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Who Can Explain The Mauritian Miracle: Meade, Romer, Sachs, or Rodrik?

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African Department

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Abstract

The views expressed in this Working Paper are those of the author(s) and do not necessarily represent those of the IMF or IMF policy. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate.

This paper examines different explanations—initial conditions, openness to trade and FDI, and institutions—of the Mauritian growth experience since the mid-1970s. We show that arguments based on openness to trade and FDI are either misleading or incomplete, and the transmission mechanism insufficiently identified. However, even when correctly articulated, openness appears to be a proximate rather than an underlying explanation for the Mauritian experience. The institution-based explanation offers greater promise. Ultimately, however, the econometric results indicate that existing explanations may be incomplete. Some idiosyncratic factors, particularly Mauritian diversity and the responses to managing it, may provide the missing pieces in the story of Mauritius's success.

JEL Classification Numbers: F1, F4, O0, O1, O2, O4, O5

Keywords: Mauritius; growth; institutions; geography; openness

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I. INTRODUCTION

In the post-war period, few sub-Saharan African countries have made the transition to achieving high standards of living for their population. The record of sustained economic performance in sub-Saharan Africa (hereafter Africa) is not heartening. It is not that there have not been periods of sustained growth: as Table 1 shows, sixteen African countries, at various points in time, achieved high rates of growth. Sadly, however, very few such episodes have been long and sustained enough to lead to high levels of income and standards of living.² In 1998, only two African countries ranked among the top 50 countries in the world in terms of per capita GDP (calculated on a PPP basis), and none ranked among the top 50 on the UN's Human Development Index.³ This is surprising, especially in an era of rapid globalization, which should have led to significant catch-up by Africa relative to the rest of the world. After all, globalization is the vehicle par excellence for catch-up because it is supposed to facilitate the transmission of capital, ideas, and technology, which are the determinants of growth (see Coe et. al., 1997). And yet, instead of convergence of global incomes, we see "divergence big time."

But Africa is not without its successes. At the very top of this admittedly short list of accomplishments is Mauritius. Yet it did not have to be Mauritius that succeeded. Indeed, we had it on the highest possible authority that Mauritius was, if anything a strong candidate for failure because of being a very typical African economy—monocrop; prone to terms of trade shocks; witnessing rapid growth rate in population; and susceptible to ethnic tensions.

"Heavy population pressure must inevitably reduce real income per head below what it might otherwise be. That surely is bad enough in a community that is full of political conflict. But if in addition, in the absence of other remedies, it must lead either to unemployment (exacerbating the scramble for jobs between Indians and Creoles) or to even greater inequalities (stocking up still more the envy felt by the Indian and Creole underdog for the Franco-Mauritian top dog), the outlook for peaceful development is poor" (Meade, 1961; emphasis added).

History, or rather Mauritius, proved the Noble Prize winner, James Meade's, dire prognostication—made in 1961—famously wrong. This paper seeks to understand this failed prediction in terms of three explanations of long-run growth performance: initial conditions, openness, and institutions. Section III describes the various aspects of the initial conditions in Mauritius. Section IV then analyzes three aspects of Mauritius' openness strategy, articulated by Sachs and Warner (1995, 1997), Romer (1993) and Rodrik (1999a) respectively. Section V discusses the role played by institutions in Mauritian economic performance. Section VI presents econometric results that shed light on the different explanations. Finally, Section VII offers some concluding observations.

² In many cases, growth decelerated or ground to a halt around the time of the oil and debt crises which Rodrik (1999) refers to as the growth collapse.

³ These assessments exclude the Seychelles.

Table 1. Sustained Growth Experiences in Africa, 1960-1998

Country	Start	End	Length of Period	Average Growth Rate	PPP GNP per Capita (in US dollars; 1998)	Ranking (out of 174)
South Africa	1960	1974	14	5.1	8,296	49
Mauritius	1980		18+	5.4	8,236	50
Gabon	1965	1976	11	13.1	5,615	63
Botswana	1965		33+	9.1	5,796	65
Namibia	1961	1979	18	6.4	5,280	75
Ghana	1983		15+	4.7	1,735	129
Lesotho	1970	1982	12	9.9	2,194	133
Cote d'Ivoire	1960	1978	18	9.5	1,484	134
Cameroon	1967	1986	19	7	1,395	138
Togo	1960	1974	14	6.8	1,352	145
Uganda	1986		10+	6.1	1,072	152
Kenya	1961	1981	20	6.7	964	156
Mozambique	1986		12+	7.1	740	162
Etiopia	1960	1972	12	4.5	566	170
Malawi	1964	1979	15	6.6	551	172
Tanzania	1961	1975	14	5.7	483	173
Sub-Saharan Africa					1,607	

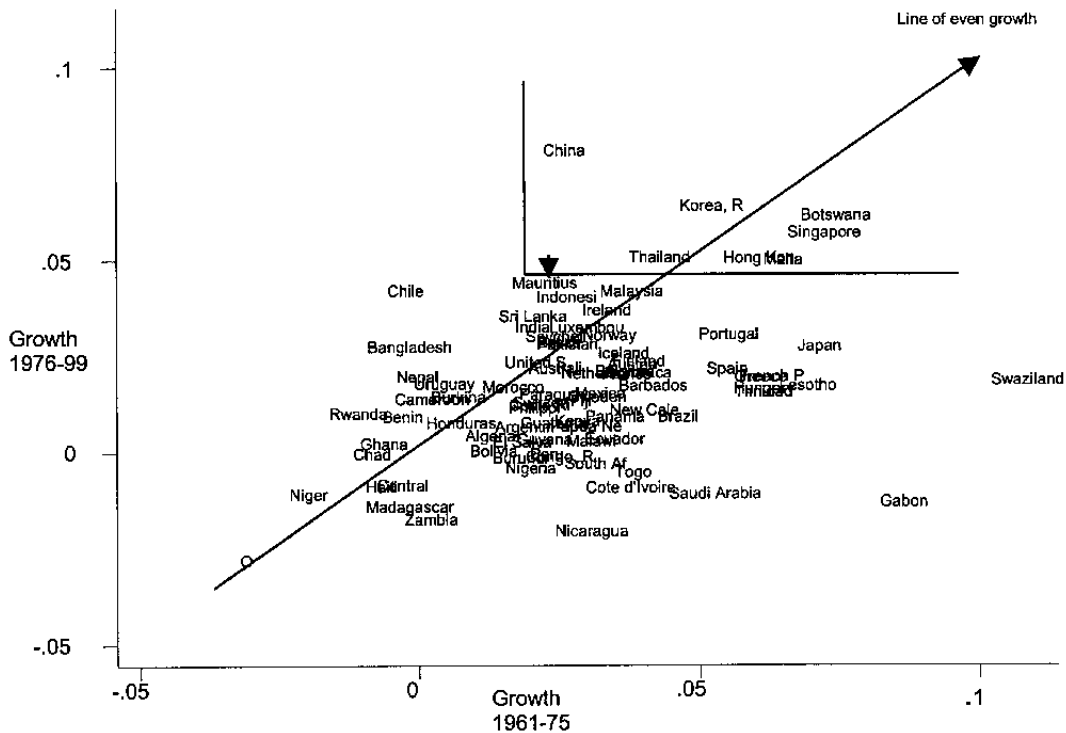
Sources: Berthelemy and Soderling (2001); UNDP, Human Development Report.

II. THE ACCOMPLISHMENTS

First, the undeniable facts. Between 1973 and 1999, real GDP in Mauritius grew on average by 5.9 percent per year compared with 2.4 percent in Africa. In per capita terms the corresponding numbers are 3.25 percent and about 0.7 percent. The magic of compounding means that the income of the average Mauritian has increased three and a half times over a forty-year period, while that of the average African increased by 32 percent.

Figure 1 depicts the comparative growth performance for a cross-section of countries over two periods, 1961-75 and 1976-99. The 45° line represents the locus of points of equal growth in the two periods. Countries above the line grew faster in the later period and vice versa for the countries below the line. Countries are mostly clustered below the line, confirming the characterization due to Rodrik (1999b) of the growth collapse after the first oil shock. Mauritius defied this trend, its per capita growth rate of 4.2 percent in the later period being about one and a half percentage points above that in the earlier period. In terms of growth performance, moreover, very few countries outperformed Mauritius in both periods (in the figure, very few countries lie to the northeast of Mauritius). This group comprises the East Asian tigers and Botswana, the only African country to have registered high rates of growth.

Figure 1. Per Capita Income Growth Rate: 1976-99 Versus 1961-75



Improvements in human development indicators have been equally impressive. Life expectancy at birth increased from 61 years in 1965 to 71 in 1996; primary enrollment increased from 93 to 107 between 1980 and 1996 compared with 78 and 75, respectively in Africa. Income inequality has also seen impressive improvements: the Gini coefficient declined from 0.5 in 1962 to 0.42 in 1975 and 0.37 in 1986-87.

