Overcoming Smallness through Education Development: A Comparative Analysis of Jamaica and Singapore

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Between 1960 and 2010, Singapore's real gross domestic product (GDP) per capita skyrocketed from $4,383 to $55,862, while Jamaica's barely increased from $6,417 to $8,539. It is plausible that differing rates of GDP growth are associated with differences in the development of education systems but causally the linkage is not well understood. Using a comparative analysis of education in Jamaica and Singapore, this paper explores the critical factors in education development in small states. This article argues that education development can substantively help small states overcome many of the limitations of their smallness that are exacerbated in an increasingly global economy. Three significant factors that shaped the education development of Jamaica and Singapore are identified. First, the timing of reforms is important, not just the content of educational reforms. Second, having a vocational strategy is key. Third, a balanced, forward-looking education development strategy that closely ties education, economic and national development is crucial.

Introduction

Since the 1980s, the educational problems facing small states have garnered the special attention of many agencies such as the Commonwealth Secretariat and World Bank (Bacchus, 2008; Bray & Packer, 1993; Crossley, Bray, & Packer, 2011). Financial, cultural and political globalization have exacerbated the vulnerabilities and fragilities of these small states in the twenty-first century, making the success of small states largely dependent on the quality of their human resources (Bacchus, 2008; Mayo, 2010). Despite the heightened interest, many of the publications on small states fail to capture the contribution that education can make to the development of small states in light of increasing globalization (Bacchus, 2008). Diverging economic growth rates among small states compel researchers and policymakers to re-conceptualize the limitations of 'smallness' and the role of education development strategies in overcoming constraints facing small nation states in an increasingly global economy.

Several studies have focused on the relationship between economic growth rates and the quality of education (Aghion, Caroli, & Garcia-Penalosa, 1999; Barro, 1991; Hanushek, 2008; Hanushek & Woessmann, 2007; Sen, 1999) but there are relatively few comparisons between these metrics and national strategies for education development especially among developing countries. Consider two cases. In 1960, Jamaica had a higher real gross domestic product (GDP) per capita than Singapore. Over the next 50 years, Singapore's real GDP per capita grew exponentially compared to Jamaica's anemic economic performance. During this period, Singapore's GDP skyrocketed from $4,383 to $55,862, while Jamaica's barely increased from $6,417 to $8,539 (Heston, Summers & Aten., 2012). Figure 1 shows the real GDP per capita (at Purchasing Power Parity 2005 constant prices) for Jamaica and Singapore between 1960 and 2010.

How do two countries with similar starting points in 1960 have such divergent economic development outcomes over the next half-century? This article is an exploratory study based on secondary sources including analysis of cross national data from the World Bank and Penn World Tables to detect patterns in education and economic metrics, document analysis of policy briefs from the Ministries of Education and a review of previous literature on education development

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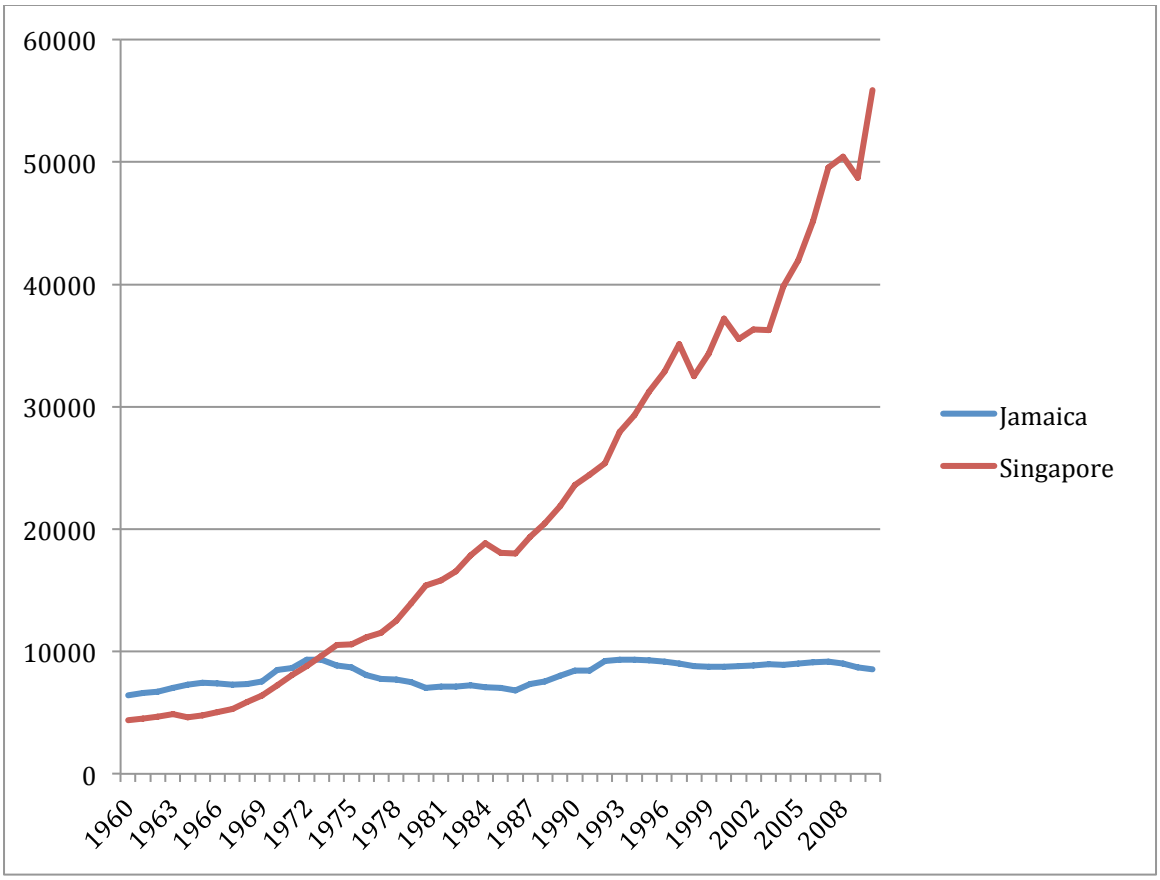

(Source: Heston et al., 2012; Penn World Tables, 7.1)

Figure 1. **Real GDP per capita, at PPP 2005 constant price, Jamaica and Singapore: 1960-2010.**

in both countries. The central research question guiding this study is: What are the critical factors that shape education development in small states? Although this paper posits that quality education is a core component of economic and national development, economic growth is a complex endeavor and the relationship described is based on consistent covariance rather than implied causality.

