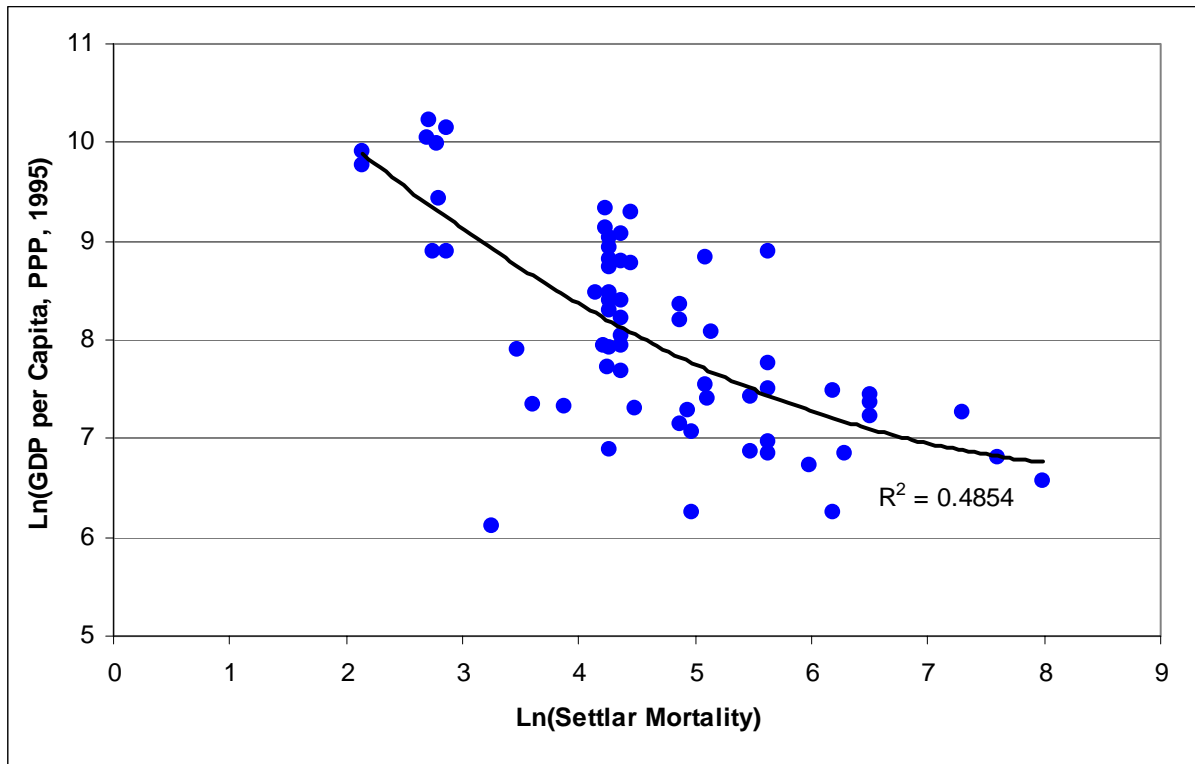
European powers are identified by AJR as having two “extreme” options in terms of colonising strategies. The first, termed “extractive states”, was exemplified by the Belgium colonisation of the Congo. Institutions did not create much in the way of private property protection or checks and balances against government misconduct. Their purpose was to foster the extraction of natural resources and return them to the colonisers’ homeland. At the other extreme, the creation of “Neo-Europes” saw the replication of European institutions with strong emphasis on property rights and checks and balances against the misuse of government power. Primary examples include the New England states in North America (AJR 2001: 1370). These two possibilities do not however reflect the true extent of colonial strategies, as research by Osterhammel (2005) promotes six more possible options (explored in section 3) to establish additional colonisation options.

Secondly, AJR believe that colonisation strategy was determined by the feasibility of having sustained settlement of large groups in the colony. This implied the direct influence of expected settler mortality on the Europeans willingness to relocate there, information which was apparently well broadcasted in Britain and France according to Curtin (1964, 1998). Malaria, yellow fever and gastroenteritis – known and feared disease amongst the European population - accounted for 95% of European settlers’ deaths in European colonies (Diamond 1997: 212).

AJR use mortality rates from the 17th to 19th centuries for European clerics and national serviceman (sailors and soldiers) to illustrate the unhealthy nature of some colonies, and how receptive European people were expected to be to these circumstances. Their data is sourced from the World Bank and several studies by Curtin (1964, 1989 and 1998) to gather comparable data on mortality and current economic performance for 75 countries. Although AJR (2001: 1370) claim to use of 75 countries in their analysis, only 64 cases are reported in their data appendix and in those of Glaeser et al (2004), Olsson (2004) and Albouy (2006) who use the same data. They do however emphasise that their quantitative estimates and results is not driven by outliers, with the removal of Australia, New Zealand, North American and African colonies not influencing results drastically (2001: 1372). It is assumed that some outliers have been excluded in the data appendix.

Figure 1 illustrates the 64 colonies for which AJR supplies information in their data appendix (AJR 2001: 1398), illustrating their recordings of Curtin’s actual mortality data (annualised deaths per 1000) of Europeans in colonies. They obtained the 1995 GDP per capita (with consideration of purchasing power parity) measure from the World Bank. The illustration indicates a strongly negative association between expected European mortality and current economic performance. See Appendix A for a table of quantitative variables used in Figure 1.

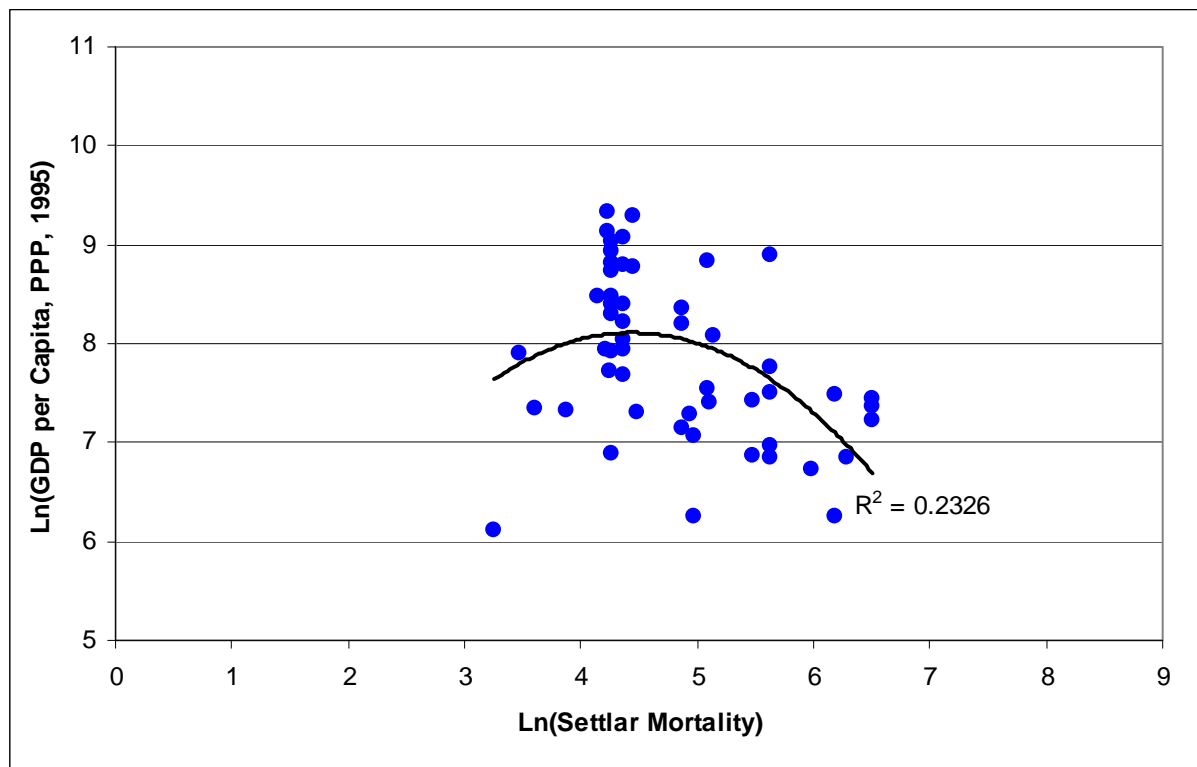
Figure 1: Relationship between Current Income and Historical Settler Mortality (64 countries)



Data source: AJR (2001: 1398)

Questioning the premise of European mortality's influence on present day economic performance, it is accepted that this is not the only variable influential on current gross domestic product (GDP) per capita, as AJR also acknowledges. However, across much of the mortality scale there is great variance of GDP per capita, with a similar observation made of the variability of mortality measures across GDP per capita levels. There is a clear downward trend, or inclination, of the data points, though it is not very "clean" in nature – an R^2 of almost 0.50 is observed. Ignoring outlying settler mortalities with a natural log (ln) value of less than three (ten countries) and larger than seven (three countries) will leave a data distribution for 80% of the sample that does not reveal a negative trend. On the contrary, Figure 2 illustrates this sub-sample of 53 observations, revealing an inverted-U association with an R^2 of less than half of that observed in the full sample. The large influence of these outliers indicates a vague and possibly disputable rule-of-thumb regarding the relationship between European mortality estimates and current GDP per capita.