High growth rates have been delivered along with macroeconomic stability. Between 1973 and 2000, consumer price inflation averaged 7.8 percent per annum, compared with over 25 percent in Africa (Figure 2). Although subject to episodic spikes, the variability of inflation has also been well below that for Africa as a whole. For example, the standard deviation of inflation in Mauritius (2.4%) has been half of that in Africa.

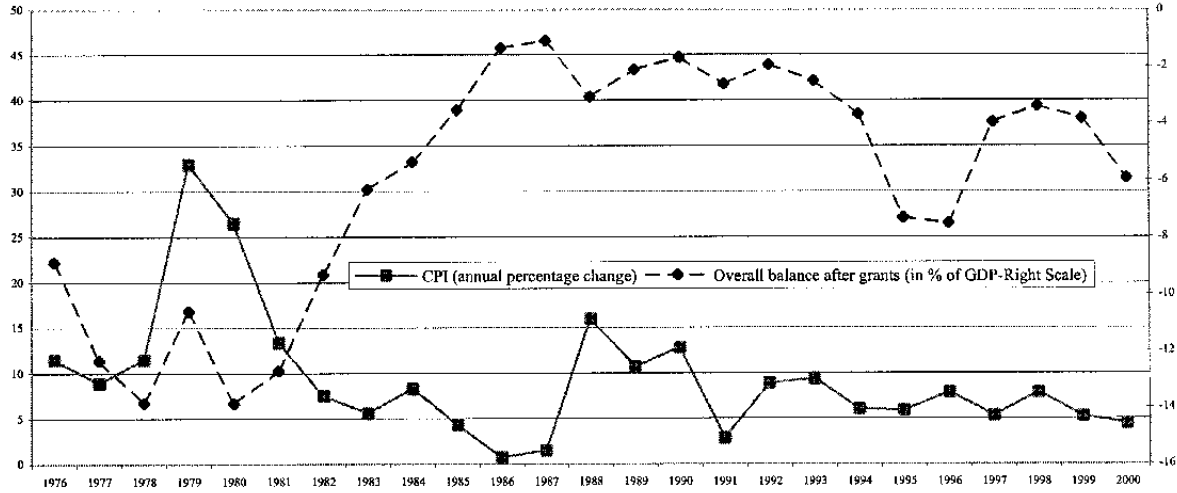
As interesting as the cross-section comparison is the temporal evolution in Mauritius' economic performance. A growth accounting framework analysis highlights the contrasting performance between the 1980s and 1990s (Table 2).

	GDP per Worker	Total Factor Productivity
Mauritius		
1982-99	2.5	0.7
1982-90	1.0	0.6
1991-99	3.5	1.4
Other developing countries (1984-94)		
East Asia	4.4	1.6
Latin America	0.1	-0.4
Middle East	-1.1	-1.5
South Asia	2.7	1.5
Sub-Saharan Africa	-0.6	-0.4
Sources: Authors' estimates for Mauritius and Collins and Bosworth (1996) for other developing countries.		

In the former period (1982-1990), economic growth was intensive; that is, it was motored predominantly by the growth of inputs—capital and labor—which together accounted for 90 percent of the annual average rate of GDP growth of 6.2 percent. It is worth noting the stellar performance of employment growth in this period, which averaged 5.2 percent a year, reflected in a sharp decline in the unemployment rate from nearly 20 percent in 1983 to 3 percent in the late 1980s (see Figure 3).

In contrast, economic growth in the 1990s has been driven to a greater extent by productivity growth. As wages started to climb, firms economized on the use of labor, focusing instead on sustaining growth through higher productivity (see Figure 3). TFP growth during this period

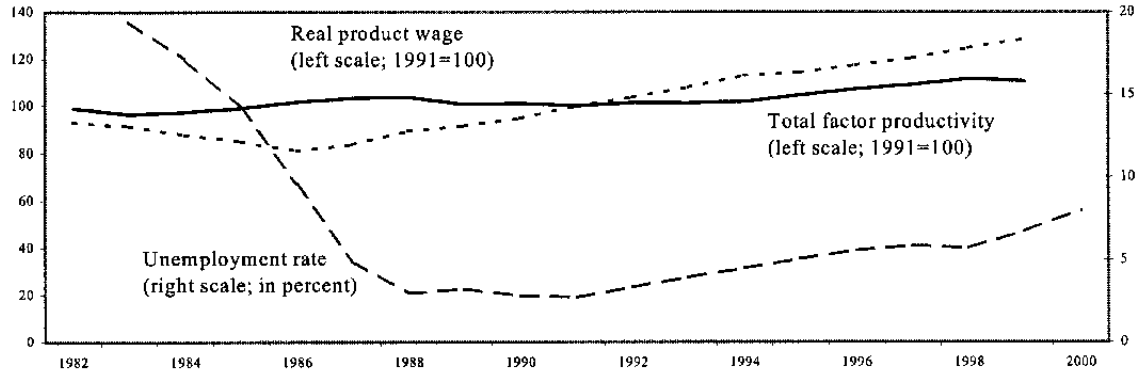
Figure 2. Mauritius: Budget Deficit and Inflation, 1976-2000



Source: Authors' calculations.

averaged 1.4 percent a year and accounted for a full 25 percent of total growth. This improvement in TFP performance, which compares favorably with that of Asia (see Collins and Bosworth, 1996), also augurs well for the future as Mauritius runs into labor shortages and limits to capital deepening.

Figure 3. Mauritius: Real Product Wage, Factor Productivity and Unemployment Rate



Source: Authors' calculations

Finally, it is worth mentioning that Mauritian economic performance has been sustained by OECD-type social protection. This has taken several forms: a large and active presence of trade unions with centralized wage bargaining; price controls especially on a number of socially-sensitive items; and generous social security, particularly for the elderly and civil servants. Unlike the OECD countries, however, generous social protection has thus far not necessitated high taxes, reflecting both strong growth and a favorable demographic structure with a high proportion of the population being of working age. The OECD affliction of a changing demographic structure, with rising number of dependents, however, looms large for Mauritius in the coming years.

III. MEADE AND THE MIXED INHERITANCE OF MAURITIUS

Meade's prophecy of doom for Mauritius was based on his reading of what he saw as the country's very adverse inheritance, foremost amongst which was the impending population explosion. Imbued as he was by the prevailing labor surplus doctrine, he saw little prospect for expanding the traditional agricultural sector and was equally pessimistic about the possibilities in manufacturing. In his view, there was little technical know-how in manufactures and little experience outside the sugar factories in the conduct of the industry, there was scarcity of capital, there were few raw materials available within boundaries and the domestic market was miniscule. Meade moreover noted that the Mauritian society was highly fragmented on all

lines—ethnic, economic and political—which made the task of progress much more difficult than elsewhere.⁴

But was Meade's reading of an adverse inheritance correct? A retrospective answer to this question can be offered based on the indicators that the current growth literature suggests as being important for long-run growth. Table 3 depicts how Mauritius scores on these indicators both in absolute terms and in comparison with three other groups of countries. These indicators are selected from Sachs and Warner (1997) and are supplemented with a few others considered important for long run growth.

One of the most important of these indicators relates to the phenomenon of catch-up or convergence. Conditional on other determinants of growth, the higher the per capita income at the beginning of the growth process, the slower will be the subsequent rate of growth. As the scatter plot below for a selected group of countries shows, Mauritius had the highest per capita income in 1960 and hence was likely to witness slower growth rates than other African countries on this count (see also Table 3).

One variable on which Mauritius scores highly is human capital: for example, life expectancy at birth (60.4 years) in the early 1970s was substantially higher in Mauritius than even in the fast growing economies of Asia. On most of the other variables however, Mauritius fares either more poorly than other African economies or at least no better than them. For example, on geography, although Mauritius is not landlocked, it does have a fully tropical climate (score of 1 on the tropics variable) and in terms of its remoteness from world markets, Mauritius fares the worst, being at about 25 percent farther away from the world's economic center of gravity than the average African country and 30 percent farther than the average developing country.

Two other points about Mauritius' inheritance are worth highlighting. First, the empirical growth literature increasingly points to the adverse effects of being commodity dependent. (see Dalmazzo and Guido de Blasio (2001). They stem not just from the secular decline or increased variability associated with commodity prices but also from the rent seeking and corruption to which they give rise. Mauritius actually fares much worse than the average African economy in terms of commodity dependence. In 1970, the share of exports accounted for by commodities was nearly 30 percent compared with the 18 percent for the average of the African economy.

But is it possible that Mauritius was nevertheless less susceptible to commodity dependence because sugar (Mauritius' main export) fared better than other commodities? It is certainly true that Mauritius' terms of trade have been less variable than for the average commodity but this

⁴Meade's development strategy hence proposed wage restraint, agricultural diversification, a rapid change in industry structure, overseas welfare assistance, a system of welfare benefits for the unemployed, emigration of workers to other British colonies, and an effective family planning system.