Education development is defined by changes in access, equity, efficiency and quality. This definition is operationalized by outcome measures including literacy rates and average years of school attainment as well as inputs such as public spending on education. There is a conscious focus on factors not directly related to teacher quality and recruitment since a growing body of research has confirmed the importance of teacher quality in student achievement and education development strategies (Barber & Mourshed, 2007; Coleman, 1966; Murnane, 1991; Rivkin, Hanushek, & Cain, 2005). Though population size is the standard defining characteristic, small states can also be defined by location, geo-political positioning and economic capacity (Bacchus, 2008; Bray & Packer, 1993; World Bank, 2000). This article uses a population size of below five million (Commonwealth Secretariat, 2009; Crossley et al., 2011) and islands with a geographical mass of less than 12,000 square kilometers to define countries as small states. Both Jamaica and Singapore meet these criteria.

This article offers three plausible grounded hypotheses for the critical factors that shaped the education development of Jamaica and Singapore. The factors posited are not proven conclusions but claims requiring further empirical support and analysis. First, the timing of educational reforms (the when) and not just their content (the what) is important. It is plausible that the varying education policies of each country in the immediate post-independence era (1960-1980) have had lasting effects. Second, having a vocational strategy is key. Singapore's extensive efforts in vocational education signaled that the political leadership was thinking consciously about linking education and labor markets. Third, a balanced, forward-looking education development strategy that closely ties education, economic and national development is crucial. In what follows, the varying contexts of the two countries are outlined. Next, a brief selective history of education development in Jamaica and Singapore from 1960 through to 2010 is provided. The three aforementioned hypotheses in the development of education systems in small states are discussed using the experiences of Jamaica and Singapore.

Similar Starting Points, Contrasting Contexts

Jamaica and Singapore provide a comparison between countries with compelling similarities and differences. Both nations are islands, members of the Commonwealth and former British colonies that started their development journey in the 1960s. However, both countries had vastly different roles within the British Empire that shaped their post-independence policy directions and path to economic growth. Indeed, the education development of small states cannot be separated from the impact of social, cultural and geo-political factors (Crossley & Holmes, 1999). Thus, in comparing Jamaica and Singapore, a few points of context are important as they may partly explain the disparities in economic growth as well as contextualize the education policies pursued by each country.

Jamaica and Singapore gained independence in 1962 and 1965 respectively, but with different colonial legacies. In contrast to the assimilation process that complemented colonization in the Americas, Singaporeans in the colonial era could freely practice their own religions and speak their own language (Boon & Gopinathan, 2006). Jamaica was under British colonial rule longer than Singapore and both countries had different economic drivers. It is difficult to assess how the infrastructure in each country differed in 1960 because of limited primary and secondary data, however, it is plausible that colonial experiences play a role in post-independence education strategies. Table 1 summarizes the basic economic, political and social features of Jamaica and Singapore from 1960 to 2010.

Jamaica and Singapore had different histories of colonialism by virtue of the different roles each colony played in the British Empire. Jamaica provided raw materials and markets for the British Empire while Singapore was mainly a regional trade node. Jamaica was a plantation society with slavery and a predominantly black population. As was typical of countries in the Anglophone Caribbean, education in Jamaica was restricted to the planter class and a tiered system of educational opportunities persisted into the post-independence period (Evans, 2001; Jules, 2010). In contrast, Singapore was a diverse state composed of Chinese, Tamil and Malay ethnic groups with no slavery.

Both countries inherited the Westminster parliamentary system but over the next 50 years, Jamaica maintained a two-party democracy compared to Singapore's de facto one party democracy. Between 1960 and 2010, Jamaica had 11 parliamentary elections with eight different prime ministers and the government has changed several times between the two major political parties. On the contrary, Singapore has had three prime ministers and the same party has been

Table 1. ***Political, Economic, Education and Cultural Features of Jamaica and Singapore: 1960-2010***

	Jamaica	Singapore
Political		
Land area	Approx. 11,000 square kilomaters	Approx. 700 square kilometers
British colonial rule from	1655 to 1962	1819 to 1965
Achieved independence	August 1962	August 1965
Parliamentary system	Bicameral parliament is legislative branch of government in parliamentary democracy	Unicameral parliament is the legislative branch of the government in parliamentary republic
Leadership	8 different prime ministers in competitive multiparty elections	3 different prime ministers; People's Action Party has won every election with majorities
Economic		
Per capita GDP (1960)	$6,417	$4,383
Per capita GDP (2010)	$8,539	$55,862
Natural resources	Bauxite and alumina	None
Main economic activities	Tourism, bauxite export, agriculture (sugar, banana, coffee), remittances In 1960, economy consisted mainly of agriculture, bauxite, tourism In 1980, bauxite influence on economy wanes; tourism, agriculture, manufacturing and remittances begins to wax. In 2010, the economy was heavily dependent on services (60% of GDP), remittances (15%), and tourism (15%)	Manufacturing, services, hi-tech industries, trade. In 1960, mainly trade-based economy; in 1980, economy diversified to manufacturing, financial services oil refinery. In 2010, a highly developed market-based economy with manufacturing, services and high-technology driven industries, highest trade to GDP ratio in the world with more than 7000 multinational corporations.
Education		
Ministry of Ed. role	Oversees formulation and implementation of all policy	Oversees formulation and implementation of all policy
Adult Literary	Adult literacy rate (1999) – 80% Adult literacy rate (2009) – 86%	Adult literacy rate (1980) – 83% Adult literacy rate (2009) – 95%
Public expenditure on education (% of GDP)	5.5%	3.5%
Cultural		
Population (1960)	1.6 million	1.6 million
Population (2010)	2.8 million	4.7 million
	Majority of population is of African descent: 95% Black Jamaican patois is national dialect and most spoken on the island but English is the official language Emigration is heavy and consistent to US, UK and Canada	Approximately 3 million people are locally born signaling an influx of foreigners and large number of immigrants. Majority of population is composed of three ethnic groups: Chinese (74 %), Indian (13%) and Malay (9%) There are four official languages: English, Malay, Tamil and Chinese

Sources: Aldcroft, 2000; CIA Factbook, 2012; Heston et al., 2012 (Penn World Tables, 7.1); World Bank (2011).

in government over the last 50 years. Given that social and political instability are central factors that may curtail the development of small states (Wint, 2002), education development strategies in Singapore were undoubtedly influenced by the stability of the political leadership of Singapore's first Prime Minister Lee Kuan Yew, who remained in power for nearly three decades. Since 1972, Freedom in the World, a comparative assessment of global political rights and civil liberties, has consistently rated Jamaica as 'free' while Singapore is rated as 'partly free'; Jamaica, unlike Singapore, is classified as an electoral democracy (Freedom in the World, 2012).