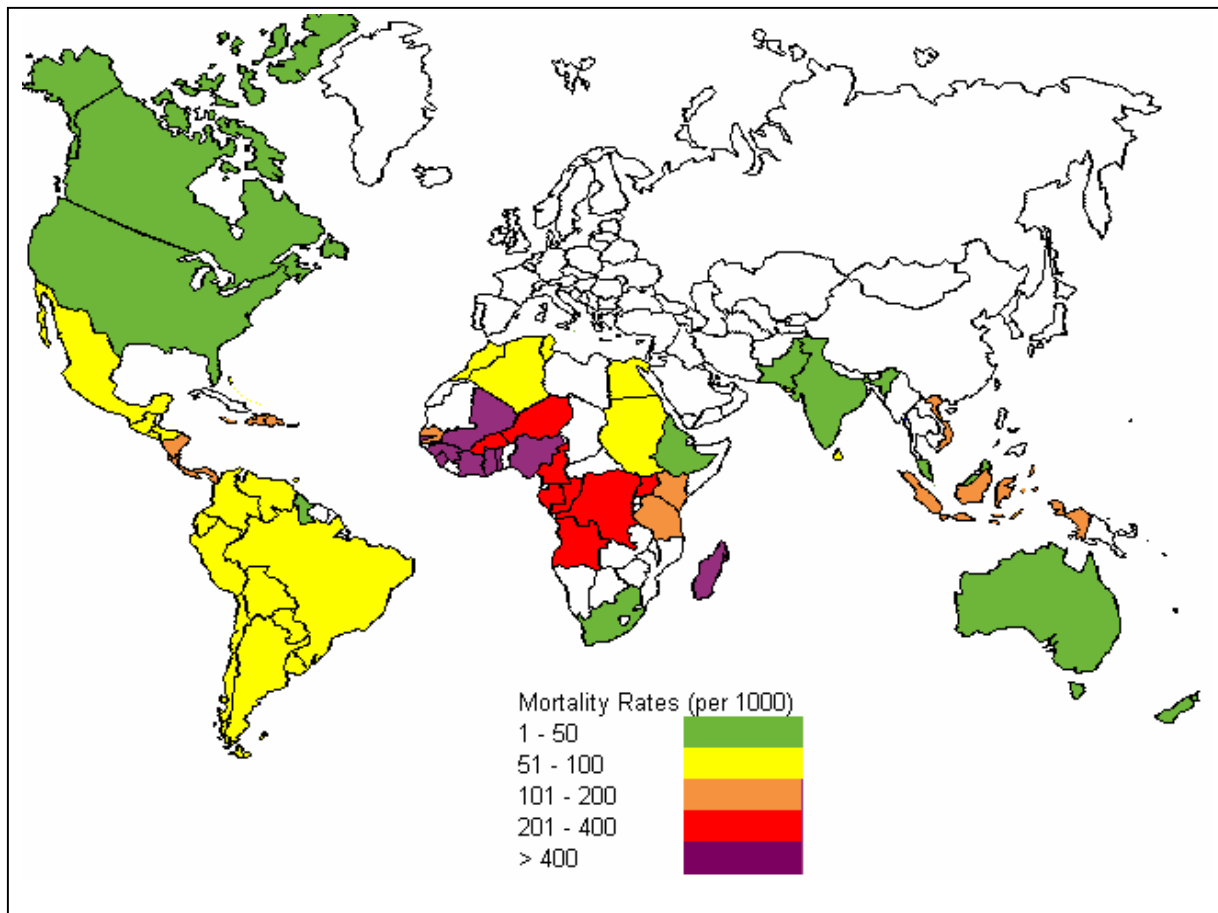
Figure 2: Relationship between Current Income and Historical Settler Mortality (53 countries)



Data source: AJR (2001: 1398)

Geographically, the distribution of these colonies judged on their European mortality rates are spread across the world. The range of mortality figures is also diversely spread, illustrated in Map 1 by classifying mortality rates into five groups. The levels of European mortality have been selected and grouped according to observations with large breaks between them, with sub-samples representing about a fifth of the observations each. Note that the islands of The Bahamas, Malta and Singapore were too small to find on the original map. They were graphically included with the addition of dots in the appropriate location.

Map 1: Actual European Settler Mortality in Colonies, 17th to 19th Century

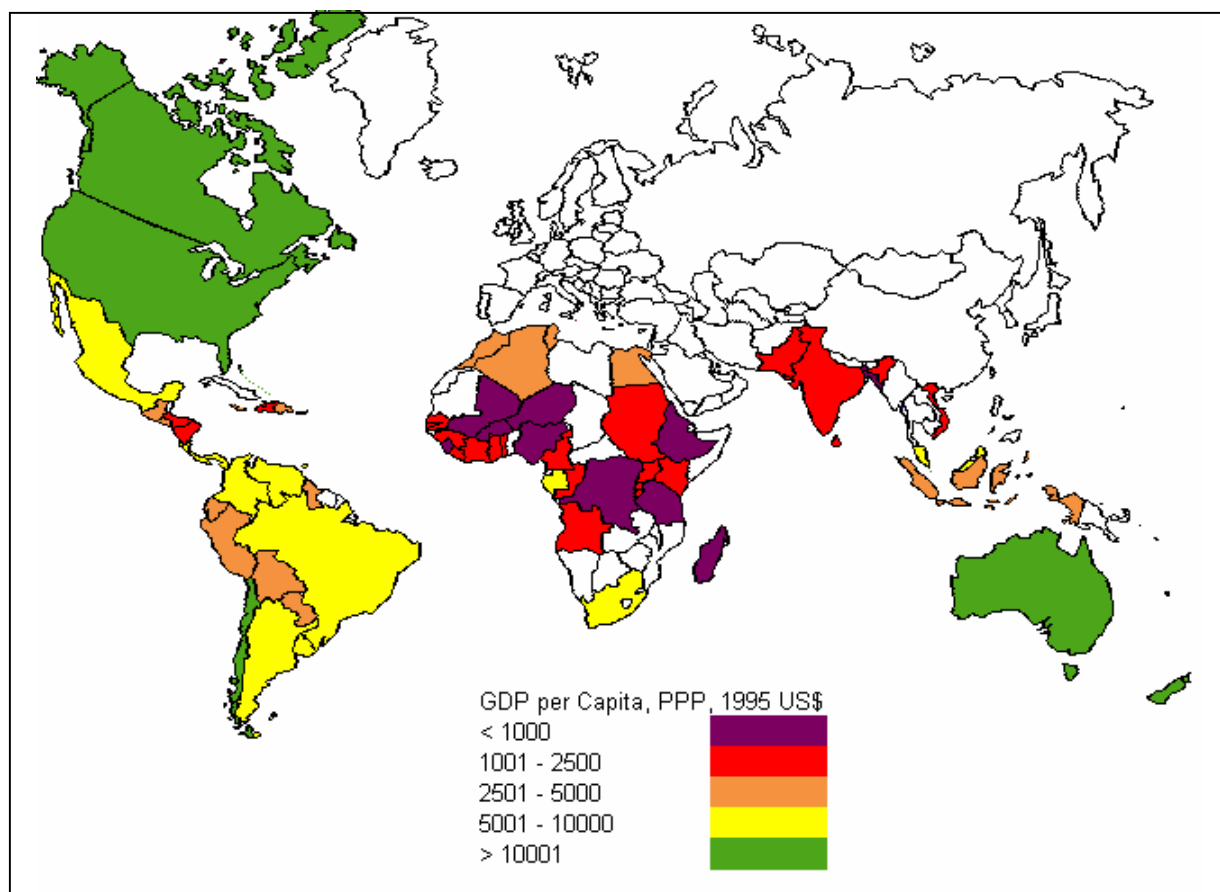


Sources: AJR (2001: 1398) & Theodora (2002)

A popular hypothesis on economic development is that latitude proximity from the equator, associated with tropical climates and its negative effect on labour productivity, determines economic success. Mortality observations do not adhere to this hypothesis and can rather be associated with diagonal regions on the map. Very low mortality rates (1 to 50 deaths per 1000) are situated on a south-west to north-east axes in northern America and Southern Africa. Similarly, south-east to north-west axes are observed in Oceania and the Indian subcontinent. Low mortality levels (51 to 100 deaths per 1000) are situated on south-east to north-west axes in Central America and northern Africa, with the South American continent a prominent south-west to north-east example. Moderate, high and very high mortality rates (higher than 101 deaths per 1000) are distributed on a south-east to north-west axes in the Asian-Pacific Islands and lies south-west to north-east in central Africa and the southern part of North America.

By AJR's reasoning, the distribution of economic success at present should have displayed a similar distribution. Map 2 indicates the distribution of GDP per capita in 1995 in these former colonies as sourced from AJR (2001: 1398). A perfect match between mortality rates and current economic performance is not expected, though there are strong correlations between the two visually, with the diagonal positioning of high mortality / low economic performance and vice versa strikingly similar. The only area that greatly deviates from the hypothesis is Central and South America, having very similar expected mortality rates though varying economic development successes is observed at present. Note that to assist the association of low mortality rates with high economic performance, the colors in Map 1 have been inverted to create the association observed in Figure 1 in Map 2.