Table 3. Inheritance: Mauritius Versus Rest of World⁵

	Mauritius	Africa	Fast-Growing Economies	All other Developing Economies
<i>Inheritance</i>				
Catch-up ⁶	8.72	7.29	7.90	7.85
Life expectancy in years (circa 1970) (human capital)	60.40	41.60	57.10	51.9
Ethnolinguistic fractionation ⁷	0.58	0.64	0.42	0.32
Population growth ⁸	0.97	-0.09	0.82	0.33
Share of primary exports in total exports	0.29	0.18	0.09	0.12
<i>Geography</i>				
Fraction of area in tropical climate	1.00	0.89	0.69	0.59
Landlocked ⁹	0	0.33	0	0.11
Remoteness from Economic center of the world (Kms) ¹⁰	11,249	9,183	9,464	8,633

Sources: Authors' calculations; and Sachs-Warner (1997).

⁵ The fast-growing countries include Thailand, Malaysia, Indonesia, China, Hong Kong SAR and Singapore.

⁶ Log of real GDP per economically active population in 1965.

⁷ Probability that 2 randomly selected people from a country will not belong to the same ethnic or linguistic group.

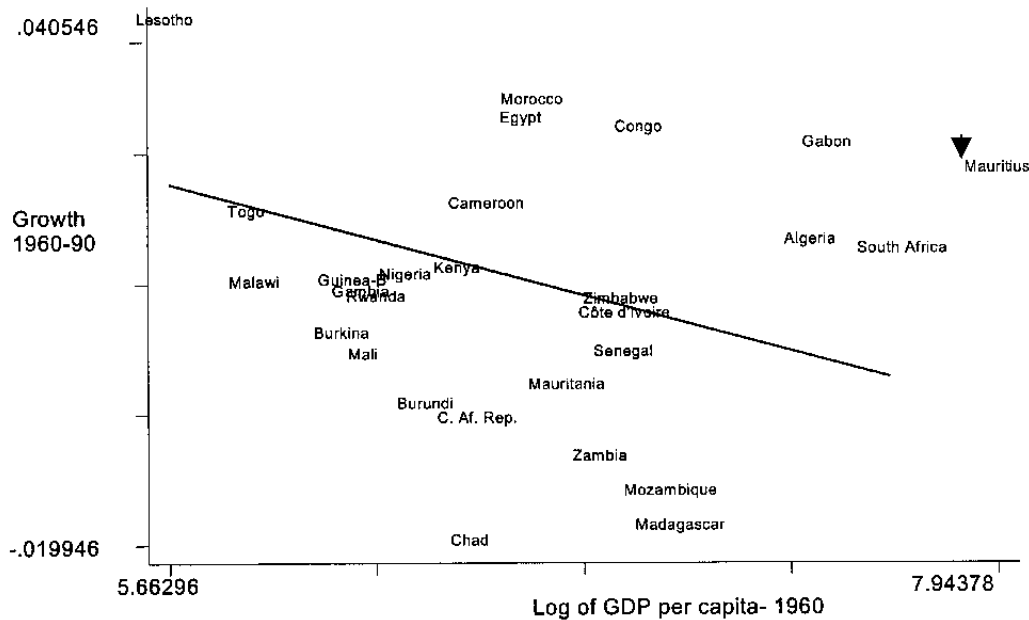
⁸ Growth of working age population minus growth of total population between 1965 and 1990.

⁹ 1 if it is landlocked, 0 if it is not. For a group it depicts the fraction of countries landlocked.

¹⁰ Remoteness of a country is its average distance to trading partners, weighted by their share in the world GDP.

may be a misleading indicator of the adverse impact of commodity dependence. The reason is that Mauritian sugar *production* has been subject to a series of cyclone and drought related

Figure 4. Catch-Up: Mauritius Versus Africa



shocks which has imparted great variability to the export earnings derived from sugar. The importance of production shocks, indeed for the greater impact of these shocks for Mauritius compared with the average commodity exporting countries, is suggested by an interesting result in Cashin and Patillo (2000). According to their results, shocks to Mauritius' terms of trade have been less persistent than for the average commodity exporting country but the shocks to Mauritius' income terms of trade (terms of trade multiplied by exports) have indeed been far more persistent than for the average country.

Ironically, Meade's greatest fear of rapid population growth proved to be a blessing for Mauritius. Mauritius' demographic inheritance was extremely favorable, even more so than the fast growing economies with the growth in labor force outpacing the growth in the overall population. The rapid job creation in the last two decades indeed to the extent that it now imports substantial amounts of labor to meet its demands has meant that Mauritius is now a labor scarce rather than labor surplus economy.¹¹

¹¹ It is estimated that over 30 percent of the labor force in textile and clothing sector is imported.

Thus, the overall conclusion is that Mauritius' excellent growth performance since the late 1970s cannot be attributed to Mauritius' favorable initial conditions as Mauritius fares worse than the average African economy. Meade was therefore not entirely wrong on the facts: although he misread the demographic inheritance and missed the very favorable initial stock of human capital, he was broadly correct in the assessment that Mauritius' overall inheritance was unfavorable.

IV. MAURITIUS' OPENNESS STRATEGY

Perhaps the most interesting aspect of the Mauritian development experience has been its openness strategy (defined broadly as its openness to trade and foreign investment (FDI)). Different economists read into this experience their own interpretation. But a proper understanding of this experience is interesting if not controversial.

A. Openness Outcomes

At one level, the Mauritian experience can be advanced as a show-piece for the prescription associated with the Bretton Woods Institutions (the so-called Washington consensus) that openness is unambiguously beneficial. Figure 5 illustrates this. Since the mid-1980s, the volume of imports and exports of goods grew quite rapidly, at a rate of 8.7 percent and 5.4 percent, respectively per year; the openness ratio (the ratio of trade in goods-to-GDP) increased from about 70 percent to 100 percent over this period, compared with an openness ratio for Africa that stagnated around 45 percent. Particularly strong was the growth in manufacturing exports, originating predominantly from the export processing zone (EPZ).¹²

This trade performance, especially in contrast to its African neighbors, merits an explanation or explanations. To say that Mauritius' growth performance was due to the rapid growth of its trade begs the next obvious question: why did trade grow as much as it did? Three explanations have been offered. The first due to Sachs and Warner is that Mauritian trade policy was open. The second due to Rodrik (1999a) is that Mauritian trade policy was heterodox involving segmentation with imports being "closed" and exports relatively open. The third is due to Romer (1993) who emphasizes Mauritius' openness to FDI and its favorable consequences. We shall examine each in turn.

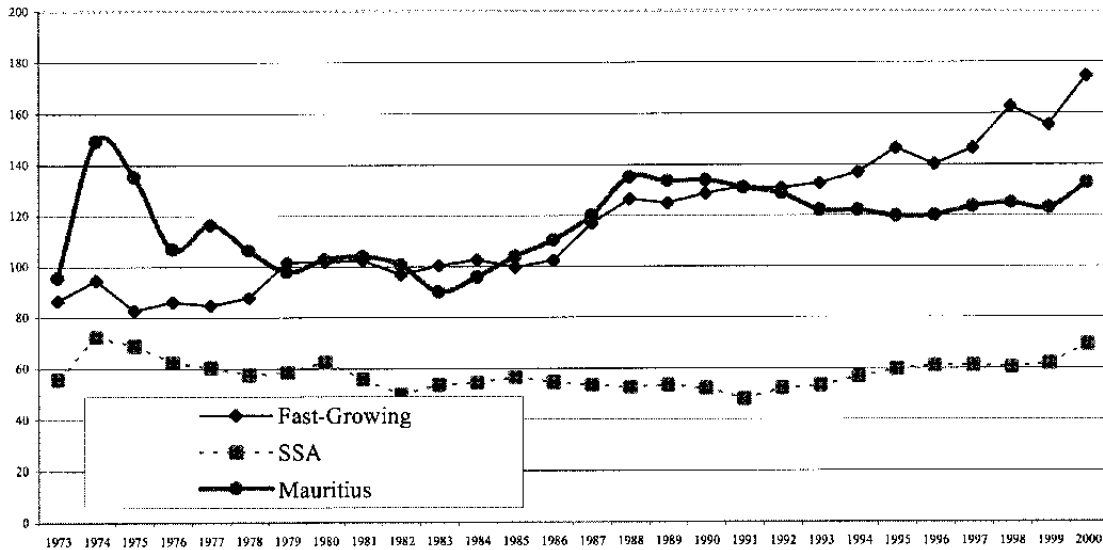
B. Trade Policies

Trade policies clearly affect trade. One of the most important insights of trade theory due to Abba Lerner is that a restrictive import regime imposes a tax not just on imports but also on exports and hence on trade as a whole. Thus, quantitative restrictions and high tariffs reduce the

¹² However, Mauritius has been considerable less open than the fast growing countries of East Asia whose openness ratio increased from 85% to 180% between 1973 to 2000.

size of a country's total trade. An import tax reduces exports by raising the cost of inputs which make exports less competitive in world markets. In a more fundamental sense, however, import taxes increase the attractiveness of domestic production of import-competing goods, hence diverting resources away from sectors where a country has comparative advantage, namely the

Figure 5. Mauritius: Sub-Saharan Africa and the Fast Growing Economies: Openness Ratio, 1973-2000
(Exports plus imports of goods and services in % of GDP)



Source: World Economic Outlook.

export sector. Empirical results for Africa show that on average if trade taxes go down by one percentage point, the trade-to-GDP ratio increases by about an equivalent amount (Rodrik, 1999).