In many instances, the agenda of education in small states is significantly influenced by paradigms advanced by multilateral organizations instead of endogenous development imperatives (Jules, 2006). Thus, geo-political positioning and the impact of international financial institutions, regional groups and other special interests on education development strategies may also vary between the two countries. Singapore started the development process in the 1960s in a fragile geo-political environment that prompted rapid industrialization with an abundance of unskilled, low cost labor (Ashton, Green, Sung, & James, 2002). Historically, the Caribbean Community (CARICOM), a regional organization of Caribbean states formed in the 1970s, has played a limited role in the education policy of individual countries (Jules, 2010). Since Education for All (EFA), an international initiative launched in 1990 with significant inputs from Caribbean countries, there has been a greater effort towards synchronization of education policy in the Caribbean with mixed results (Miller, 2000).

Although Singapore's economic growth has been attributed to the work ethic and culture of Singaporeans (Yew, 2000), it is difficult to compare the role cultural differences played in the education development of both countries. Similarly, the coordination between different agencies within the government, the promotion of greater collaboration between education and other state ministries, and variations in management and administrative skills pose challenges in comparing the two countries. Population flows and the levels of foreign direct investment substantively vary between the two countries and may point to critical differences regarding the available talent pool for education administration between the two island nations. While Jamaica has suffered from severe brain drain, Singapore has high people flows and a substantial amount of Singapore's population is foreigners. The net inflow of human resources in Singapore compared to the outflows in Jamaica may be indicative of the differences in the link between education development and job availability in each country.

Though primary and secondary school enrollment is near universal in the two islands, Singapore's education system has markedly outperformed Jamaica's since both countries gained independence in the 1960s. As of 2009, Singapore had the higher literacy rate of the two countries with 95% compared to Jamaica's 86% (World Bank, 2011). In Jamaica, females have higher literacy rates than males while the opposite is true in Singapore. In terms of educational attainment and achievement, Singapore has a better gender balance than Jamaica. A comparison of public spending on education as a percent of GDP in the latter half of the twentieth century indicates that Singapore spends relatively less than Jamaica (roughly 3.5% vs. 5.5%). This disparity in expenditure suggests that how funds are used is perhaps more important than the scarcity of funds that small states often face. Moreover, the comparative experience of the two countries implies that there are significant factors beyond increased funding that are necessary for substantial improvement in education outcomes.

Expanding Access to Primary and Secondary Education: 1960-1980

The period of 1960 to 1980 was a transformative, post-independence era in Jamaica and Singapore.

Upon independence, Singapore inherited a fragmented system with English and non-Ministry Of Education (MOE) funded vernacular schools and the main policy challenge was to unify the system and integrate the various ethnic groups through education (Boon & Gopinathan, 2006). Since 1953 every public primary school in Jamaica has had its own independent school board, which hires and fires teachers and this has also been the case of secondary schools from the latter part of the 19th century (Miller, 1999). In the 1950s, access to secondary education in Jamaica was very limited but a major expansion of secondary schools beginning in the 1960s resulted in a dramatic increase in the number of secondary schools (Miller, 1990). Tables 2a and 2b summarizes the main policy events in the education development of Jamaica and Singapore from 1960 to 2010.

Upon their independence, expanding access to education was a major imperative in both countries (Jules, 2010; Law, 2008). However, the countries diverged in deciding which level of schooling to prioritize and how to balance competing goals in the development of education systems. Both countries adopted the goal of universal primary education (Boon & Gopinathan, 2006, Miller, 1997). Yet the education development strategies pursued by each country illuminate differences in promoting primary education and the impact of post-independence policies on the overall development of education systems in developing countries.

Jamaica focused on further access to secondary and post-secondary education to meet the expanding demand for skilled labor as evidenced by the rapid growth in enrolment in higher education until the mid-1980s (Nkrumah-Young, Huisman, & Powell, 2010). In contrast, Singapore emphasized the quality of primary schooling as well as technical and vocational education while expanding secondary schooling (Ashton et al., 2002; Law, 2008). Singapore employed a sequential strategy to education development by focusing on primary education then moving up to higher levels as the skills demanded by the economy changed (Aldcroft, 2000). Indeed, in its initial years of independence, the Singaporean government allotted the majority of its annual budget to primary education followed by secondary education and higher education (Boon & Gopinathan, 2006). This paper posits that this key strategic difference in the 1960s partly explains the disparity in education development and economic growth between the two countries over the post-independence period.

A significant differentiating factor in the immediate post-independence period is how each country chose to resolve the language 'problem'. The language of instruction is a potentially contentious issue in an education system as it is deeply intertwined with feelings about personal and national identity (Mourshed, Chijioke, & Barber, 2010). In Singapore, the learning of a second language was made compulsory in all primary schools in 1960 and this policy was extended to secondary schools in 1966 (Boon & Gopinathan, 2006). The government viewed the bilingualism as a critical component of the education system for achieving social cohesion and economic prosperity in a largely plural society (Boon & Gopinathan, 2006). Conversely, Jamaica continues to grapple with the dual language issue as English is the language of the classroom but patois is the language of homes, especially in lower-income families (Bryan, 2004). The role of patois in the Jamaican classroom remains contentious and unresolved.

Jamaica

Changes in the lending policy of the World Bank enabled Jamaica to obtain loans for the extension of educational facilities placing great emphasis and importance on the expansion of secondary and post-secondary education. Between 1966 and 1980, 50 new secondary schools were built and a Canadian loan scheme at the same time sponsored the building of 40 primary schools (Whyte, 1983). Notwithstanding, there have been continued variations in access to the different types

of secondary schools for different social classes (Evans, 2001). For instance, the 'all-age' school serves as a primary and secondary school as it offers instruction from Grades 1 to 9. 'All-age' schools were established after slavery was abolished to prepare the children of ex-slaves for the labor market as laborers in a highly stratified society (Turner, 1987). In the post-independence period, 'all-age' schools were attended mainly by children of the lowest earning quintiles of the Jamaican population (Evans, 2001).