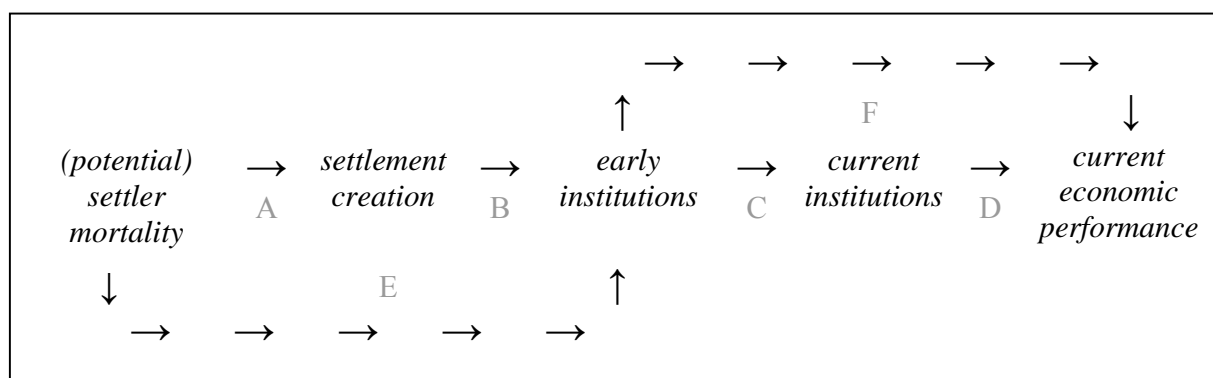
Map 2: Economic Performance of Former European Colonies.



Sources: AJR (2001: 1398) & Theodora (2002)

AJR (2001: 1373) believe that Europeans were well educated about mortality risks. The British and the French press informed the public of mortality rates in colonies, though authorities did not know how to control the pestilence. Instead colonisers had to adapt their lifestyles in these colonies to accommodate the problem. This inter alia includes steps that helped determine initial / original institutions as a strong determinant of current institutions, which determine present economic performance (2001: 1370). North (1990) refers to this as “institutional path dependence”, with the reasoning behind the relationship according to AJR illustrated in Figure 2.

Figure 3: Schematic summary of relationship between potential settler mortality and current economic performance.



Source: Derived from AJR (2001: 1370)

AJR’s reasoning is as follows: potential European settler mortality would determine the colonisation strategy followed in establishing a colony (step A), thereby establishing early institutions (step B). These institutions are directly related to today’s institutional structures (step C), which have a direct effect on current economic performance (step D). The economic viability of steps B, C and D cannot be disputed and are rooted in the theoretical frameworks of institutional economics, as discussed at length by North (1990).

One of the aims of AJR (2001) should have been to establish steps A and B in order to use mortality data as indicator of initial institutional structures. Though logic and arguments prevail, the proof for step A is lacking. By circumventing step A’s direct verification, AJR use potential settler mortality as a proxy for early institutions (step E), and through its association with current institutions is used to explain current economic performance (step F). This

methodology seems open to expansion, as the one key step not supported by decades of theoretical and applied investigation (step A) is merely assumed to hold. This places an air of spuriousity on their quantitative findings.

Thirdly, AJR's final theoretical premise is that institutions and institutional structures are transient over time and have a strong inertia to evolve, but not greatly change. Their belief is that institutional structures created at the time of colonisation would through this inertia continue to have an influence on economic institutions and performance today. There are several economic structures that would lead to "institutional persistence". It might be costly to establish certain institutional frameworks, making it costly again to change them, in essence creating an incentive of savings to not change the status quo. In addition, ruling elite might prefer the nature of institutions that supplies them with large amounts of income, continuing with e.g. extractive institutions after independence from colonial rulers. Finally, irreversible investments made that are complimentary to institutions will diminish in value and efficiency under a different institutional regime, encouraging spending towards keeping institutions as they are (AJR 2001: 1376). AJR give adequate theoretical and applied examples of this argument, supported by quantitative results that cannot be faulted.

This paper will only find issue with AJR's first two premise, which could ultimately shed some questions on their third premise as well.

3. Osterhammel (2005) definitions of colonisation strategies

On face value, AJR's quantitative arguments and proofs are viable, and have served as the basis for five more highly acclaimed papers exploring the importance of institutions for economic growth (AJR 2002a, 2002b, 2003 and 2004). By using two possible colonial strategies, the authors are able to group currently developed countries along the lines of similarly low mortality expectations which encouraged Europeans to foster healthy social infrastructure. Poor disease environments have been found to be similarly homogenous in economic development due to negative institutions instilled by colonisers.

Their two versions of colonisation are however greatly insufficient in classifying colonial strategies, as homogeneity in colonisation is not strongly observed across different geographic location. At least half a dozen more possible strategies have been identified to help understand these diverse occurrences, possibly questioning AJR's uniform dual-classification. A broad

theoretical discussion in *Colonialism: a Theoretical Overview* (2005) by Jurgen Osterhammel² offers many more concepts on the expansions of societies beyond its original habitats (2005: 4-11). Each strategy offers a diverse combination of variables representing natural resource issues, indigenous population interaction and ties to European origins that make them heterogeneous in nature and not scaleable from “good” to “bad”. Osterhammel (2005: 24) believes that there is no colonial history, only the history of separate colonies.

It is not possible to rank different colonial strategies as being “more” or “less” extractive, or economically “good” or “bad”. From an economic perspective, the first four strategies discussed here are associated with positive, settlement oriented colonising, with independence and non-extractive institutions created due to low or similar to native mortality levels. The last four are associated with fewer settled people and more extractive, dependent regimes where mortalities are moderate, high or of ambiguous value to settlers. Admittedly, there appears to be two groups of colonisation strategies that represent the ideas put forward by AJR in their two-option definition of colonisation. However, these two groups of four options each have fundamentally varying characteristics between them and cannot be homogenously aggregated into two encompassing definitions as AJR (2001) has done.

Total migration involves large human collectives or societies that settle in an area substantially distanced and separated from their origins. This could involve military campaigns and oppression of indigenous people to give economic and political power to these intruders. It creates a “non-colonial” colony, as controlling power is not situated in any country of origin. Examples include the Great Trek of South African Dutch settlers from the British colony, who created their own republics in the north of the country during the mid-19th century. Scenarios like this are however seldom observed in history (Osterhammel 2005: 4-5) and not expected to be evident in European settlements. This strategy would only be viable if expected mortality rates were low, otherwise an alternative location would be selected.

Border colonisation involves the systematic expansion of land control for the purposes of agricultural or resource purposes. This version requires expanding settlements, new or old, to ensure continued possession of the extended frontier. It is often overlooked that such a strategy can be followed once a colonial foothold has been established. The spread of European power

² Jurgen Osterhammel is a graduate of the London School of Economics. He obtained his doctorate in Economic History from the University of Kassel, Germany, in 1980. He is currently Professor in Modern and Contemporary History at the University of Konstanz in Baden-Wurttemberg, Germany.

across northern America is a good example (Osterhammel 2005: 5-6), where newly claimed territories did not necessarily directly or immediately influence indigenous populations. Proximity to the conquerors origin implies a similar and not necessarily low mortality expectation.

Independent overseas settlement is an alternative version to border colonisation, and takes the form of establishing a presence (not necessarily dominance) in a new territory not within immediate geographic proximity. Indigenous peoples were most mostly not integrated into the newly established society, often military or agricultural in nature, and were afforded only a “subservient” status as labour. This is the class of colonisation into which the first states of New England would fall (Osterhammel 2005: 6-7). This strategy implies self-reliance for economic sustainability, suggesting low mortality expectations, and is the most similar to AJR’s “good” settlement colonies.

Mass individual migration sees individuals, families and small groups leaving domestic territories, with no plan to return, while leaving behind a still existing society. They are integrated into existing societies and colonise their own space within these areas, e.g. “Chinatown” areas in New York City and Los Angeles. This is often referred to as the “classic emigration” in the broadest sense, and is not often associated with colonial strategies (Osterhammel 2005: 5). This strategy implies already established societies, possibly superior in some ways to the migrant’s origin. This appears to imply relatively low mortality rates, or at least lower than the settlers’ origin, which could imply mortality rates acceptable to groups dependent on their origin.

AJR’s neo-European strategy for New England, Australia and New Zealand does not seem to be uniformly classifiable as “good” according to Osterhammel’s (2005) theoretical premise on colonisation strategies. Where New England was an overseas settlement at its core, Australia conforms to the dependent overseas settlement criteria, while New Zealand occurred as a border colonisation of the Australian territory. This is a strong indication that their namedropping strategy might not hold with closer scrutiny of actual colonisation, questioning the “extremes” that are discussed. This is also the case with the following “extractive” strategies, where the “extractive extreme” is not nearly as severe as some of the other options.

Dependent overseas settlement occurs when a “politically dominant settler minority” drives indigenous peoples from the best resources but is still dependent on them for labour supply. This economic dependency between foreign minorities and domestic labour often creates

societies that are eventually and often unintentionally integrated, though benefits from its development are redirected to European origins. Many African colonies, like the Belgian Congo, followed this framework (Osterhammel 2005: 7) and most closely resemble AJR's extractive policies. This does not necessitate low mortality to facilitate colonial success as the number of settlers was limited, actually ideally suited to high mortality areas.

"Caribbean style" overseas settlement is named after its most prominent examples. Indigenous people are driven from the area colonised and slave labour was brought in to compensate for this. Minority economic and political power was kept by settling parties with extractive strategies for the benefit of the motherland instilled. The large volume of black Africans in the Caribbean testifies to this strategy (Osterhammel 2005: 7). The eventual swap of natives for foreign servants do not indicate a necessarily low mortality area, with the expulsion of natives possibly indicating high mortality among that group which is undesirable for European settlers. Some argue this strategy to be more severe than that of the dependent overseas settlement – AJR's (2001) "bad" extreme.