C. The Sachs-Warner Assessment

Trade policies affect not only trade, but also long-run economic growth. In two papers, Sachs and Warner (1995, 1997) showed that one of the key determinants of long-run growth is a country's trade policies. Using an elaborate scheme for classifying various aspects of trade policies, they computed a binary measure for determining whether a country was open or closed. According to that measure 18 countries in Africa were classified as closed in 1980 and only 7 countries were classified as open.¹³ Their estimates indicated that, if a country moved from being closed to open, its long-run growth rate would increase by 2.2 percentage points.

¹³ The Sachs and Warner (1995) results have been criticized on a number of grounds and in particular by Rodriguez and Rodrik (2000). But that is not really relevant to the argument made below.

Trade policies could thus significantly affect a country's standard of living. Mauritius was one of the countries that Sachs and Warner classified as being open or following liberal trade policies. But this categorization of Mauritius as an open economy was misleading, even incorrect. Tables 4 and 5 provide estimates of the restrictiveness of Mauritius' trade policy regime. During the 1970s and 1980s, Mauritius remained a highly protected economy: the average rate of protection was high and dispersed. In 1980, the average effective protection exceeded 100 percent, and although this diminished by the end of the 1980s, it was still very high (65 percent). Moreover until the 1980s, there were also extensive quantitative restrictions in the form of import licensing, covering nearly 60 percent of imports.

An alternative scheme of classification that has been devised in the Fund ranked Mauritius as one of the most protected economies in the early 1990s: Mauritius elicited a rating of 10, the highest possible category of policy restrictiveness. It is only in the late 1990s, that conventional measures of trade protection began to decline: by 1998, Mauritius obtained a rating of 7 on the Fund's index, still amongst the highest in the world and in Africa (Subramanian et. al. 2000). A more recent study by Hinkle and Herrou Aragon (2001) comes to even stronger conclusion (Table 5). On nearly every indicator of trade policy Mauritius fares worse than the average African economy.

The conclusion that we draw is the following. It may well have been that Mauritius in some broad sense (examined below) was indeed open, but certainly not on the basis of indicators of import policies of Sachs and Warner (1995). On the contrary, it was a highly restricted economy during much of the 1970s, 1980s, and the early 1990s. More specifically, the data suggest that Mauritius would not have met two of the criteria—relating to average tariffs and coverage of quantitative restrictions—that Sachs-Warner (1997) deemed necessary for classifying a country as open.

D. Heterodox Opening (Rodrik)

Clearly, by the most usual measures for determining trade policy openness, Mauritius is not the poster boy for the Washington consensus. Mauritius had a highly restrictive trade regime. But why did this not translate into an export tax and hence a tax on all trade? According to Rodrik (1999a), Mauritius chose a strategy of trade liberalization that was unusual and that effectively segmented the export and import competing sectors. Through a policy of heterodox opening Mauritius ensured that the returns to the export sector were high, effectively segmenting its export sector from the rest of the economy and preventing a restrictive trade regime from spilling over to this sector. This combination ensured that the returns to the export sector remained high, and high enough to prevent domestic resources from being diverted to its inefficient import competing sector.

Table 4. Mauritius: Estimates of Effective Protection,
1980 and 1990

(In percent)

	1980	1990
Beverages and tobacco	123	182
Textile yarn/fabrics	77	11
Apparel	99	4
Leather products	269	8
Footwear	158	88
Wood products	191	38
Furniture	130	241
Paper products	131	57
Printing/publishing	75	7
Chemical products	38	21
Rubber products	125	144
Plastic products	89	59
Non-metallic products	77	48
Iron/steel	154	73
Fabricated metal products	156	48
Machinery	62	3
Electrical machinery	179	181
Transport equipment	23	4
Optical goods etc.	266	9
Average	127	65
Memorandum item:		
Share of imports under licenses	57	

Source: Milner and McKay (1996).

Table 5. Openness of Mauritius and Africa

Criteria	Mauritius	Africa Average
Parallel market premia (index of foreign exchange restrictions) (1996)	4.0	2.8
Discrimination against imports in excise taxes (average rate of taxation) (1996)	219.0	27.4
Maximum trade taxes on imports (includes statutory tariff rates plus surtaxes and the ad valorem equivalents of specific duties)	80.0	78.3
Exemptions as percentage of dutiable imports	13.2	18.9
Unweighted average tariff rate	26.4	17.2
Import weighted average tariff rate	20.3	12.4
Tariff collections as percent of GDP	6.0	2.6
Import weighted average tariff on consumer goods	25.2	19.7
Unweighted average import tariff on inputs	19.3	11.0
Unweighted average import tariff on capital goods	15.9	7.7
Indicators of effective protection in agriculture	19.5	18.2
Indicators of effective protection in Manufacturing	150.2	82.7

Source: Hinkle and Herrou-Aragon (2001).

The institutional mechanism for achieving the segregation of the exporting sector from the importing sector was the creation of the export processing zone (see below), but the policy instruments that were deployed were the following:

- First, duty free access was provided to all imported inputs. This ensured that the export sector's competitiveness on world markets was not undermined by domestic taxes that could have raised the cost of inputs used in export production.¹⁴
- Second, a variety of tax incentives was provided to firms operating in the export processing zones, which had the effect of *subsidizing* exports.¹⁵ This subsidization was a key element helping to offset the impact of the implicit tax on exports created by the restrictive trade regime.
- Most importantly, the labor market for the export sector was effectively segmented from the rest of the economy (and in particular the import competing sector). Different labor market conditions prevailed at least until the mid-to-late 1980s. Employers had greater flexibility in discharging workers in the EPZ sector (for example, no severance allowances had to be paid before retrenching workers and advance notification of retrenchment to a statutory body was not required) and the conditions of overtime work were more flexible. Most importantly, although legal minimum wages were the same in the EPZ sector as in the rest of the economy, minimum wages for women were fixed at lower levels (Hein, 1988; Wellisz and Saw, 1993). And since EPZs employed disproportionate amounts of female workers (in 1990 for instance the EPZ workforce comprised 60,372 females and 27,886 males), these labor market measures also acted as an implicit subsidy for exports as they increased the incentive to produce in the export- than in the import-competing sector. Figure 6 illustrates the wage differential between the EPZ and the rest of the economy in the 1980s and 1990s.¹⁶ EPZ wages were about 36-40 percent lower in the 1980s, with the differential narrowing to between 7 percent and 20 percent in the 1990s.

The creation of the EPZ generated new opportunities of trade and of employment (for women), without taking protection away from the import-substituting groups and from privileged male workers. The segmentation of labor markets was particularly crucial, as it prevented the expansion of the EPZ from driving wages up in the rest of the economy, and thereby

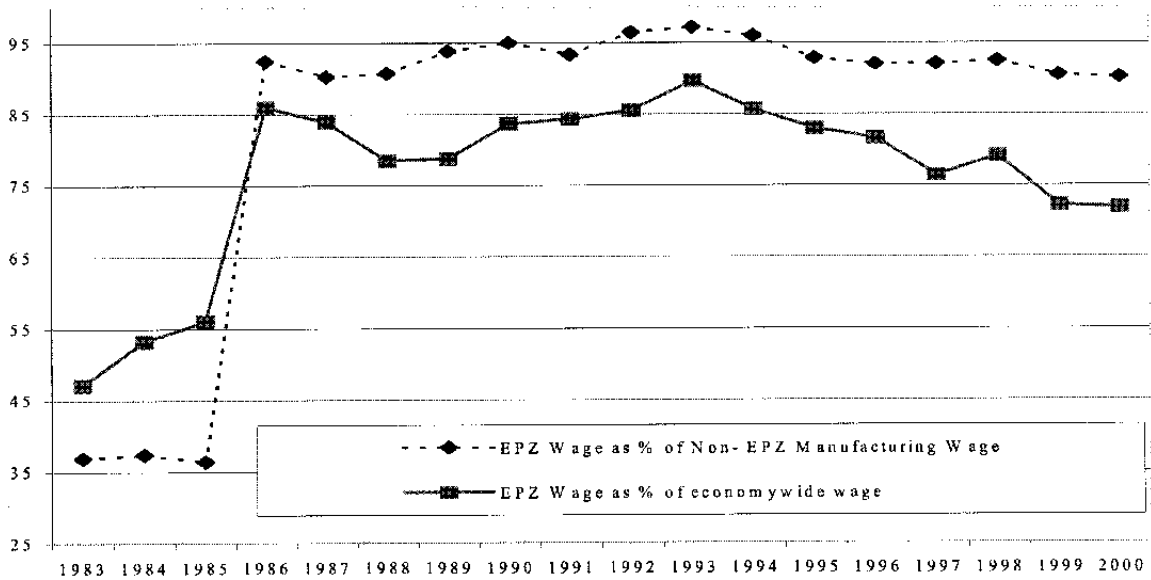
¹⁴ Note that duty drawbacks and equivalent schemes do not entail export subsidization, they merely offset the bias from restrictive import policies.