In the early 1970s, the Michael Manley led government adopted educational reforms aligned with its overarching goal of putting Jamaica on the path towards democratic socialism. Consequently, there was a flurry of initiatives in education as the MOE was radically reorganized and modernized. In 1973, 'Education Thrust' was instituted as a comprehensive program intended to address all levels of education, with improved access to all levels of education from primary to adult education. This reform resulted in the first mass literacy campaign in the Anglophone Caribbean and an increased focus on adult literacy with the formation of the *Jamaica* Movement for the Advancement of Literacy in 1972 (Jules, 2010). The shift system was implemented as a supposedly temporary measure to increase the number of places in high schools. In addition to establishing a vocational unit, the MOE also formed a research unit which has conducted several studies since the mid-1970s (Miller, 1997).

In the 1960s, Jamaica's education development strategies were seemingly subjected to significant influence from multilateral agencies. While it may be true that primary education has a higher economic value at lower levels of development (Psacharopoulos, 1985; Psacharopoulos & Patrinos, 2002), special interest groups may push for investment in higher levels of education. This also implies that the state will be more likely to foster economic growth by initially investing in lower levels of schooling then shifting government spending and expanding access to higher levels of schooling as the country becomes more developed. In the 1970s, there was still significant investment in higher levels of schooling as from 1973-1976 the budget for tertiary education increased more steadily than for primary and secondary education, though it was acknowledged that the greatest needs were at the lower levels of education (Nkrumah-Young et al., 2010).

Singapore

During the 1960s, Singapore focused on access and increasing enrollment; primary and secondary schools were built at a rate of one per month between 1959 and 1968 (Mourshed et al., 2010). During this time, Singapore emphasized an intimate and deep link between education and economic development. A Five-Year Plan (1961-1965) initiated a focus on primary education that was sustained throughout the 1970s. Singapore pursued the standardization of subject syllabi and educational structures across the various language streams, and the institution of common terminal examinations (Tan, 1998). By the late 1960s, Singapore had a high level of access and literacy rates at the primary level (Aldcroft, 2000).

Singapore had very little vocational and technical education (VTE) prior to independence (Law, 2008) but it grew significantly from the late 1960s to early 1970s as emphasis in the school system begun to shift from general academic education to VTE (Kam & Gopinathan, 1999). VTE refers to training designed to enhance an individual's general proficiency, especially in relation to occupation rather than a profession. In 1964, the government established secondary vocational schools (Boon & Gopinathan, 2006). A need to expand VTE arose from the increasing pace of industrialization and by 1972, there were nine vocational institutes in Singapore and the number of graduates had increased to over 4,000 from only 324 in 1968 (Law, 2008).

Balancing Quantity, Quality and Equity: 1980-2010

By 1980, both countries had achieved high levels of enrollment at the primary level and continued expanding secondary education (Boon & Gopinathan, 2006; Miller, 1997). However, dissatisfaction with inequitable access in secondary and post-secondary education, low educational quality, and lackluster achievement outcomes was common across the two small states (Miller, 1997; Mourshed et al., 2010). The new millennium gave rise to the knowledge economy and found nations focusing on reorienting their education systems towards the global economy (Rizvi & Lingard, 2010). The rise of service industries as the main global economic activity placed greater significance on an educated workforce with critical thinking and adaptive skills. Both countries differed in managing the tradeoff between quantity and quality as well as reorienting their education development strategies to take advantage of globalization. Balancing quantity and quality in educational outcomes posed a constant challenge for Jamaica and Singapore, and the response to this challenge can be posited as a key differentiating factor in the education development of the two countries.

Over time, the equity and quality of educational opportunities became the major concern in both countries as opposed to access to education. Indeed, research has shown that educational achievement, as measured by the percentage of eligible students receiving a secondary education, is not a significant predictor of economic performance in small states but that the nature and quality of education that students receive are far more important (Wint, 2002). It is reasonable that after resolving access issues at the primary and secondary levels, the next natural (and perhaps overlapping) cycle of educational reforms is to address the quality of education. Singapore may have reached this cycle of reform before Jamaica as by the 1980s Singapore was only a few years from stellar results in the Trends in International Mathematics and Science Study.

Competition-driven reforms have prompted many governments to pursue decentralization (Carnoy, 1999) and as each government has transformed its education system to prepare students for a knowledge-based economy, the dynamics between centralization and decentralization has shifted. Both countries retain fairly centralized control over central elements such as curriculum (Ashton et al., 2002; Kam & Gopinathan, 1999; Miller, 1997) yet each government seems to strike a different autonomy balance – by allowing autonomy on the one hand and limiting it on the other – that has critically shaped the development of the country's education system. It can be argued that decentralization in Singapore has strengthened central control over the strategic agenda while achieving tactical efficiency (Tan & Ng, 2007). Compared to Jamaica, it appears that Singapore had explicit measures and incentives to promote and induce competition among schools to improve the quality of education that proved to be a successful education development strategy.

Singapore

The main challenges that the Singapore education system faced as highlighted by the 1978 Goh Report included: low rate of progression from the primary to secondary level (almost 30% of students did not progress); low literacy achievement; and poor and uneven quality of instructional materials (Mourshed et al., 2010). The Goh report introduced streaming but the government attempts to incorporate VTE into the curriculum had to be revised because of the low status attached to vocational education (Ashton et al., 2002). In 1979, when the economy was restructured toward high technology, more capital intensive industries such as petrochemicals and biotechnology, the VTE policy responded (Law, 2008). In the late1980s, Singapore initiated moves to give schools (initially extended to the top eight academic schools) greater autonomy as the system had grown overly centralized (Tan & Ng, 2007).There were also efforts to improve the

quality of vocational education resulting in significant changes in the image and public perception (Law, 2008).