Wars of conquest establish the rule of one group over another where exploitive colonies were created without actually settling a colony. Military representation was used to further economic pursuits in these existing societies, often of similar development to its oppressor. Roman expansion in pre-modern times is a traditional example of this strategy, where relations often started with reciprocal interaction followed by the military claiming (though not destruction of) one society (Osterhammel 2005: 8-9). Prior contact imply situations congruent to their needs, i.e. similar mortality expectations in conquered areas, although the extractive nature of their dependence on new colonies imply the tolerance of high mortality would be possible. This is also evident in the campaigns of Alexander the Great.

Naval network creation is a sparser version of overseas settlement, where the territories are entered for pure strategic military reasons, often with the intention of creating safe maritime routes. It was, due to its limited scope and direct control, the only form of colonisation that was truly adaptable to changing times, and had little influence on indigenous peoples if at all present. Gibraltar offered such a strategic target for the Europeans (Osterhammel 2005: 11). Although these groupings lived in isolation, and interaction with locals was limited, expected mortality might have been second to military needs.

This also places some doubt on their uniform extreme classification of “extractiveness”, which could also fall within 2 or three different strategies. The motivation and strategy of colonisation can have many different origins, some even hybrid versions of two or three of the theoretical possibilities discussed. They are however much greater than those offered in AJR (2001). All of these theories offer observable variations in several characteristics that can be analyzed. The next section examines the possible theoretical premise behind colonising by reviewing the countries listed in table 1 at the hand of Osterhammel’s (2005) possibilities.

4. European colonisation strategies

The European colonies considered in AJR (2001) can all be classified into eight different colonisation strategies, six more than they originally promoted. Table 1 lists the different colonisers, their colonies and colonisation strategies followed in each as determined by this classification. Out of Osterhammel’s eight possibilities only six strategies were observed, with the total societal migration not evident, and mass individual migration not considered in the macro analysis of colonialism. The colonies examined by AJR all belonged to one of eight European powers, being (in order of the number of territories claimed) Great Britain (22), Spain (17), France (15), Portugal (3), Belgium (3), Germany (2), The Netherlands (1), and Italy (1).³

Kurian (1992), Page (2003) and Benjamin (2007) do an excellent job in exploring the history of most colonies under consideration here. However, not all historical accounts are detailed enough to rely solely on his accounts, making the examination of many other historical and geographic narratives necessary. The surveying of a few sources would have made the process much simpler, but also open to possible criticism as being based on only a few author’s opinions. To ensure that reasonable accounts are given of each of the 64 colonies, the following subsections give a labourious review of all these areas from different sources and references.

³ This list does not include Turkey, Russia, Japan or Denmark who also claimed colonies between 1550 and 1950 according to De Bijl, Foubert and Murphy (2007: 230-231).

Table 1: Colonisers, Colonies and Colonisation Method

Coloniser	Colony	Colonisation Strategy	Coloniser	Colony	Colonisation Strategy
Britain	New Zealand	Border colonization	Spain	Ecuador	Dependent overseas settlement
Britain	Jamaica	Caribbean overseas settlement	Spain	Guatemala	Dependent overseas settlement
Britain	Bangladesh	Dependent overseas settlement	Spain	Honduras	Dependent overseas settlement
Britain	Gambia	Dependent overseas settlement	Spain	Mexico	Dependent overseas settlement
Britain	Ghana	Dependent overseas settlement	Spain	Peru	Dependent overseas settlement
Britain	Guyana	Dependent overseas settlement	Spain	Venezuela	Dependent overseas settlement
Britain	India	Dependent overseas settlement	Spain	Panama	Naval network
Britain	Indonesia	Dependent overseas settlement	France	Guinea	Border colonization
Britain	Nigeria	Dependent overseas settlement	France	Haiti	Caribbean overseas settlement
Britain	Pakistan	Dependent overseas settlement	France	Algeria	Dependent overseas settlement
Britain	Sierra Leone	Dependent overseas settlement	France	Cote d'Ivoire	Dependent overseas settlement
Britain	Sri Lanka	Dependent overseas settlement	France	Gabon	Naval network
Britain	Trinidad & Tobago	Dependent overseas settlement	France	Senegal	Naval network
Britain	Uganda	Dependent overseas settlement	France	Canada	Overseas settlement
Britain	Hong Kong	Naval network	France	Burkina Faso	Wars of conquest
Britain	Singapore	Naval Network	France	Madagascar	Wars of conquest
Britain	Australia	Overseas settlement	France	Mali	Wars of conquest
Britain	USA	Overseas settlement	France	Morocco	Wars of conquest
Britain	Malta	Overseas settlement	France	Tunisia	Wars of conquest
Britain	Egypt	Wars of conquest	France	Vietnam	Wars of conquest
Britain	Kenya	Wars of conquest	French	Niger	Border colonization
Britain	Sudan	Wars of conquest	French	Dominican Republic	Caribbean overseas settlement
Spain	Bahamas	Caribbean overseas settlement	Portugal	Malaysia	Naval network
Spain	Argentina	Border colonization	Portugal	Brazil	Caribbean overseas settlement
Spain	Bolivia	Border colonization	Portugal	Angola	Dependent overseas settlement
Spain	El Salvador	Border colonization	Germany	Cameroon	Dependent overseas settlement
Spain	Paraguay	Border colonization	Germany	Togo	Dependent overseas settlement
Spain	Uruguay	Border colonization	Germany	Tanzania	Dependent overseas settlement
Spain	Nicaragua	Caribbean overseas settlement	Belgium	Congo	Dependent overseas settlement
Spain	Chile	Dependent overseas settlement	Belgium	Zaire	Dependent overseas settlement
Spain	Colombia	Dependent overseas settlement	The Netherlands	South Africa	Naval network
Spain	Costa Rica	Dependent overseas settlement	Italy	Ethiopia	Wars of conquest

4.1 United Kingdom

The imperial empire of the United Kingdom of Great Britain is probably the epitome of colony building. In this sample of territories, it “owned” more than a third. The majority of these were dependent overseas colonies, likened to the traditional view of African colonies. Only three of these - created in the Atlantic Ocean – was outside the African and Asian realm. Guyana and Trinidad & Tobago’s conquest was less severe than most other tropical states experienced under e.g. Spanish rule. To increase their abilities to produce sugar cane for own consumption and trade, the British used these areas as plantation economies utilizing native groups as labour – very little slaves were imported (Waites 1990: 47). Close by, a Caribbean style overseas settlements was created, where Jamaica was originally inhabited by aborigines driven from their homes by European sailors after 1655, and were replaced by slaves of African origin.

Osterhammel (2005: 32) calls the UK’s increase in control over India as the most important development in this regard. At first, its trade with the subcontinent was amicable and reciprocal. However, as political change on the sub-continent changed to the detriment of Britain, it increased military power in the harbours it controlled. The demand for agricultural products

drove natives to produce cotton, spices, teas and opium for extractive exports. Sri Lanka (Ceylon until 1972) and Indonesia followed suit, where plantation profits were channeled back to the United Kingdom (Ferro 1997: 126). Pakistan was part of the British Indian Empire from 1857 to 1947. It was one of the last areas to come under British control when they extended their Indian frontier to secure more natural and agricultural resources for sea trade (Kurian 1992: 1472). Bangladesh had the same historical colonial experience as Pakistan, until 1971 known as the province of East Pakistan (Kurian 1992: 114).

In Africa, Sierra Leone and The Gambia experienced a similar method of maltreatment. The nature of exploitation in these two nations was some of the most unjust of all territories under consideration here, according to Waites (1990: 113). Despite the native inhabitants' abilities to produce agricultural goods for trade Europeans were mostly interested in possessing the strategic harbour in Freetown, ideal for further exploitation of Africa. The claim laid on the harbour extended British control over the whole Sierra Leonean and Gambian territory in search of natural resources and semi-slave labour for these pursuits. To that effect, Sierra Leone was made the centre of government of all British African colonies under British control of course (Pim 1940: 38) to manage their dependent overseas settlements on the African coast.

Uganda's original commodity was the export of slave labour, often captured by Africans and traded to Europeans. When this supply dwindled, the expansion of freight railroads in 1902 and the introduction of cotton seed in 1903 made the tropical area attractive again. The trade of agricultural produce was controlled by the British, with African labour, that grew in stature to the point where political control was in European hands by economic default (Albertini & Wirz 1982: 458). This is a clear example of a dependent overseas settlement colony. Where Uganda is viewed as a dependent overseas settlement, Kenya is more inclined to being a conquest of war colony. After dissolving the East Africa Company in 1895, Britain started to re-establish control over Kenya gradually. Agricultural progress was forced upon the natives, driven from their lands if they resisted. With an Indian-slave build railroad, they increased their agricultural exports and grew in importance to Britain. In 1907, they presented their political cause to Winston Churchill, and with military support gained a strong hold over the greater Kenya territory by the start of the World War One (Boahen 1990: 78). Kenya was in fact won by political and military less so than by mercantilist power, and is seen as a military conquest.

Britain's control over Nigeria grew at a gradual pace. After sanctioning the United African Company to extract resources from the area, the Crown took control over the territory after the Berlin Conference⁴ and renamed it the Oil Rivers Protectorate in 1893. Its main aim was to enforce the settler minority's management of natural resources, including natural gas and oil, for the use of Britain's growing industrial needs (Kurian 1992: 1436-1437). Ghana also experienced gradual influence of British power on its way to becoming a dependent overseas settlement, growing in strength on the coastal regions in the early 19th century and culminating in colonial rule from 1901 to 1957. The British established many self-governing structures in the area, and made a large influence on social, cultural, economic, language, education and political life. In return, Britain benefited from the well-endowed natural resources of the dependent state it established and is still its greatest buyer of exports (Kurian 1992: 673).