¹⁵ The main incentives included a 10 year tax holiday on retained earnings, and a partial tax holiday for periods beyond that; free repatriation of capital and profits; and preferential interest rates for firms in the EPZ.

¹⁶ For example, in 1984, 79 percent of total employment in the EPZs was female, compared with 31 percent in the rest of the economy (Hein, 1988).

disadvantaging import-substituting industries. New profit opportunities were created at the margin, while leaving old opportunities undisturbed. There were no identifiable losers (Rodrik (1999a)).

Figure 6. EPZ Wage in Mauritius Compared to other Wages



To summarize these arguments, Mauritius managed to maintain neutrality of incentives between the export and import-competing sectors. The neutrality of incentives was achieved through a high dose of intervention on both imports and exports (“heterodox opening”). On the one hand, imports were restricted through high trade barriers; on the other, to offset this intervention, extensive and selective intervention occurred on the export side. In this sense, it appeared to follow the dirigiste approach of Korea, Taiwan, and Japan rather than that of Singapore and Hong Kong SAR.

E. Heterodox Opening: The Role of Preferential Access

The argument made by Rodrik is plausible but incomplete in an empirical sense. For example, Table 4 indicates that effective protection for the import competing sector averaged about 125 percent in the 1980s and about 65 percent in the 1990s. At the same time, Figure 6 indicates that the de-facto subsidization through the labor market was closer to 25-30 percent, even less if EPZ wages are compared with those in the import competing sector. Even allowing for favorable tax breaks, it seems that heterodox opening and intervention (in the form of subsidies in the export sector) did not offset completely the anti-export bias of the restrictive import

regime.¹⁷ There is a missing piece and that is the preferential access to the export markets enjoyed by Mauritius.

The policy of heterodox opening would probably not have been a success, or at least not to the same extent that it was, without the policies of Mauritius' trading partners which played an important role in ensuring the profitability of the export sector. Mauritius has enjoyed preferential access to the markets of the major trading partners—United States and especially Europe. This access has affected two main products that have together accounted for over 90 percent of Mauritian exports.

First, since independence in 1968, Mauritius has been guaranteed a certain volume of exports of sugar to the European Union. Moreover, these quotas are at a guaranteed price that has been above the market price by about 90 percent on average (Figure 7) between 1977 and 2000. The resulting rents to Mauritius have amounted to a hefty 5.4 percent of GDP on average each year, and up to 13 percent in some years.¹⁸ Effectively, this preferential arrangement in the sugar sector increased the return to the export sector and acted like a subsidy to domestic production of sugar. Unlike a domestic subsidy, subsidies received through the preferential access were a transfer from consumers in the importing country to producers (and taxpayers) in Mauritius.

Mauritius has also enjoyed preferential access on its exports of textiles and clothing. Foreign investment into the clothing sector, which originated largely in Hong Kong SAR, was motivated in part by the need to circumvent the quotas on textiles and clothing that was constraining clothing exports from Hong Kong SAR. The international regime in place, known as the Multi-Fiber Arrangement (MFA)—was an attempt by the United States and the European Union (EU) to limit imports into their own markets. These limits were achieved by awarding country-specific quotas for the different textile and apparel exporting countries. One of the effect of these quotas was to redistribute production between exporting countries—away from low cost toward high cost sources of production. Thus, high-cost-producing countries gained an advantage relative to low-cost producers, resulting in higher production than would otherwise have taken place.

Table 6 provides quota rents for Mauritius in the apparel segment under the MFA arrangement as a percent of the GDP.¹⁹ The substantial rents accruing to exports ensured that resources were not diverted away despite the attractiveness of the protected import-competing sector. From a

¹⁷ The impact of the corporate tax incentives on exports could not have been large because most non-EPZ manufacturing firms also benefited from the numerous tax concessions.

¹⁸ Most, but not all of these rents accrued to producers because of the export tax on sugar, which has averaged about 12 percent between 1975 and 1995.

¹⁹ The quota rents are actually an upper bound under the assumption of perfectly elastic export supply.

Table 6. Rents to Mauritius from Apparel Exports²⁰

	1984				1996				1999			
	EU*		USA*		EU*		USA*		EU*		USA*	
	ETE	Rent	ETE	Rent	ETE	Rent	ETE	Rent	ETE	Rent	ETE	Rent
Shirt knitted	3	0.01	15	0.00	28.3	3.40	57.8	2.55	18.1	4.33	37.6	4.88
T-shirts knitted	3	0.02	17	0.00	28.3	40.95	0.8	0.29	14.7	45.31	7.6	0.97
Shirts not knitted	5	0.09	27	0.29	12.6	9.54	50.8	27.77	10.6	6.95	42.9	36.62
Trousers	20	0.79	20	1.41	9	9.85	31.6	19.81	11.6	9.81	25.7	23.56
Ladies' blouses etc.	10	0.18	17	0.62	4.4	0.62	8.4	0.35	9.9	1.05	12.1	1.30
Jerseys, pull-overs, cardigans etc.	3.1	0.20	25.6	1.39	1.8	3.07	1.6	0.10	8	12.20	12.7	1.62
Total rent	1.29		3.71		67.44		50.87		79.65		68.96	
Rent/GDP (%)	0.49%				2.91%				3.54%			

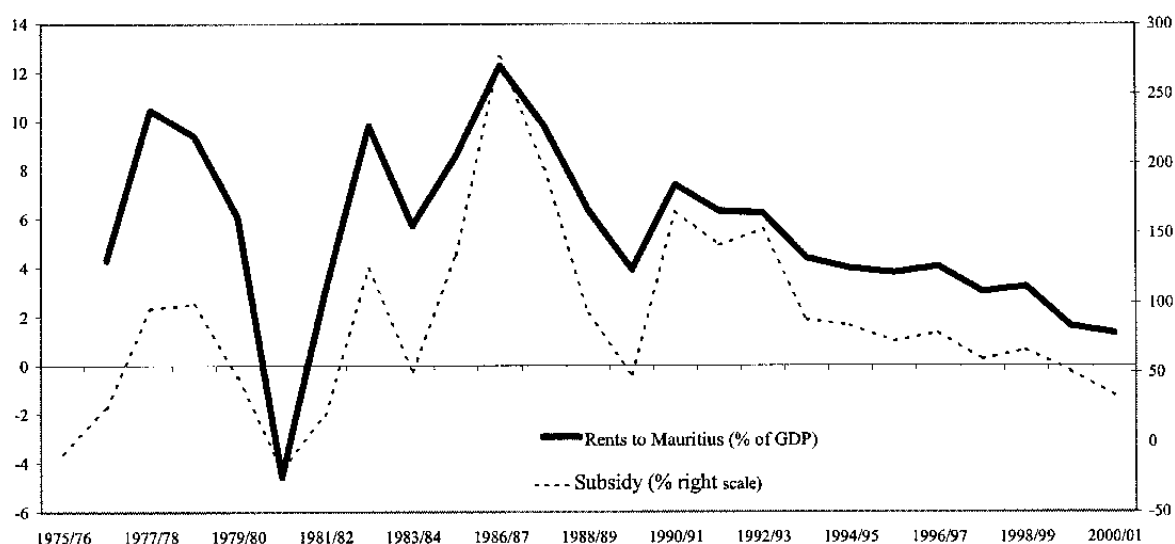
Source: Authors' Calculations.

* Rents are in millions of current US dollars.
Export tax equivalents (ETE) are in %.

²⁰ The percent of apparel exports covered for the EU and USA for the three-time periods are 45 and 68, 93 and 84 and 80 and 94 percent, respectively.

macroeconomic perspective moreover, these rents played a crucial role in sustaining high levels of investment and explain the fact that during the growth boom in Mauritius domestic rather than foreign savings have financed domestic investment. Our calculations suggest that rents in Mauritius from preferential access in sugar and clothing together amounted to about 7 percent of the GDP in the 1980s and to about 4.5 percent of GDP in the 1990s.

Figure 7. Mauritius: Benefits from Preferential Access to EU Sugar Market



Source: Fund staff calculations.