Reforms were introduced in 1990 to extend the minimum period of education to 10 years and the Institute of Technical Education (ITE) was established as part of efforts to upgrade technical education (Ashton et al., 2002). Since the late 1990s, the Singaporean government has introduced measures to decentralize the education system as the state transitions to a supervisory steering model from a direct interventionist control model (Tan & Ng, 2007). Singapore has a regulated and not a free market as the government dictates the terms under which schools compete, and parents have a wide range of quality educational choices for their children (Tan, 1998). In the 1990s, the emphasis of Singapore's education system began to shift from mastery of content to acquisition of critical thinking and learning skills (Kam & Gopinathan, 1999). Since the 2000s, Singapore has positioned itself as an education hub to attract foreign students and internationally renowned universities as the service sector of the economy grows (Law, 2008; Law, 2010). From the late 1980s to mid-2000s, the gap between the percent of Chinese, India and Malay primary school students that are eligible for secondary school has substantially narrowed (Mourshed et al., 2010).

Jamaica

In contrast, the late 1970s to late 1980s was a stagnant period in education reform in Jamaica and cutbacks adversely affected confidence in the system between the major stakeholders as expenditures on education declined and student-teacher ratios increased (Miller, 1992). In 1982, the Human Employment and Resource Training (HEART) Trust was created and has played a pivotal role in the provision of VTE in Jamaica. HEART Trust was reorganized into the National Training Agency in 1994 centralizing and planning the analysis of VTE. There has also been progress in VTE in the 1990s, especially in certification. Jamaica's VTE program has impacted many and serves as a model for CARICOM countries (Lewis, 2008). Yet, in 2003, approximately 80% of employed and unemployed workers and 74% of first time job seekers in Jamaica had no vocational, technical or professional training (Blank & McArdle, 2003).

By the 1980s, Jamaica offered some type of secondary schooling to 50% of the 12-17 age cohort (Miller, 1992). In the 1990s, improving the quality of primary education was a national imperative (Miller, 1997). Prior to 1994, there was no common curriculum for secondary education and the Reform of Secondary Education program launched in 1993 introduced a national curriculum for grades 7-9 (UNESCO-IBE, 2010). Jamaica made substantial improvements in data reporting and analysis, and extended the role of student assessments beyond selection mechanisms (Miller, 2000). In 1999, the National Assessment Program (NAP) was launched with Grade 4 and Grade 6 achievement tests to all primary school students as part of a shift in the testing policy. Social promotion was discontinued and standards for promotion at the primary level were introduced, stipulating that a student should not advance above Grade Four without the requisite functional literacy (Miller, 2000).

In recent decades, there has been a notable regional and international influence on Jamaica's national educational reform strategy. The island participated in the EFA international initiative, and educational reform efforts were dominated by the Inter-American Development Bank (IDB) projects at the primary level and World Bank projects at the secondary level (Miller, 2000). In spite of the reforms undertaken, quality remains a major challenge. In 2003, 30% of primary school leavers in Jamaica were illiterate and only about 20% of secondary school graduates had the qualifications for employment or entry into a postsecondary program (Davies et al., 2004).

The Timing of Reforms

The comparative experience of Jamaica and Singapore suggests that timing (the when) is important, not just the content (the what) of educational reforms. Education systems are constantly reforming though the nature and extent of reforms differ among countries (Cuban, 1999). Singapore is a good example of how a system shifts in emphasis as it evolves. Singapore's stages of education development can be broadly classified as "survival-driven" (1959-78), "efficiency-driven" (1979-96), and "ability-driven" (1997-present) (Mourshed et al., 2010). Jamaica initially adopted a more project driven approach to education development in the 1990s but gradually shifted to a more comprehensive strategic approach to education development by 2000 (Miller, 2000). It can be argued that Singapore enacted more comprehensive reforms in the post-independence period compared to Jamaica's mostly project-driven approach to education development. Singapore undertook a series of four comprehensive education reform cycles (in 1961, 1979, 1991 and 1997) compared to Jamaica's two (in 1973 and 1999).

Although it is difficult to be definitive about the impact of the timing of reforms given the multitude of confounding factors, it is reasonable that the timing of reforms was a major contributor to the progress in education development in both countries. The notion that not only did Singapore undertake more comprehensive reforms rather than a project-driven approach but the timing of these reforms roughly every 20 years as opposed to Jamaica's approximate 30 year cycle may be an explanatory variable of the disparities in education development and subsequent economic development. Furthermore, it appears that educational reforms that accompany and complement economic reforms may be crucial. For instance, in Singapore in 1979 and 1991, comprehensive economic plans were followed by major educational reforms (Law, 2008).

Differences in education development strategies between both countries in the immediate independence era were pivotal. It seems that there was an important policy window in both countries between 1960 and 1980. The period was defined by a confluence of factors including social demand, political will and economic means that made bold educational strategies and policies feasible. In the 1960s, when Jamaica had a seemingly weak appetite for embracing educational reforms with major projects sponsored by multilateral agencies, Singapore was remaking its education system with policy moves addressing bilingualism and curricular choices. In Southeast Asia, earlier investment in primary and secondary education had substantial effects on economic growth in the early 1980s (Birdsall & Sabot, 1995); and high literacy rates and enrollment at the primary level of the 1960s is positively related with economic growth rates in the 1970s and 1980s (Aldcroft, 2000; Barro, 1991). It is plausible that Singapore is reaping the benefits of the strategies for education development implemented in the early independence period while Jamaica is paying the costs.

Many of the education development strategies Jamaica began to pursue in the 1970s such as an increased focus on the quality of primary schooling and vocational education were employed by Singapore nearly a decade earlier in the 1960s. This article argues that Singapore's head start played a critical role in developing human resources to take advantage of the transition to the knowledge-based economy and economic globalization. Though it is difficult to associate education policies and the changes in per capita GDP growth rates this paper posits that there may be a lagged link. Early differences and changes in education development during the 1960-1980 period may be associated with economic growth from 1980-2010, with the late 1960s and early 1970s being key turning points. The underlying logic is that the instrumental education development strategies Singapore pursued between 1960 and 1980 prepared its economy to capitalize on changes in the global economy between 1980 and 2010.