Wars of conquest were also quite limited, with only two such endeavors. They were able to occupy and gain control over the Egyptian state in 1882 after doubtful borrowing by the Africans from European powers created a politically and military weak government. Thorough penetration of the area by European industrialization and merchant control made this quite easy to achieve (Waites 1990: 117). In the 1820's Egypt proclaimed the Sudan region as a territory of their Ottoman viceroy's influence, developing its slavery and ivory trade and reaping many rewards from its labour. After establishing control over Egypt, the British forces continued their military conquest of the Sudan, establishing the Anglo-Egyptian Sudan in 1898 (Stewart 1989: 260). Much of the areas economic activity and culture remained as is customary in many conquest campaigns.

Two independent overseas settlements were established. First, the current United States of America (USA) was formed after 1492 with the goal of settlement and creation of positive societies. This however also included the annihilation of the economically dispensable indigenous population. It might be contestable, but the establishment of Australia does not pertain to any other sort of colonialism than this one, having also reduced the levels of native inhabitants (Osterhammel 2005: 12). Secondly, Australia was identified by Osterhammel (2005:

⁴ The Berlin Conference of 1884-85 was called for by Portugal and organized by German Chancellor Otto von Bismarck to establish parameters to regulate European colonisation. It resulted in the "Scramble of Africa" in which European powers proclaimed control over the majority of African states. By 1895 only five states were still independent.

12) as a New England type overseas settlement, which is accurate according to the definitions used in this research.

Gaining control over New Zealand was however not the same. Polynesians had been visiting the islands from the 1400's, with Dutch, Portuguese, Australian and English merchants trading with Maoris without proclaiming explicit control over the area. Due to the large agricultural, fishing and trading possibilities in procuring the region, Australia politicians eventually sent designations to negotiate protectorate terms with the Maoris', establishing a protectorate over the two islands in 1840 (Lemon & Pollack 1980: 163-166). This is interpreted as being a border colony of the growing Australian territory.

Britain established three naval network stations as part of their vast naval prowess. Hong Kong was one of Britain's most prominent naval enclaves until recently. Its role in the British naval network is undisputed, established with the explicit goal of contributing to the logistical and governing control, over the trade with Asia. The British established an informal sort of control over the inhabitants, an already established autonomous state prior to becoming a protectorate. Singapore was in the same position, paving the way for British trade in the same fashion as Hong Kong did, going from a self-ruling nation to British colony (Osterhammel 2005: 11). Up until its independence in 1964, Malta operated as a fortress of the strongest naval power in the Mediterranean. This value as strategic naval position gave rise to its economic, political and administrative systems and institutions. Although Napoleon drove out missionaries in 1798, the British were able to obtain Malta at the Treaty of Paris in 1814 and incorporate it as part of its naval network (Boissevain 1980: 4).

4.2 Spain

There were only two Spanish Caribbean style overseas settlements. The country claimed the island group currently known as The Bahamas and removed its native population for slave trade purposes, emptying the island by 1513. They eventually repopulated the area with African slaves to establish agricultural plantations. By the 1530's Nicaragua followed suit in using Indian slave labour which were eventually augmented by African slaves (Burkholder & Johnson 1994: 32).

The dominant entity in Spanish exploitation was the dependent overseas settlements which numbered about half of their territories. New Spain was the most important conquest for the Iberian travelers in the New World. Later named Mexico, the area was rumored to have vast

gold deposits and had a large Aztec military force moving into the area from Central America. The local tribes in the Valley of Mexico opposed the Aztecs and incurred great losses in fighting their progress from South America, which the Spanish used for their own benefit in 1545 to finally destroy local opposition to any colonial conquest. They established a dependent overseas settlement based on mining, ranching and farming with Indian labour (Olson 1992: 435-436).

Christopher Columbus' discovery of what is now known as Costa Rica was intent on finding gold supplies for Spain. After initial misguided elation on finding it, it was discovered that very few deposits were available. After another half century Spanish settlement started to grow, where with the labour of native Indian populations and *encomienda* treatise farmers grew cochineal and indigo. This established a wealthy Spanish minority in control of economic production, with exports the main feed of income (Wilson 1998: 9-10). A dependent settler colony was also established in Chile, where great resistance from natives was experienced by the Spanish. Their desire for mining minerals leads them to militarily overpower native Inca descendents, and demographically destroyed them. With a shortage of labour as result, agriculture was favored for export production. A similarly aggressive military campaign was followed in Peru to establish agricultural societies (Bethell 1984: 244).

The Spanish search for precious metals continued further south to Guatemala, where little was found. Establishing several towns in the area during the 1500's, Spanish settlers were awarded formerly Indian land to produce indigo and cocoa. They were given forced native labour to support these practices (Olson 1992: 294-296) relating to many dependent overseas settlements in Africa. Piecemeal settlement of Venezuela started in the 1500's when it contributed a small fraction of (small scale) mining and stock farming in the Spanish colonial empire. Only from the early 18th century did the export of gold, silver, cocoa, tobacco and indigo make it more prominent. The use of native Indian labour made this a profitable dependent settlement for the Spanish (Olson 1992: 624-626). They continued onwards to extend their search for precious metal, though founds very few metals in the region now known as El Salvador, opting instead to use it as an agricultural base. Large tracts of land were granted by the crown to settlers, which included the right to claim tribute from local Indians (Bethell 1984: 168).

Colombia was seen as one of the least important Spanish conquests. Although Europeans already reached its shores in 1500, it only attracted larger interest from the 1700's when other areas were also conquered. Its geography made its economic value limited, with gains from

subjecting its people to dependent colonial rule of Spain borne from agriculture, and to a lesser degree mining and textile production. Honduras formed part of the Mexican empire and the United Province of Central America from 1822 to 1838, when it obtained independence from Spain. Its value in silver mining made the Spanish conquest after Christopher Columbus' discovery in 1502 (Olson 1992: 182-184).

Border colonisation became an important part of supporting Spain's colonial economies. After concurring Mexico and Peru, the economic activities in these areas needed supplies for man, animal and machine. The area of Argentina was identified as a prime supplier of these needs, and then inhabited by many "native American tribes". The economy revolved around pack animal and ranch farming in addition to grain production for especially miners in Bolivia. In establishing a Viceroy in 1777, it proclaimed its control over Argentina (and Uruguay, Bolivia and Paraguay) to "outdo" the Portuguese (Olson 1992: 50-51). Bolivia was settled as an expansion of Mexico's territory (Collier, Skidmore & Blakemore 1992: 187). To try and enlarge its presence in Latin America further, Spain sent explorers forth from Buenos Aires to discover the inland of South America. It increased its frontier (i.e. establishing a border colony) by creating *encomienda*⁵ based economies (Burkholder & Johnson 1994: 55). This is how the territory of Uruguay was established, expanding the geographic influence of Spain in Latin America.

Colonialism was much less severe in Paraguay compared to other Latin American states. Due to its limited supply of wealth (resources) labour was not often mistreated. Native Indians were educated in religion, farming practices and politics while the Spanish used the region as a centre for its religious and political management of the Latin American colonies it was situated between Brazil and Argentina and was established by enlarging their boundaries in the 1500's (Olson 1992: 473-474). Similarly less exploitive was Spain's single naval network colony established in the Panama region. The first Spanish settlement on the North American continent, Panama, was established in 1509 from the outset as a strategic point of naval activity. It served as base for the conquest of Peru, the first European sighting of the Pacific Ocean, and the shipping of gold from the Americas to Europe (Olson 1992: 466-467).

⁵ Under this agreement, labour and services of native groups were exchanged for military protection while the Spanish were compelled to do missionary work amongst them (Burkholder & Johnson 1994: 336).

4.3 France

France used its military prowess quite often in colonisation endeavors. After many years of strife between the French and the British, France eventually laid claim to the area of Burkina Faso (Upper Volta till 1984). It was consisted of parts of Upper Senegal and the Niger colony and established in the 1890's (Stewart 1989: 285). After conquering, many of the population were incorporated into French military and education systems, with agricultural production directed at other French colonies. They also invaded Madagascar in 1883, needing to expand the territory of overpopulated Reunion Island to the north already under French control. After several wars and invasions from 1883–1894, an agreement between the United Kingdom and the French signaled the British protectorate over Zanzibar and France's rule over Madagascar in 1895 (Boahen 1990: 109-110).

Another military conquest of the territory now known as Mali occurred in the 1880's. A French protectorate was declared after defeating Muslin forces and building several military forts in the area. Unlike Senegal, the area of Mali was not subjected to great French dominance and influence, with only the French language being a major influence (Kurian 1992: 1233-1234). They also conquered Morocco in a similar fashion to the English seize of Egypt. The Independent Sultanate of Morocco also had great debt to European powers, needing to secede much of its land to repay debts. However, large parts of the area were still under Moroccan control, with French influence focused on language and education (Waites 1994: 110). In similar fashion, the area of Tunisia was taken in 1881 by military force. The French received the right to claim the territory at the Congress of Berlin in 1878, where European powers vied for African land. Vietnam too was claimed in this way, where French missionaries had long been passively acting to enlarge the value of French views in the area. The banning of Catholicism between 1825 and 1833 changed this, with a French bishop's incarceration leading to the landing of French warships in 1847 and troops in 1858. In 1862 the Vietnamese government seceded to the French emperor (Albertini & Wirz 1982: 193-195, 261).