Preferential access made an enormous contribution to offsetting the bias of import policies (Table 7). The de-facto subsidization of exports in the two export sectors amounted to about

Period	Import Protection ²	Export Subsidy						
		From Domestic Policy		From Preferential Access			<i>Total</i>	
		Case A	Case B	Sugar	Apparel	Total	<i>Case A</i>	<i>Case B</i>
1980s	127	32	39	108	15	52	84	91
1990s	65	7	20	98	28	47	54	66

Source: Authors' calculations.

¹ Subsidy from domestic policy refers to the difference between the EPZ wage and the wage in the non-EPZ manufacturing (Case A) and in the economy (Case B).

² To capture the resource allocation effects, protection is measured in effective rather than nominal terms.

50 percent. This combined with export subsidization through domestic policies would have been about 90 percent, very close to the tax stemming from import restrictiveness. Quantitatively, preferential access contributed more to offsetting the anti-export bias of the import regime than domestic export subsidization policies.

In sum, Mauritius benefited enormously from the policies of its trading partners who granted preferential access to Mauritius. An alternative way of stating this is that Mauritius benefited from the protectionist policies of the United States and EU in the sugar and textile and clothing sectors. Had these industrial countries liberalized their markets, it is quite likely that the Mauritian trade performance would have been quite different. It is therefore no secret that Mauritius has not been enthusiastic about dismantling protection in world agricultural and clothing markets.

F. Trading Rules

Another less well-known aspect of the international trading regime is relevant in analyzing Mauritian trade policies. Under the WTO, developing countries have generally been exempted from undertaking obligations to rein in protectionist trade policy. This favorable treatment of developing countries has, until the Uruguay Round, extended to export subsidies. The Mauritian regime for export processing zones, particularly the favorable tax treatment of firms in EPZs, could not have flourished had the prohibition of export subsidies by developed countries also been applied to developing countries. The international regime was therefore indulgent toward Mauritius in this respect as well.²¹

G. Export Processing Zones: FDI and Ideas (Romer)

By any conventional measure, the EPZ experiment in Mauritius has been a resounding success: it has literally helped transform the Mauritian economy. Since 1982, output has grown by 19 percent per annum on average, employment by 24 percent, and exports by about 11 percent. The EPZ sector from a base of zero in 1971 now accounts for 26 percent of GDP, 36 percent of employment, 19 percent of capital stock, and 66 percent of exports.

It could be argued that this performance is a reflection of the various financial incentives provided to firms operating in EPZs and that a proper economic evaluation that incorporates the social costs of these incentives might portray a different picture. To test this proposition, a growth accounting analysis was conducted for the EPZ sector and compared with that for the economy as a whole. The results are striking. For the period 1983-1999, productivity growth in the EPZs has averaged about 3.5 percent compared with 1.4 percent in the economy as a whole. For the 1990s, EPZ productivity growth was spectacular, averaging 5.4 percent per annum, a level not matched even in the fast growing countries of East Asia (see Table 8). As wage costs

²¹ Interestingly, the WTO rules do not treat differential labor regulations between the export and other sectors as a subsidy.

have risen in Mauritius, firms have economized on their use of inputs and improved their efficiency in order to sustain growth.

Table 8. Total Factor Productivity in EPZ Sector in Mauritius

	%GDP	%K	%L	Labor Share	TFP
1982-99	10.2%	9.5%	5.4%	0.69	3.5%
1982-90	19.0%	24.1%	17.5%	0.67	-0.8%
1991-99	5.7%	0.7%	0.0%	0.71	5.4%

Source: Authors' calculations.

Does the performance of the EPZ reflect the benefits of FDI? Romer (1992) has strongly argued that the Mauritian experiment is a vindication of a strategy of importing ideas and allowing the economy to generate high rates of growth based on them. The conceptualization of ideas in Romer (1992) as a public good has the policy implication that the government needs to subsidize the *use/production* of ideas. According to Romer "The only obvious candidate for explaining the success of Mauritius is the policy of supporting an EPZ, which made investment attractive to foreigners." Beginning with Meade who took a narrow view of Mauritian entrepreneurial expertise, Romer's story explains well that foreign entrepreneurs brought an array of ideas in a new line of activity i.e. textile and apparel. Ideas which are useful are expected to be reflected in rising productivity and the experience of the EPZ sector in Mauritius does confirm this prediction.

H. Openness: What to Conclude?

Of the three explanations, the one due to Sachs and Warner does not appear to square with the facts. Mauritius was simply not a liberal economy in import policy terms. The explanation due to Romer encounters two problems. While it may have been true that the initial wave of investments that triggered the growth in EPZ output was largely foreign, the Mauritian EPZ sector, unlike that in many countries had a substantial local presence. For example, in 1984, only 12 percent of the total employment in the EPZ was accounted for by wholly foreign-owned operations compared with 72, 42, and 64 percent respectively in Korea, the Philippines and Malaysia. It is estimated that about 50 percent of the total equity of firms in the EPZ was owned by Mauritian nationals. In other words ownership figures do not provide unambiguous support for the notion that ideas originated from abroad and were mediated through foreign direct investment.²²

²² Of course, given the public good nature of ideas, even very small initial amounts imported from abroad could have subsequently been adopted by domestic firms. Thus, substantial domestic ownership of the EPZ firms need not invalidate the Romer insight.

A second problem is more general. True, the Mauritian government did support the export processing zones as we have discussed above but was it unique to Mauritius? Apart from Mauritius, EPZ facilities and the attendant incentives were provided by a host of other African countries such as Zimbabwe, Senegal, Madagascar and Cameroon. Hinkle and Herrou-Aragon (2001) rated countries like Zimbabwe and Senegal at par with countries without the EPZs, for the reason that these countries provided for EPZs but implemented the arrangements so poorly that they were judged to be no better off than African countries without the EPZs. Other countries like Cameroon which tried the same experiment had only moderate success. The EPZ experiment failed in almost all these countries. Put differently, while Romer's insight on the successful use of ideas (mediated through FDI) by Mauritius may be valid, the question of why FDI flowed to Mauritius rather than to others that attempted to similarly attract FDI remains unanswered.

This poor performance was not limited to the EPZs alone. In fact reviewing the system of export incentives in 13 African countries Hinkle and Herrou-Aragon conclude that no sample country came anywhere close to international best practice for export incentives. They attribute this unambiguous failure to fiscal constraints, limited administrative capacity, the latter resulting in leakage of commodities benefiting from the incentives to the domestic market, favoring import competing rather than export-oriented activities. There seems to be more to the EPZ experience of Mauritius than the import of ideas through subsidies.

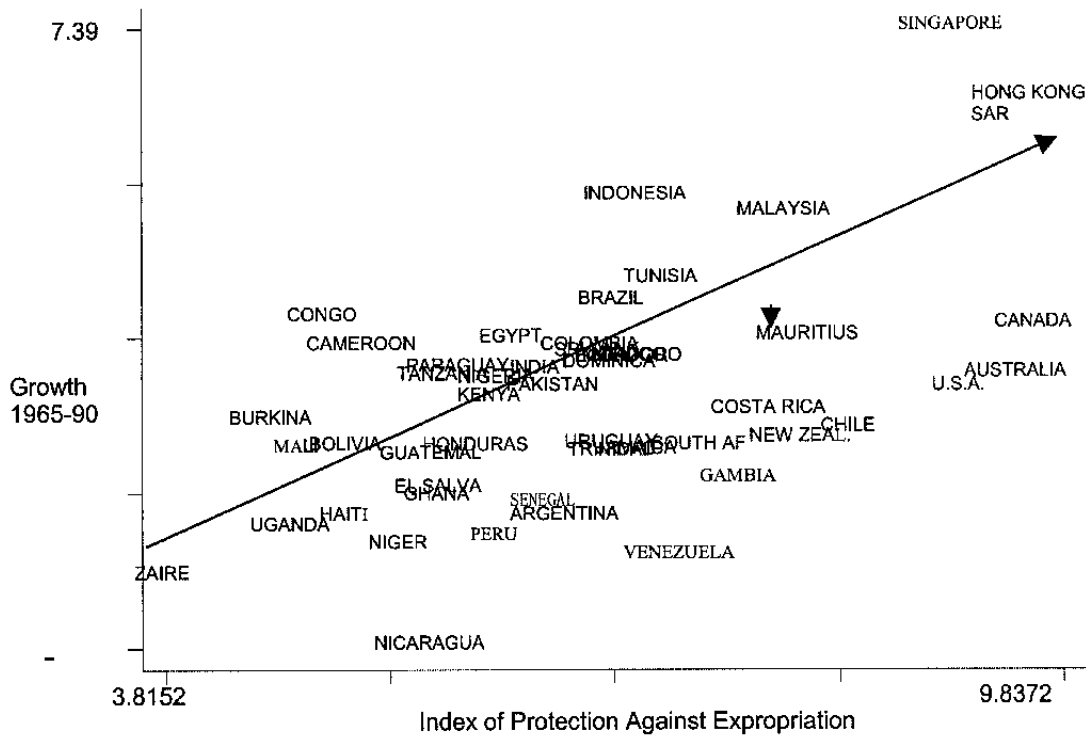
The heterodox opening argument due to Rodrik points in a promising direction. When supplemented with the role played by trading partners, it appears to explain why the trade regime was at least neutral between exports and import competing sectors. But again this explanation appears to be a proximate one. Other African countries established EPZs and enjoyed preferential access to foreign export markets without comparable success. There seems to be more to the Mauritian experiment than interventionist policies at home and generosity abroad.