Table 2a. ***Key Events in the Education Development of Jamaica: 1960-2010***

	Jamaica
1962	The 70/30 Scholarship system is implemented to provide access to secondary schools for the poor and working class
1963	*The Independence Plan* proposed expanding teacher training facilities and reformed the selection process for admission to secondary schools
1966	The *New Deal in Education* policy focused on expanding access to secondary and post-secondary education and resulted in the creation of "Junior Secondary Schools"
1973	*Education Thrust- Free Education for All* policy made compulsory primary and secondary schooling free, focused on the quality of primary schooling and led to significant reorganization of the Ministry of Education (MOE)
1975	The Technical and Vocational Education unit in the MOE was established
1980	The Education Act established four formal levels of the system and redefined the roles and responsibilities of the MOE
1982	The Human Employment and Resource Training (HEART) Trust was created
1983	HEART Trust launched Traineeship program; 7 HEART academies are opened between 1984 and 1988
1991	The introduction of six regional offices in the MOE with responsibility for supervising schools and schools' personnel; National Training Agency (NTA) was created to co-ordinate and evaluate all activities within vocational and technical education (VTE)
1992	Cost sharing scheme at the secondary level was introduced
1993	Reform of Secondary Education (ROSE) was launched as part of the MOE's 15 year program to reform secondary education. The program introduced a common core curriculum for grades 7-9 nationwide; National Council on Education (NCE) was established to provide leadership in stimulating, advising and promoting consensus in the development of educational policies
1994	HEART trust was reorganized into the NTA; National Council for Technical Vocational Education and Training (NCTVET) was launched with responsibility for certification issues in VTE
1999	The Grade Six Achievement Test (GSAT) replaced the Common entrance exam (instituted in 1958) as the criteria for selection and placement in secondary schools; the National Assessment Program was launched with 4 tests in primary schools
2003	ROSE II Project is launched as a follow up to the ROSE I (1993-2000) with a strong focus on literacy and numeracy and improving the cognitive skills of secondary school students
2004	*Jamaica: A Transformed School System,* a report by the Rae Davis-led task force reported significant deficiencies in education system and led to the formation of the Education Transformation Team (ETT)
2006	Jamaica Movement for the Advancement of Literacy (JAMAL) was transformed into the Jamaican Foundation for Lifelong Learning with responsibility for providing non-formal adult continuing education
2007	Cost-sharing program was abandoned
2008	The National Education Inspectorate (NEI) is established to evaluate and report on the standards and quality of education at the primary and secondary levels

Sources: Blank & McArdle (2003); Boon & Gopinathan (2006); Kam & Gopinathan (1999); Law (2008); Miller (1997); Ministry of Education, Jamaica (1999a, 199b); Mourshed et al., (2010)

Table 2b. ***Key Events in the Education Development of Singapore: 1960-2010***

	Singapore
1962	The 70/30 Scholarship system is implemented to provide access to secondary schools for the poor and working class
1966	Bilingualism was mandated by the government; all students were required to study English as well as a second language at the primary and secondary levels
1968	The Technical Education Department was established in the Ministry of Education (MOE)
1973	The first Industrial Training Board (ITB) was created to centralize and coordinate industrial training
1978	The Goh-led *Report on the Ministry of Education* found the bilingualism policy ineffective and proposed streaming students based on academic ability at the primary and secondary levels. Streaming was introduced shortly thereafter
1979	The Vocational and Industrial Training Board (VITB) was established through a merger of the ITB and the Adult Education Board
1980	The Curriculum Development Institute of Singapore was formed to produce teaching materials for schools. It was eventually closed in 1996
1981	The Schools Council was established and involved principals in the decision making process in the MOE. It is viewed as the initial step towards greater autonomy at the school level
1983	Government mandated that starting in 1987, English would be the language of instruction in all subjects
1987	*Towards Excellence in Schools,* a report by a groups of principals who visited the United States and United Kingdom leads to the creation of Independent schools in 1988
1990	New Apprentice system, patterned after Germany's Dual System of Apprenticeship, was introduced
1991	The MOE adopted a policy of a minimum of 10 years of general education for all students; Edusave scheme launched to provide grants for educational expenses
1992	Institute of Technical Education (ITE) (formerly VITB) was established as a post-secondary educational institution to create additional opportunities in post-secondary VTE; the Open University Degree Program formed to help working adults obtain degress
1994	Autonomous schools were created
1997	*Thinking Schools, Learning Nation* policy was launched with a focus on student ability;
1998	School clusters were established to increase collaboration at the local level with a pilot program involving 59 schools
2005	*Teach Less, Learn More* initiative is launched to give schools and teachers freedom to customize the curriculum

The Importance of Vocational and Technical Education in Small States

The role of VTE is another crucial differentiating factor in the education development of the two islands. The level and nature of investment in VTE varied significantly between both countries. It can be argued that one of the primary challenges both countries faced in VTE policy was combating the low status of VTE as an educational pathway for less academically inclined students. Before reforms in 1991 that mandated 10 years of general academic education, earlier policy in Singapore streamed students on the basis of insufficient education (Aldcroft, 2000; Kam & Gopinathan, 1999). In the Commonwealth Caribbean, the VTE is often positioned and offered as an alternative education avenue for low academic performers (Lewis, 2008). A key difference in the VTE policy between the two countries is the emphasis placed on access to and quality of post-secondary VTE. In contrast to Singapore that has expanded and improved post-secondary VTE, Jamaica has limited access to post-secondary VTE (Morris, 2008).

VTE is a crucial element in Singapore's economic-education modernization. The Singaporean government has invested heavily in VTE and VTE has evolved in tandem with a changing economic landscape (Law, 2008). Technical education focused on engineering to meet the needs of industrialization and the government actively sought to increase the prestige of VTE (Tan, 1998). Institutional mechanisms emerged that linked the output of education to the skill demands of the present and future economy (Ashton et al., 2002). In essence, Singapore's VTE policy enhanced the ability of production to anticipate and effectively respond to market changes. The government overcame parents' resistance by improving the prestige of VTE, facilitated the gradual upgrading of skills of the labor force to the demands of emerging high-value added industries, and contained the increasing demand for academic rather than vocational education (Ashton et al., 2002; Law, 2010).

Although a technical college was established in Jamaica in 1958 and the island had six technical high schools by 1978 (Miller, 1999), there seems to have been less emphasis placed on VTE in Jamaica's education development relative to Singapore's. In Jamaica, it can be argued that VTE was viewed as a relatively low priority and not pursued with as much vigor and innovation, especially immediately after independence in 1962. Starting in the 1970s, there was a shift in the VTE policy and an increased focus on vocational education as evidenced by the establishment of a network of non-formal vocational training centers. Following a massive reorganization of the MOE, the Technical and Vocational unit was established in 1975, nearly a decade after Singapore established the Technical Education Department in 1968 in its MOE.