The Spanish conquest of Haiti had little political or cultural influence, and it was only the coming of the French and their African slaves in the mid-1600's that came to present some value. A third colonial period under the USA (1915-1934) did not change much. The Dominican Republic fell under the Haitian governments (same island) until 1844 when it achieved

independence (Kurian 1992: 512, 774). Both were established as Caribbean style settlements, with African slaves imported to supplement deficient local labour.

After initial economic and military expansion in the Niger region by the British in the 19th century, it was not until 1922 that the Niger Military Territory became a French colony. The region was proclaimed the Zinder Autonomous Military Territory in 1900 when the French expanded the Upper Senegal area and proclaimed the Damagaram area as a further expansion of their territory (Stewart 1989: 195, 300). The coastal area of Guinea was proclaimed a French protectorate in 1849 and called *Rivieres du Sud*. With the addition of Tomba Island and Futa Jalon in the 1881 it became the *Rivieres du Sud* Territory in 1882. Renamed French Guinea in 1893 (Stewart 1989: 105, 225), the French continued colonial influence in the area. Both featured as examples of France's border expansion of African colonies in search of further resources to exploit.

The focus of France's presence in Gabon was due to naval and commercial interests. Their goal, to reduce slave trade and further resource trade, was opposed by the native Gabonese who often pillaged their vessels. As a result, France's navy extended its activities to the region while establishing new bases for supply and maintenance of ships. This continued with the establishment of fortified military-commercial sites in Dakar (Barnes 1992: 15).

The French arrived in Senegal in the 1600's, setting up trading posts across the region, trading in commodities like slaves, gold and gum (from trees). Very few Europeans settled in the area, with much of the political and administrative duties left to locals. Senegal regularly took part on French politics (sending a deputy to the French legislature) and received many social institutions like education from the French. They were the only colony where the policy of assimilation into French society was exercised over a large part of the population (Kurian 1992: 1683). The first French posts in Côte d'Ivoire (Ivory Coast) were created in 1843, becoming a formal protectorate of France in 1893. It had a long history of pro-French interaction, adopting its educational, judicial and political systems even after independence in 1958. Its main value to France was the cultivation and trade of cocoa, palm oil and coffee with forced African labour. It was controlled, as with most dependent settlement colonies, by a French minority and local elite (Kurian 1992: 918).

The state of Algeria became a metropolitan of France in 1830, has a strong mutually beneficial free-trade agreement with France, and adopted French as a national language. In return

the Algerians were used as low-cost labour in a constant subservient situation (Albertini & Wirz 1982: 256). Although this settlement was not as extractive as some other African areas, it was still a dependent settlement with profits channeled to France.

It will be disputed by some as to who should be seen as the colonisers of Canada, the English or the French. The English arrived from the middle 1800's onwards and are relevant to the mortality data under consideration. However, their expansion into the area was not purely colonial, and more of a bordering conquest. The French had already conquered the northern areas of the New World and won their freedom with gradual dissociation on basically good terms (Osterhammel 2005: 17). They established good relations with the native Amerindians and fashioned an independent overseas settlement colony (Bourque 2005: 36).

4.4 Portugal

The Portuguese fostered a similar society in Brazil as the English did in the Caribbean. After exploiting the labour of indigenous groups, and reducing their numbers by slave trade, sickness and war, they imported a large amount of slaves from Africa (from their other colonies e.g. Angola) or purchasing from other European powers. From 1570 plantation economies became very prominent in European foreign policy, with up to 600 000 black slaves already brought to Brazil (Osterhammel 2005: 12, 30). The European master class and black slave groups illustrate the exploitive nature of this colony.

Angola had similar origins to that of Australia, being the first penal colony formed by Europeans in 1750, some 50 years before the English followed suit. Like the Australians, Angola was dependent on the mother colony and showed some animosity to local inhabitants. They were, in fact, much more dependent on Brazil for trade interaction, making it of second importance to Europe, which required them to establish much more positive colonial structures than most exploitive states (Ferro 1997: 140-141). They were however still a dependent overseas settlement like most other African colonies.

Portuguese colonisation was however not all exploitive. The original conquerors of Malaysia (Malaya, or Malay Peninsula), the Portuguese occupied the city of Maracca in 1511 which was originally established by a Sumatran prince to unify several villages on the state. It was used as a way station by both them and the Dutch from the middle 1600's in the important

spice trade with the Chinese (Albertini & Wirz 1982: 145) and became a very valuable link in several naval networks.

4.5 Germany

Cameroon and Togo were declared protectorates of Germany in 1884. Salt, cotton, cloth, ivory and cotton was traded between coastal natives and their inland counterparts. The protectorate, established to secure a part of Africa's resource wealth for the German states, was dependent on Germany for trade opportunities and government structures (Pim 1940: 132). The Europeans also partook in the trading of slaves, which required the colonial regime to "pacify" opposers using military force (Le Vine 1964: 46) – a characteristic of most other dependent overseas settlements.

4.6 Belgium

The Belgium Congo (representing the current Democratic Republic of the Congo and Congo-Brazzaville) and Zaire (the name of the Democratic Republic of the Congo until 1997) regions are the quintessential definitions of extractive colonies. The personal property of the Belgian crown bearer from 1884 to 1960 (most prominent of which were Leopold II), it was used as a source of diamonds, wood, tropical fruit and slaves (Ferro 1997: 86-87). It is the most prominent exploitive overseas settlement, seen as a capitalist investment where output was needed to justify inputs. The Belgians used their invested capital in transport, trade and communication infrastructure as justification of their claim to the area (Nzongola-Ntalaja 2002: 20).

European missionary penetration and commercial interaction with Tanzania since 1840 laid the groundwork for its conquest. Germany's proclamation of Tanzania was a military one, with military treaties with certain groups fostering conflict with others. The process, from 1884 to 1900, was conducted under the auspices of the German East Africa Company and supported by German Chancellor von Bismarck (Kaniki 1980: 94-96).

4.7 The Netherlands

Both Britain and The Netherlands reigned over South Africa for more than a century each. The responsibility of establishing institutional structures however go to the Dutch, whose control over the area from 1652 to 1795 created an agrarian society aimed at supplying the Netherlands with naval travel supplies. Only after the English gained control over the colonies (in 1795) did large

scale industrial development take place. It was created by the Dutch for, and used by the English as well, to service their naval needs (Lemon & Pollock 1980: 73).

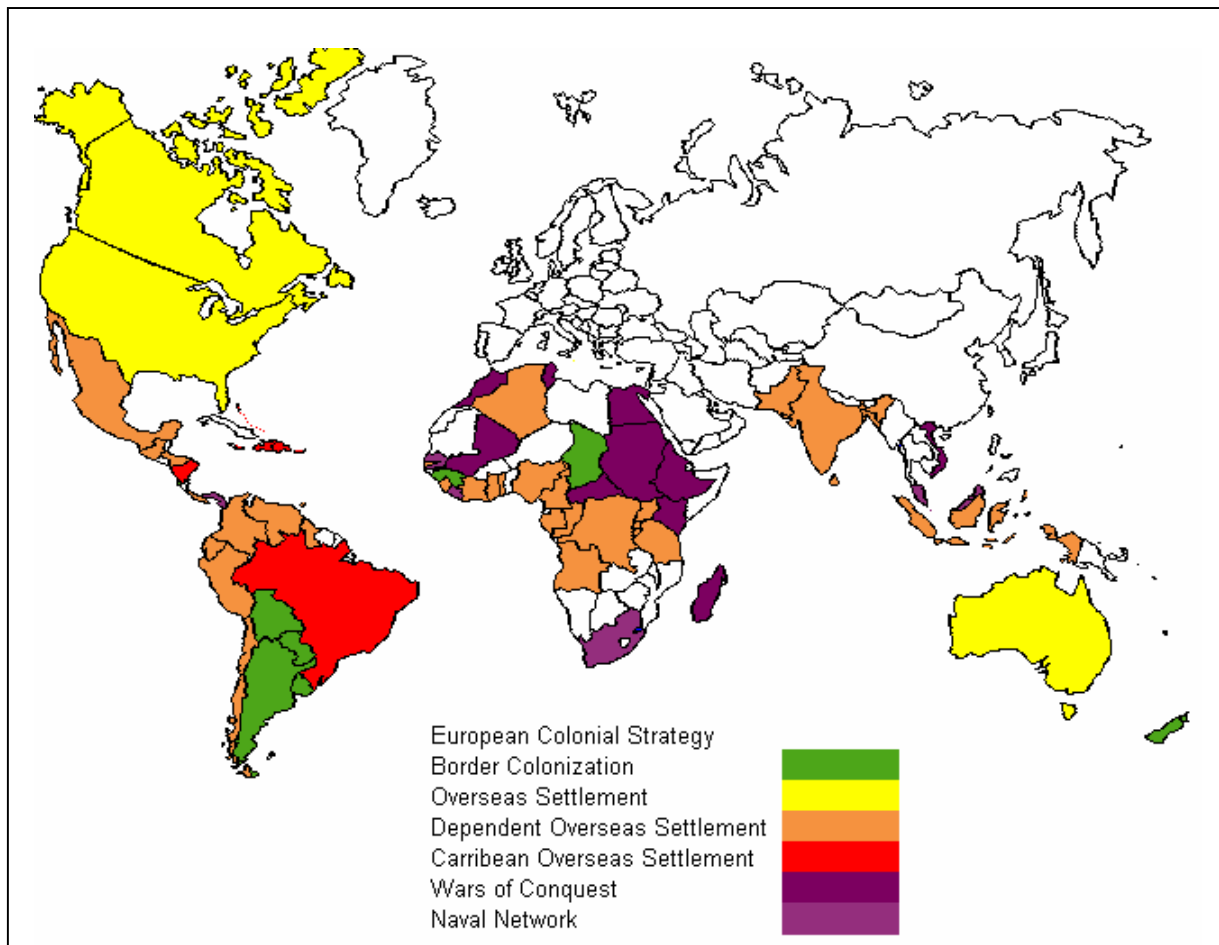
4.8 Italy

With only one colony present in this study, Italy seems to be the least prominent coloniser. However, they are included in this research because colonies per se are not the only issues here. Ethiopia was Italy's goal of conquest after it purchased a part of Eritrea to enable trade in the Red Sea. Despite support from the French and British, often in conflict elsewhere and not very reliable, the Ethiopian emperor (Yuhannes II) had little resistance to fascist military abilities (Boahen 1990: 123). Italy had to submit to an external government following this war of conquest, with Italian influences in government, administration and education systematically having influences in their culture.