V. THE ROLE OF INSTITUTIONS

The role of efficient and properly functioning institutions as a precondition to investment, entrepreneurship, and innovation and hence long-run growth is increasingly emphasized in the growth literature. Institutions have been argued to confer two types of benefits. First they enhance long-run growth (Collier and Gunning (1999), Acemoglu et al. (2000)) and second, they impart resilience to an economy, allowing it to adjust to exogenous shocks (Rodrik (1999b)).

As is evident from the partial scatter plot above fast growers have on average better institutions.²³ In reality, though it is difficult to identify all the attributes of the capital called institutions. There is social capital in the form of trust, work ethics, religious and ethnic tolerance, and civic capital in the form of infrastructure (not all of which can be captured in the form of trade costs), legal and judicial systems etc. In practice different institutions embodying

Figure 8: Growth and Institutional Quality



these varying attributes tend to be highly correlated and cross country evidence on growth has tended to be robust across different indices.²⁴

²³ The measure of institutional quality is due to Acemoglu et. al. (2000). The index of institutional quality is in fact the fitted value from the first stage of the 2SLS regressions. The measure captures the protection against the risk of expropriation of property.

²⁴ For our sample, the correlation between the ICRGE index and democracy and the ICRGE index and index of participation are respectively, 0.71 and 0.72. The correlation between democracy and participation index is 0.95.

Collier and Gunning (1999) argue that the long-run growth process itself is directly related to the quality of domestic institutions. Public social capital consists of government institutions that facilitate private activity such as well-functioning courts that ensure contract enforcement and respect of property rights. This reduces the risks of private investment, leading to larger quantities of it. Public social capital also ensures that government policy is not dominated by any single favored groups whose interests are at variance for the community as a whole. The expansion of the public sector and import substitution and the taxation of agriculture witnessed in Africa have resulted in part from the lack of mechanisms for inclusiveness in policy making. Finally, poor social capital has led to a high incidence of corruption.

The most compelling empirical evidence on the importance of institutions is due to Acemoglu et. al. (2000) who show that there is a strong systematic relationship between institutions and economic performance. The European colonizers developed and sustained better institutions in those places where the mortality rates were lower and consequently settlements rates higher like the United States, Australia, New Zealand etc. In their study, one important result that follows is that, after controlling for institutions properly, geography does not matter. In other words, institutions might well be the most critical determinant of economic performance.

Rodrik (1999b) has argued very strongly that the post-war growth experience, notably the slow-down of economic growth after the first oil shock, needs to be explained in terms of the ability of governments to adjust their macroeconomic policies to exogenous shocks. In his view, the key determinant of this ability is the quality of domestic institutions. The point here is that macroeconomic responses to exogenous shocks have serious domestic distributional implications. Take the standard example of an oil shock that creates a balance of payments problem. The IMF and textbook recommendation is for countries to implement policies to reduce domestic absorption (mainly by tightening fiscal policies) and to switch expenditure from foreign goods to domestic goods.

But which ones and how? Should fiscal tightening take the form of tax increases or expenditure reductions? If the latter, should cuts fall on defense, capital projects, health, or education? Should expenditure switching be accompanied by an incomes policy? Each of these actions has very different distributional implications. If the inevitable distributional conflict can be managed, the impact of the shock can be mitigated. If not, the economic shocks get amplified by the shocks emanating from the domestic social and political conflicts creating long-run damage for the economy. What robust domestic institutions do is to allow these conflicts to be handled at least possible cost and Rodrik (1999b) provides evidence in support.

That institutions might be important in explaining Mauritian economic performance is suggested by the high quality of its institutions. Mauritius ranks well above the average African country with respect to all indices of institutional quality, political as well as economic (Table 9) and also above the fast growing economies on most indices. The role of institutions in Mauritian growth and development is illustrated by at least three examples.

Gulhati and Nallari (1990) have argued that Mauritius' success in overcoming its macroeconomic imbalances in the early 1980s owes to domestic institutions. Macroeconomic

adjustment was in fact implemented by three different governments of apparently divergent ideological persuasions: this presupposed consultation and a recognition of the need to evolve a national consensus in favor of the adjustment. Further, a culture of transparency and participatory politics ensured that early warning signals and feedback mechanisms were in place, allowing emerging economic problems to be tackled at an early stage.

A second illustration of the role of institutions relates to the success of the EPZs in Mauritius compared with the rest of Africa. EPZs have failed in most countries because institutions and governance have not been able to manage the rent seeking, corruption and inefficiency that is required to manage the high degree of selective interventionism embodied in EPZs.

Table 9. Mauritius and other Countries with Respect to Indices of Institutions

Institutional Quality Index	Mauritius ¹	Africa	Fast-Growing Countries	Other Developing Countries
CRGE ²	7.23	4.54	6.86	4.29
Protection against expropriation ³	8.06	5.75	8.54	6.47
Democracy ⁴	0.75	0.25	0.47	0.51
Participation index ⁴	0.80	0.30	0.49	0.44

¹ For ICRGE and Protection Against Risk of Expropriation, Mauritius has fitted values.

² ICRGE (International Country Risk Guide) index is a measure of institutional quality that contains aspects of government that affect property rights or the ability to carry out business. It is published by a private firm that provides consulting services to international investors.

³ For ICRGE index and index of protection against the risk of expropriation the scale is between 0-10, with higher values indicating better institutional quality.

⁴ Participation measures the extent of competitiveness of political participation. This index is taken from the Polity III dataset of Jagers and Gurr (1995), who define it as the "extent to which non-elites are able to access institutional structures for political expression" (it is rescaled to range from 0 to 1 in Rodrik (1999)). The democracy index also ranges from 0 to 1.

The example of the success of the sugar sector in Mauritius also highlights the role of institutions in Mauritian economic performance. Sugar is the prime agricultural product in Mauritius. Like most other African countries the dependence on the primary product has been high. Where Mauritius is different from the rest of Africa is that it has nurtured and developed the sugar sector rather than taxed it. While the rest of Africa killed its cash cow, Mauritian sugar industry has thrived. The role of institutions in achieving this is elaborated in greater detail in the concluding section.

VI. AN ECONOMETRIC INVESTIGATION OF THE MAURITIAN GROWTH EXPERIENCE

In this section, we test econometrically the validity and relative importance of the different explanations of the Mauritian growth experience. To do this, we use as the benchmark two widely cited cross-country-growth studies: the first due to Sachs and Warner (1997) which seeks to explain long-run growth performance and the second due to Rodrik (1999b) which seeks to explain the *change* in the growth performance since the oil crises of the 1970s and the debt crisis of the early 1980s.

The explanatory variables in Sachs and Warner (1997) can be placed in four broad categories: initial conditions, geography, policy including openness, and institutions. Before we elaborate on our results, and given our priors that institutions could potentially be an important determinant of growth performance in Mauritius, it is essential to draw attention to our treatment of this variable.

Much of the literature on cross-country growth uses a few or common set of institutional variables. The most commonly used variable is due to the International Country Risk Guide (ICRGE), which captures aspects of the government that directly affect property rights or the ability to carry out business transactions. Knack and Keefer (1994) have compiled information on these aspects of the government from the International Country Risk Guide, a publication by a private firm that provides consulting services to international investors. The problem however is that there is a two-way relationship between institutions and growth. While institutions clearly influence growth, higher incomes increase the demand for participation, accountability and transparency and also provide the public resources that can be devoted to improving them. Thus much of the existing literature uses a variable for institutions that is prone to endogeneity bias.²⁵

To address this problem we drew upon the results of Acemoglu et. al. (2000) who use settler's mortality data in the former colonies as an instrument for the variable that captures institutional

²⁵ Ideally one should recognize the two-way relationship between institutions and economic growth. Several attempts have been made to deal with the endogeneity of institutions by using an instrumental variables approach. Mauro (1995) instruments for corruption using ethnolinguistic fractionalization which is not such a good instrument after all if growth is accompanied with emergence of a centralized state and integration via markets, moreover as Easterly and Levine (1997) argue, the further problem with ethno linguistic fractionalization is that it can directly affect performance by causing political instability. Hall and Jones (1999) use distance from equator as instrument since the distance from equator proxies "Western Influence." Acemoglu et al. (2000) critique Hall and Jones on empirical grounds that it is not easy to argue that Western influence led to better institutions and cite as an example the Belgian influence in Congo. To our knowledge, Acemoglu et al. (2000) appears to be the best attempt at getting the right instrument for institutional quality.

quality.²⁶ Table 10 presents the results based on the Sachs and Warner regressions, while Table 13 presents those based on Rodrik (1999b). Table 11 lists the estimated deviation in Mauritian growth from the different groups of countries based on the basic Sachs-Warner regressions.