The differences in approaches to VTE between Jamaica and Singapore may be partly attributed to vastly different historical contexts and how policymakers view the link between changing labor market demands and education development. The types of jobs available due to resource differences may also be accountable for the differences in VTE policy. The two countries have different labor market structures and Singapore aimed to continue its trading advantage as an entrepot with a small labor force, thus its VTE policy had to deliver progressively higher level skills to a limited range of industries (Ashton et al., 2002). Conversely, the World Bank discouraged and de-prioritized investment in VTE in the Caribbean on the basis of low returns (Lewis, 2008). Also notable is the fact that Singapore retained and expanded Polytechnics from the earlier British model while other countries phased out these career-oriented schools (Law, 2008).

Linking Education Development and Economic Development in Small States

Although VTE is an essential component of aligning economic and education development, a balanced, forward-looking education development strategy that closely ties education, economic

and national development must be considered a necessary factor for small states overcoming the constraints of smallness. Effectively linking education development to economic development goes beyond an effective VTE policy into forging a national identity and purpose which places education at the core of the wealth of the nation. It is a pronounced emphasis on the central role and importance of education to national identity building, social cohesion and economic prosperity. In this regard, it seems that Singapore did a relatively better job than Jamaica at linking increasing human capital to national and economic development in formulating and implementing educational policies. Given its limited natural resources, one of Singapore's highest priorities since independence has been education and human capital development (Law, 2008). In Singapore, education policy was used to foster national identity before ceding strategic importance to economic priorities in later decades (Aldcroft, 2010).

It is plausible that the lack of natural resources compared to Jamaica was advantageous to Singapore's education development. Singapore's experience lends credence to emergent evidence of a negative association between education development and natural resources and supports the notion that natural resources prevent economic development in developing countries (Collier, 2007). The lack of natural resources compelled Singapore to develop the habits and culture of increasing people's skills. A team from the Organization for Economic Co-operation and Development found a significant negative relationship between the money countries received from natural resources and the knowledge and skills of their high school students (Freidman, 2012). In addition to extra emphasis on human capital, this paper contends that Singapore's lack of natural resources reduced its susceptibility to global shocks as the country was not dependent on the fluctuating prices of commodities on the global market. The differences in education development between Jamaica and Singapore support the notion that societies with natural resource endowments for various reasons encounter greater problems in student achievement outcomes.

Singapore placed greater emphasis on manpower and human capital as a significant resource that resulted in a strong link between education and economic development. Singapore constantly invented education pathways, expanded curricular options and catered to different learning experiences while considering the labor market and productivity growth. An early emphasis on human capital led to a better educated workforce and enabled Singapore to capitalize on the rise of service industries in an increasingly globalized economy.

Conclusion

This paper identifies the timing of reforms, the centrality of VTE and a strong bond between education development and economic development strategies as salient factors in the development of education systems in small states. Singapore oriented education policies to changing economic needs while addressing current challenges. In contrast, Jamaica made education relevant to the current economic needs without a parallel focus on aligning education development with the diversification of the economy. Singapore also had an earlier emphasis on both the access to and quality of education compared to Jamaica. This paper contends that these differences in education development strategies partly contribute to the disparity in educational outcomes and levels of GDP per capita between the two small states in the post-independence period.

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References

Aghion, P., Caroli, E., & Garcia-Penalosa, C. (1999). Inequality and economic growth: The perspective of the new growth theories. *Journal of Economic Literature, XXXVII*, 1615–1660.

Aldcroft, D. (2000). Education and development: The experience of the four little tigers. In Latham, A., Kawakastu, J., & Heita, H. (Eds.), *Asia Pacific dynamism: 1550-2000* (pp. 169-184). London, UK: Routledge.

Ashton, D., Green, F., Sung, J., & James, D. (2002). The evolution of education and training strategies in Singapore, Taiwan and S. Korea: A development model of skill formation, *Journal of Education and Work, 15*(1), 5–30.

Bacchus, M. (2008). The education challenges facing small nation states in the increasingly competitive global economy of the twenty-first century. *Comparative Education, 44*(2), 127-145.

Barber, M., & Mourshed, M. (2007). *How the world's best performing school systems come out on top.* London, UK: McKinsey & Company.

Barro, R. (1991). Economic growth in a cross section of countries. *Quarterly Journal of Economics, 106*(2), 407-443.

Birdsall, N., & Sabot, R. (1995). *Virtuous cycles: Human capital growth and equity in East Asia.* Washington, DC: World Bank.

Blank, L., & McArdle, T. (2003). *Building a lifelong learning strategy in Jamaica.* Washington, DC: World Bank.

Boon, G., & Gopinathan, S. (2006, June). The development of education in Singapore since 1965. Background paper prepared for the Asia Education Study Tour for African Policy Makers. Singapore: National Institute of Education, Nanyang Technological University.

Bray, M., & Packer, S. (1993). *Education in small nations: Concepts, challenges and strategies.* Oxford, UK: Pergamon Press.

Bryan, B. (2004). Language and literacy in a creole-speaking environment: A study of primary schools in Jamaica. *Language, Culture and Curriculum, 17(*2), 87–96.

Carnoy, M. (1999). Globalisation and educational reform: What planners need to know. Paris, France: UNESCO/IIEP.

CIA Factbook. (2012). Retrieved from http://www.cia.gov/library.

Coleman, J. (1966). *Equality of educational opportunity*. Washington, DC: US. Dept. of Health, Education, and Welfare. Office of Education.

Collier, P. (2007). *The bottom billion: Why the poorest countries are failing and what can be done about it*. Oxford, UK: Oxford University Press.

Commonwealth Secretariat. (2009). *Small states: Economic review and basic statistics (*Vol. 13). London, UK: Commonwealth Secretariat.

Crossley, M., & Holmes, K. (1999). *Educational development in the small states of the Commonwealth: Retrospect and prospect.* London, UK: Commonwealth Secretariat.

Crossley, M., Bray, M., & Packer, S. (2011). *Education in small states: Policies and priorities.* London, UK: Commonwealth Secretariat.

Cuban, L. (1999). Reforming again, again and again. *Educational Researcher, 19*(1), 3–13.