5. Discussion of findings

Returning to a graphic perspective of the distribution of colonies, Map 3 illustrates the different colonial strategies followed across the world as identified in the discussion so far. There are (as in the case of mortality data) visible diagonal trends in North America and Australia (overseas settlements). Central America and the northern part of South America do however break away from the rest of the western hemisphere, where a homogenous level of mortality in Map 1 is not reproduced in homogenous colonisation strategies. The collection of dependent overseas settlement colonies stretches across Central America, Africa and Oceania. Areas that experienced wars of conquest are mostly clustered in northern Africa, amongst states of greatly varying expected European mortality data. South America, showing almost uniformly low levels of mortality, has regional concentrations of border colonisation, dependent overseas settlements, as well as Brazil that showed many Caribbean traits in its colonising.

Map 3: Colonisation Strategies



Source: Theodora (2002)

This map shows some great deviations in colonial strategies from the mortality situation. Although it is clearly acknowledged that expected European mortality is not the only determinant of colonial strategy, it was propagated by AJR as being very important for the purposes of understanding institutional creation and is the underlying link for their proxying of initial institutions with mortality data. Another important graphic analysis, returning to AJR's graph of the relationship between GDP per capita and expected mortality, is scrutinizing the association between different colonial strategies and their accompanied expected European mortality rates. Figure 4 illustrates the same data as in Figure 2 and (AJR 2001: 1371), but labels the data observations by color according to colonisation strategies identified in Table 1 and Map 3.

Figure 4: Relationship between Current Income and Historical Settler Mortality (64 countries)

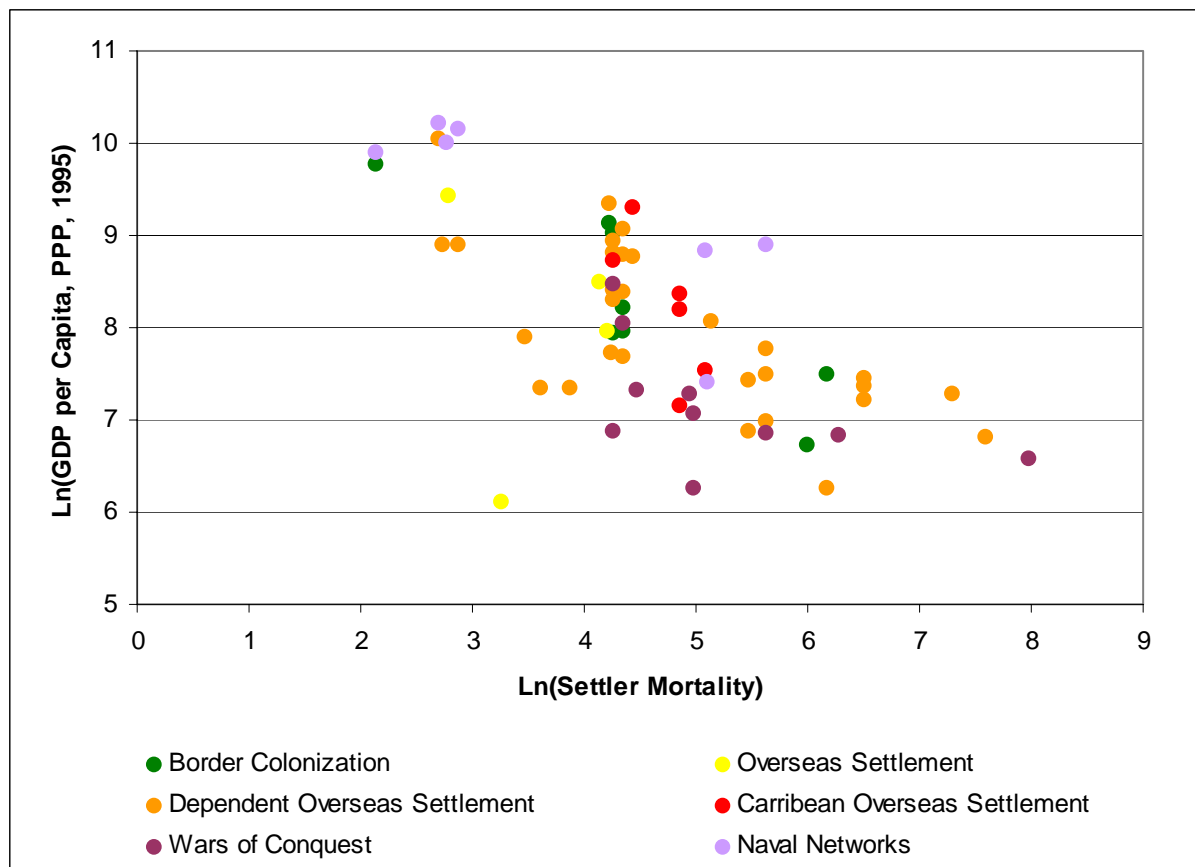


Figure 4, indicating the different colonial strategies, paints a concerning picture regarding the relationship between colonial strategies and expected European mortality. Border colonisation and dependent overseas settlement occurs over a large part of both the mortality and economic development data range, contrary to what would be expected from AJR’s reasoning – more polarisation on the extremes of the data scale. Both overseas settlements and Caribbean style overseas settlements are clustered around a certain range of mortality data, but exhibits varying economic performance across these observations – current GDP per capita varies greatly around a small sample of mortality rates. Neither wars of conquest nor naval networks can really be clustered into groups, stretching over mortality and economic performance ranges.

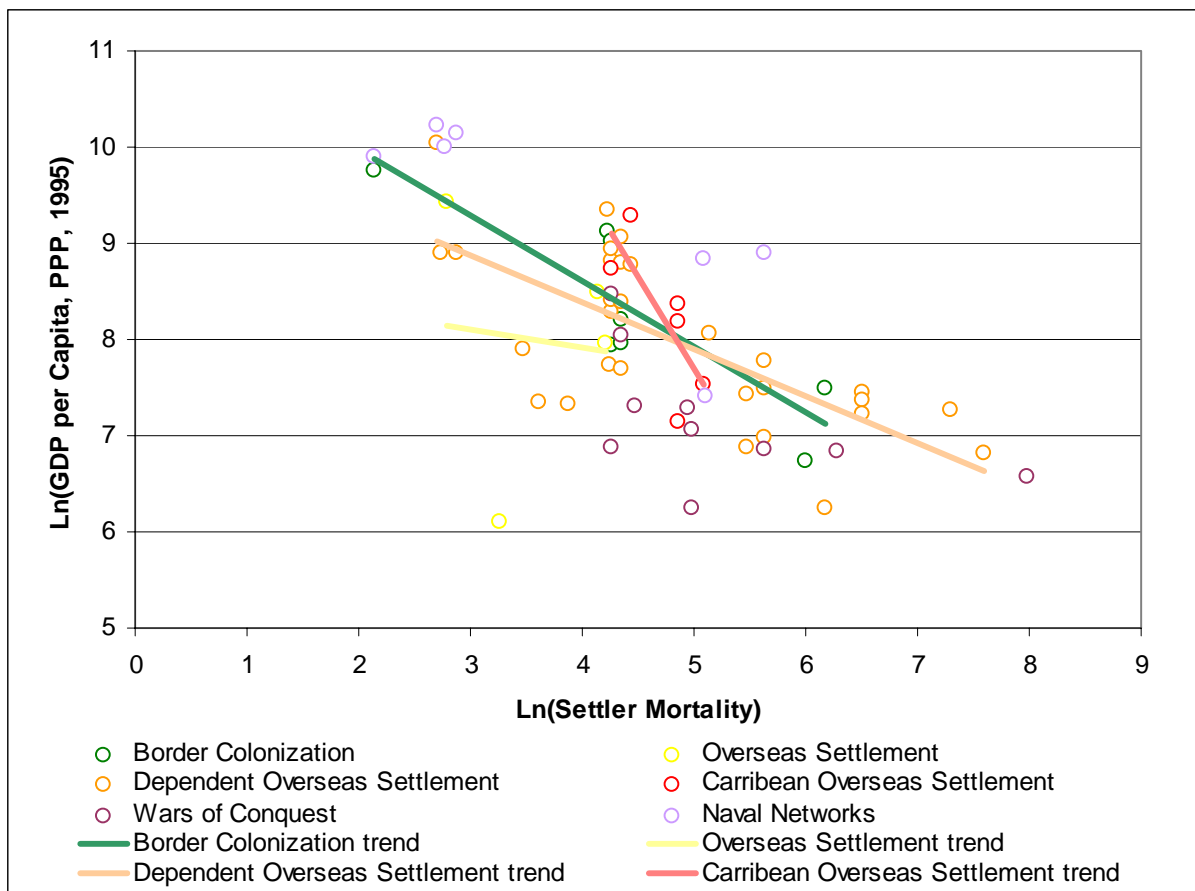
Of interest is the cluster of over 20 countries lying just to the right of a settler mortality value of $\ln = 4$ (settler mortality above 55) in figure 4. It stretches over an income range of below $\ln = 7$ and above $\ln = 9.5$. This group represents almost a third of countries in the dataset and

covers five out of the six possible colonial strategies within a very limited mortality range. It is not expected, from AJR's reasoning, that such diverse colonial strategies would be apparent in such a small expected mortality range. In addition, border colonies and dependent overseas settlements are almost equally prevalent in this sample – the first falling in the AJR's "good" colonies and the latter in the "bad" colonies section. Similar comments can be made for the observations around an expected mortality of $\ln = 5$, where ten colonies also accommodate four (out of six) different colonial settlement practices.