Evans, H. (2001). *Inside Jamaican schools*. Mona, Jamaica: University of the West Indies Press.

Friedman, T. (2012, March 10). Pass the books. Hold the oil. *The New York Times*. Retrieved from http://www.nytimes.com/2012/03/11/opinion/sunday/opinion/friedman-pass-the-books-hold-the-oil.html.

Government of Jamaica & Task Force on Educational Reform. (2004). *Jamaica: A transformed education system*. Kingston, Jamaica: Government of Jamaica and Task Force on Educational Reform.

Hanushek, E. (2008). The role of cognitive skills in economic development. *Journal of Economic Literature*, *46*, 607-668.

Hanushek, E., & Woessmann, L. (2007). The role of education quality for economic growth. World Bank Policy Research Working Paper No. 4122. Washington DC: World Bank.

Heston, A., Summers, R., & Aten, B. (2012, July). Penn World Table Version 7.1, Center for International Comparisons of Production, Income and Prices at the University of Pennsylvania.

Kam, H., & Gopinathan, S. (1999). Recent developments in education in Singapore. *School Effectiveness and School Improvement, 10*(1), 99-117.

Jamaica. Ministry of Education and Culture. (1999a). Education for all: 2000 assessment: Jamaica country report. Kingston, Jamaica: Ministry of Education and Culture.

Jamaica. Ministry of Education and Culture. (1999b). Education: The way upward. A green paper for the year 2000. Kingston, Jamaica: Ministry of Education and Culture.

Jules, D. (2006). Power and educational development: Small states and the labors of Sisyphus. In M. O. Afolayan, D. Browne, & D. Jules (Eds.), *Current discourse on education in developing nations: Essays in honor of B. Robert Tanachnick and Robert Koehl* (pp. 17–29). New York, NY: Nova Science Publishers.

Jules, D. (2010). Rethinking education for the Caribbean: A radical approach. In P. Mayo (Ed.), *Education in small states: Global imperatives, regional initiatives and local dilemmas* (pp. 79–90). New York, NY: Routledge.

Law S. (2008). Vocational technical education and economic development – The Singapore

experience. In *Towards a better future: Education and training for economic development in Singapore since 1965* (pp. 114-134). World Bank and National Institute of Education, Singapore.

Law, S. (2010). Case study on "National policies linking TVET with economic expansion": Lessons from Singapore. Paper commissioned for the EFA Global Monitoring Report 2012.

Lewis, T. (2008). Reconceptualizing vocational education and training (VET) in Caribbean Schooling. In L. Quamina-Aiyejina (Ed.), *Reconceptualising the agenda for education in the Caribbean* (pp. 477–488). St.Augustine, Trinidad and Tobago: University of the West Indies.

Mayo, P. (2010). Introduction: Comparative and international perspectives on education in small states. In P. Mayo (Ed.), *Education in small states: Global imperatives, regional initiatives and local dilemmas* (pp. 1–4). New York, NY: Routledge.

Miller, E. (1990). *Jamaican society and high schooling*. Kingston, Jamaica: Institute of Social and Economic Research.

Miller, E. (1997). *Jamaican primary education: A review of policy relevant studies*. Kingston, Jamaica: Green Lizard Press.

Miller, E. (1999). *Educational reform in the Commonwealth Caribbean.* Washington, DC: INTERAMER No. 54. Organisation of American States.

Miller, E. (2000). Education for all in the Caribbean in the 1900s: Retrospect and prospect. Retrieved from http://www.unesco.org/carneid/monograph.pdf.

Miller, E. (1992). *Education for all: Caribbean perspectives and imperatives*. Washington, DC: InterAmerican Development Bank.

Morris, H. (2008). Graduate studies in technical and vocational education training (TVET) in the Caribbean: Whose responsibility. In L. Quamina-Aiyejina (Ed.). *Reconceptualising the agenda for education in the Caribbean* (pp. 489–498). St.Augustine, Trinidad and Tobago: University of the West Indies.

Mourshed, M., Chijioke, C., & Barber, M. (2010). *How the world's most improved school systems keep getting better.* London, UK: McKinsey & Company.

Murnane, R., et al. (1991). *Who will teach? Policies that matter.* Cambridge, MA: Cambridge University Press.

Nkrumah-Young, K., Huisman, J., & Powell, P. (2010). The impact of funding policies on higher education in Jamaica. In P. Mayo (Ed.), *Education in small states: Global imperatives, regional initiatives and local dilemmas* (pp. 91–103). New York, NY: Routledge.

Psacharopoulos, G. (1985). Returns to education: An updated international comparison. *Journal of Human Resources, 20*(4), 583-604.

Psacharopoulos, G., & Patrinos, H. (2002). *Returns to investment in education: A further update*. Washington, D.C: World Bank.

Rivkin, S., Hansuhek, E., & Cain, J. (2005). Teachers, schools and academic achievement. *Econometrica, 73*(2), 417–458.

Rizvi, F., & Lingard, B. (2010). *Globalizing education policy*. New York, NY: Routledge

Sen, A. (1999). *Development as freedom.* New York, NY: Random House

Tan, C., & Ng, P. (2007). Dynamics of change: Decentralized centralism of education in Singapore. *Journal of Educational Change*, *8*, 155–168

Tan, J. (1998). The marketisation of education in Singapore: Policies and implications. *International Review of Education, 44(*1), 47–63

Turner, T. (1987). The socialization intent in colonial Jamaican education. *Caribbean Journal of Education, 14*(2), 54–87

UNESCO, International Bureau of Education. (2010). Jamaica: World data on education, 7th edition, 2010/11. Retrieved from http://www.ibe.unesco.org.

Whyte, M. (1983). *A short history of education in Jamaica*. London, UK : Hodder and Stoughton.

Wint, A. (2002). Competitive disadvantages and advantages of small nations: An analysis of internation economic performance. *Journal of Eastern Caribbean Studies, 27*(3), 1–25

World Bank. (2011). World Bank database. Retrieved from http://web.worldbank.org/.

World Bank. (2000). Small states: Meeting challenges in the global economy. Report of the Commonwealth Secretariat/World Bank Joint Task Force on Small States. Retrieved from http://web.worldbank.org/.

Yew, L (2001). *From third world to first: The Singapore story: 1965-2000*. New York, NY: Harper Collins.