AJR remove outliers from their sample of countries to ensure that these observations do not drive their findings, showing the robustness of their econometric results. They are able to show that with outlier removed, results are still consistent despite a smaller sample. If outliers are removed from the dataset of 64 countries the observations around $\ln = 4$ and $\ln = 5$ would constitute 56% of the sample of colonies (almost 48% when all outliers are included). It would seem quite troubling to make an argument for an empirical regularity, as displayed by AJR's association between expected mortality and initial institutions, if about half of the sample under consideration does not conform to the discourse.

An additional concern is the observation that the series of mortality data used, with its diverse characteristics, can even be suspected of having several structural breaks. Figure 5 shows the trend lines of data ranges associated with different colonisation strategies, excluding wars of conquest and naval networks due to their irregular groupings. The gradients of these lines range from -1.68 to -0.19, a great variation that should indicate, without great statistical analysis, several structural breaks in the data. This indicates that the data should possibly be separated into different data series or sub-samples, with the implication that these colonies should not be uniformly compared with each other. The difference between the trend of a "good" overseas settlement and a "bad" Caribbean overseas settlement is immense.

Figure 5: Data trends associated with different colonisation strategies



Data source: AJR (2001: 1398)

These results show that the data used in AJR's paper should not be uniformly seen as comparable. According to Albouy (2006: 1), over twenty published articles and many more working papers make use of AJR's settler mortality data. Doubtless, many of these also use the data for the purposes of instrumenting for initial institutions. There is a questionable relationship between expected European mortality and colonial strategy using AJR's data when sufficient colonisation definitions are used. In addition, the economic results from certain colonial strategies are also not conforming to expectations. There are too many diverse combinations of economic performance and mortality rate variables that are connected to colonisation strategy to form the conclusion that potential settler mortality had a strong direct (or even indirect) influence on settler strategies.

Returning to Figure 2, this gives evidence against the idea of potential settler mortality determining settlement creation through a specific colonial strategy (step A) - a crucial operator in AJR's assumption that potential settler mortality can be used as a proxy for initial institutional structures. If step A is not viable, the early institutions created by colonial settlement strategy cannot be linked to expected European mortality by quantitative proxy. This makes the assumed relationship not viable, with the instrumenting of early institutions with mortality data qualitatively illogical and quantitatively questionable

6. Conclusions

Acemoglu, Johnson and Robinson's (2001) paper is seen as a gigantic contribution to understanding the role of institutional factors in economic development. The diverse nature of economic outcomes, past and present, makes the understanding of determining factors all the more important in understanding our global economic heritage. Their data collection, quantitative analysis and results obtained are excellent and cannot be faulted quantitatively. The value of this text is illustrated in it being referenced almost 1,500 times in peer-reviewed journals by end-June 2007 according to Google.com search parameters.

There does, however, exist a lack of sufficient theoretical examination of colonial strategies as part of a great system of colonialism across time. Their view of colonisation strategies is too narrow to discuss the broad methods followed in 64 colonies. A much broader and explicit definitional discussion by Osterhammel (2005) highlights this shortcoming, offering eight different possibilities.

Where quantitative abilities, facilitated by modern computation methods, are often used to understand historical economic dynamics, the role of qualitative facts have often been diminished. In the case of AJR (2001), general instruction is given on historical events in a limited quantity, with the necessary qualitative historical facts significantly absent from their theoretical and logical arguments. When examining the actual accounts of colonial strategies since the 16th century, the diverse nature of these processes beyond AJR's reckoning becomes apparent.

AJR (2001: 1395) summarizes in their conclusion that "there is a high correlation between mortality rates faced by soldiers, bishops, and sailors in the colonies and European settlements; between European settlements and early measures of institutions..." This paper

finds no fault in the latter assumption, as the establishment or modification of a society by colonial settlement would have changed the nature of institutions and institutional structures. However, the historical research conducted here has shown that expected European mortality rates cannot be uniformly connected with certain colonial strategies across AJR's data range under consideration. The options identified by Osterhammel (2005) indicate a broad range of colonial options that are not associated with a certain level of expected mortality. On the contrary, diverse colonial strategies are evident in limited expected mortality ranges, representing almost half of the data observations depending on sampling. With 50% of observations inconsistent with AJR's argument, this quantitative regularity appears to have been dealt a severe blow.

Graphical analysis between expected European mortality and economic development associated with certain colonisation methods cannot be grouped or classified to determine a possible rule-of-thumb in linking expected European mortality and initial institutions. This indicates fallacies in AJR's arguments that use mortality data as proxies for initial institutions, a premise shown to be incorrect by examining qualitative information on the relationship. By failing to integrate a qualitative approach to understanding the relationship between expected European mortality and colonisation strategies their quantitative wizardry has been left wanting. This raises concern over other research that has used this premise for quantitative work, tainting the quantitative results.

This study illuminates the value of qualitative research into economic history despite the apparent quantitative robustness of explaining development and growth. Future work will entail explaining the connection between expected settler mortality and current economic development as indicated by quantitative results in AJR (2001), as it is clear that colonial strategy is not the common denominator. The lesson learned from this study is that a qualitative discourse could be needed to solve this riddle.

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Appendix A

Mortality is measured as the expected death per 1000 of European settlers. Current income is measured in 1995 GDP per capita, as measured by the World Bank in US Dollars, with consideration of purchasing power parity.

Table 2: Country, Coloniser, Colonial Mortality and Current Income

Country	Coloniser	Colonial Mortality	Current Income	Country	Coloniser	Colonial Mortality	Current Income
Algeria	France	78.2	4402.8	Jamaica	Britain	130.0	3604.7
Angola	Portugal	280	2368.5	Kenya	Britain	145.0	1164.4
Argentina	Spain	68.9	9228.0	Madagascar	France	536.0	934.5
Australia	Britain	8.55	19930.4	Malaysia	Britain	17.7	7259.0
Bahamas	Britain	85	10829.2	Mali	France	2940.0	713.4
Bangladesh	Britain	71.41	972.6	Malta	Britain	16.3	12456.5
Bolivia	Spain	71	2779.4	Mexico	Spain	71.0	7631.2
Brazil	Portugal	71	6185.7	Morocco	France	78.2	3102.6
Burkina Faso	France	280	943.9	New Zealand	The Netherlands	8.6	17326.6
Cameroon	Germany	280	1808.0	Nicaragua	Spain	163.3	1881.8
Canada	France	16.1	21807.3	Niger	Britain	400.0	837.1
Chile	Spain	68.9	11384.4	Nigeria	Britain	2004.0	906.9
Colombia	Spain	71	6700.9	Pakistan	Britain	37.0	1556.2
Congo	Belgium	240	1669.0	Panama	Spain	163.3	6905.0
Costa Rica	Spain	78.1	6568.2	Paraguay	Spain	78.1	3677.5
Cote d'Ivoire	France	668	1702.8	Peru	Spain	71.0	4447.1
Dominican Republic	Spain	130	4272.7	Senegal	France	164.7	1636.0
Ecuador	Spain	71	4769.5	Sierra Leone	Britain	483.0	518.0
Egypt	Britain	67.8	2835.6	Singapore	Britain	17.7	25591.1
El Salvador	Spain	78.1	2835.6	South Africa	The Netherlands	15.5	7259.0
Ethiopia	Italy	26	450.3	Sri Lanka	Britain	69.8	2275.6
Gabon	France	280	7332.0	Sudan	Britain	88.2	1495.2
Gambia	Britain	1470	1436.6	Tanzania	Germany	145.0	518.0
Ghana	Britain	668	1587.6	Togo	Germany	668.0	1366.5
Guatemala	Spain	71	3983.8	Trinidad & Tobago	Britain	85.0	6438.2
Guinea	France	483	1790.1	Tunisia	France	63.0	4817.4
Guyana	Britain	32.18	2697.3	Uganda	Britain	280.0	1064.2
Haiti	France	130	1274.1	Uruguay	Spain	71.0	8349.9
Honduras	Spain	14.9	2186.4	USA	Britain	15.0	27446.7
Hong Kong	Britain	78.1	23155.8	Venezuela	Spain	78.1	8690.6
India	Britain	48.63	1525.4	Vietnam	France	140.0	1451.0
Indonesia	The Netherlands	170	3197.1	Zaire	Belgium	240.0	962.9

Data source: AJR (2001: 1398)