Given our discussions earlier about Mauritius' trade policy, we chose to categorize it as closed rather than open economy. On this basis, we ran the original SW regression (Column 1) as well as augmented one with instrumented institutional variable due to Acemoglu et al. (2000). The fitted values for institutional quality used in the second stage have been obtained by regressing the index of protection against expropriation on historical settler's mortality and a host of geography and other exogenous variables. Two aspects of the results are striking. First that the dummy for Mauritius is significant and positive. In other words the cross-country growth regression is inadequate in explaining Mauritian growth performance. It is interesting, however that the significance of coefficient declines when the correct measures for institutions is introduced.²⁷

The openness issue for Mauritius as raised in this paper is likely to be controversial. The assessment of Mauritius as a closed economy though seems in conformity with the data but to explore further Mauritius' trade performance, we estimated a gravity model based on Subramanian and Tamirisa (2001) to check whether Mauritius was an exceptional trader. The results presented in Table 12 are interesting. The results indicate that Mauritius has simply been an average rather than an exceptional trader. The Mauritian dummy in the regressions for the early 1980s and the late 1990s is not statistically different from zero. This is in contrast with the vast majority of African countries that are typically undertraders and the tigers of East Asia that are consistent overtraders. The inference therefore is that exceptional growth performance was not the result of an exceptional trade performance.

The same results namely the uniqueness of the Mauritian growth record holds for Mauritius in the Rodrik regressions. The significance of the Mauritian dummy is robust to alternative measures of institutional quality (Table 13) including the Acemoglu variation. The results are stronger on the uniqueness of Mauritius because the Rodrik regressions are aimed at explaining performance of the post 1975 period relative to the pre-1975 period and it is in the latter that

²⁶ Acemoglu et. al. (2000) instrument for institutional quality in an equation with the log of income per capita (rather than growth of this variable).

²⁷ The interesting result from a general perspective is that instrumenting for institutions *trumps* openness. The openness variable in the SW regressions is no longer significant once the 2SLS methodology is adopted, nor are the geography variables. In fact the central message of the Acemoglu et. al. paper is that once institutions are controlled for, geography does not matter. Sachs and McArthur (2001) contest this result.

Table 10. Cross-Country Growth Regression as in Sachs-Warner (1997)²⁸

Dependent Variable—Growth Rate Between 1965–90	OLS	2SLS
Log of initial GDP	-1.44* (-6.45)	-1.79* (-5.73)
Openness x log of GDP	-1.18* (-3.5)	-0.27 (-0.57)
Openness (fraction of years open according to Sachs Warner 95)	11.85* (4.25)	3.21 (0.79)
Landlocked dummy variable	-0.61* (-2.71)	0.39 (0.38)
Log life expectancy circa 1970	45.47* (2.71)	111.14*** (1.82)
Square of log life expectancy	-5.37** (-2.32)	-13.81*** (-1.79)
Central government saving 1970-90	0.11* (5.17)	0.11** (2.31)
Dummy for tropical climate	-0.82* (-2.92)	0.52 (0.66)
Institutional Quality Index (ICRGE)	0.34* (4.14)	
Expropriation index instrumented		1.41*** (1.72)
Natural resource exports/GDP 1970	-3.82* (-3.97)	-5.64* (-3.94)
Growth in economically active population - pop growth	0.74** (2.16)	-0.46 (-0.38)
Mauritian dummy	1.46** (1.94)	1.89** (1.88)
Constant	-83.26** (-2.46)	-216.43*** (-1.76)
R Squared	0.87	0.83
Adj R squared	0.85	0.78
Number of observations	85	52

Source: Authors' estimates.
Figures in brackets represent *t* ratios.

²⁸ *-significant at 99%** , significant at 95%, ***-significant at 90%.

Table 11. Breakdown of Mauritian Growth²⁹

Explanatory Variable	Difference in Mauritian Growth from Baseline Growth of		
	Africa	Fast-Growing Countries	Other Developing Countries
Catch-up	-2.33	-1.33	-1.41
Life expectancy	1.51	0.29	0.68
Landlocked	0.19	0	0.06
Tropical climate	-0.09	-0.26	-0.34
Natural resource abundance	-0.35	-0.65	-0.55
Etholinguistic feactionalization	0.01	-0.03	-0.05
Total inheritance	-1.06	-1.98	-1.61
Openness	-0.20	-1.93	-0.47
Central government savings	-0.43	-0.53	-0.08
Average national savings ratio	-0.001	-0.02	-0.006
Institutional quality	0.75	0.10	0.82

Inheritance Variables

Policy Variables

Source: Authors' calculation.

²⁹ Estimates are based on the Sachs and Warner (1997) basic regression.

Table 12: Undertraders, Average Traders
and Super Traders

(Coefficient on country dummies
in a gravity model³⁰)

Country	1997-98
Angola	0.975
Burundi	-1.804*
Congo, Dem. Rep. Of	-1.617*
Ethiopia	-1.650*
Kenya	-1.103*
Madagascar	-0.945**
Malawi	-1.361*
Mauritius	0.252
Mozambique	-1.654*
Rwanda	-1.939*
Seychelles	-0.325
Tanzania	-1.901*
Uganda	-2.066*
Zambia	-1.416*
Zimbabwe	-0.974*
Indonesia	0.086
Malaysia	1.569*
Thailand	0.819*
China, P.R., Hong Kong SAR	1.505*
Korea	0.764*
Singapore	1.852*
Taiwan Prov. of China	1.292*

Source: Authors' estimates.

*--Denotes significant at the 5% level.

**-- Denotes significant at the 10% level.

³⁰ Negative and significant coefficient implies under trader while positive and significant coefficient implies overtrade. See Bhavnani, Subramanian, and Tamirisa (forthcoming).

Table 13. Cross-Country Regressions of Change in Growth (Rodrik (1999))

East Asia dummy	2.41* (-3.26)	2.11* (-3.06)	
Latin America dummy	-2.16* (-4.56)	-1.77* (-3.7)	
SSA dummy	-2.11* (-3.38)	-2.09* (-3.6)	
Growth 1960-75	-0.77* (-7.11)	-0.72* (-6.41)	-0.83* (-5.41)
Log GDP/capita 1975	-0.90* (-3.02)	-0.87* (-2.91)	-2.03* (-4.54)
External shocks	-0.03 (-1.05)	-0.07* (-2.84)	-(0.04) (-1.26)
Democracy	1.73** (2.18)		
Institutional quality (instrumented for index of protection against risk of expropriation)			1.85* (5.41)
Index of participation		2.02* (2.57)	
Ethnolinguistic fractionalization	-1.65* (-2.38)		
Dummy for Mauritius	3.68** (2.19)	4.30* (2.49)	3.91** (2.29)
Constant	8.55* (3.94)	7.44* (3.11)	3.95** (1.98)
R squared	0.6039	0.6051	0.54
Adjusted R squared	0.5629	0.5741	0.49
Number of observations	97	97	59

*-significant at 99% level.

** -significant at 95% level.

*** - significant at 90% level.

Mauritian growth accelerated. Relative to most other countries in Africa and in Latin America, Mauritius enjoyed a sustained boom while others suffered a growth collapse.³¹

VII. CONCLUDING OBSERVATIONS—WHAT MIGHT BE UNIQUE ABOUT MAURITIUS

The foregoing discussion can be summarized as follows: first, the Mauritian growth performance between 1960 and 1990, and especially since the 1970s has been exceptional. In standard cross-country growth regression models, Mauritius is an outlier, implying that conventional determinants of growth do not fully capture the country's performance.

Second, initial conditions have had an ambiguous, and on balance a negative impact on subsequent growth performance. Its initial inheritance of human capital and demographic characteristics were favorable, but its higher level of initial income, commodity dependence, unfavorable geography have exerted a drag on growth. Certainly, in the growth race, Mauritius did not receive a stagger relative at least to countries in Africa. Table 11 indicates that the initial conditions disadvantaged Mauritius relative to all groups of developing countries. Mauritius' inheritance implied a drag on growth of about 1 percentage point relative to the average African country and close to 2 percentage points relative to the fast growers.

Third, Mauritius adopted a distinctive approach to openness. It has not had an open trade regime in any conventional sense; on the contrary its import regime for much of the 1970s, 1980s, and 1990s has been highly restrictive. The distinctiveness has been how Mauritius prevented an import tax from becoming an export and trade tax. Through a mixture of segmentation of the import competing and export sectors, and heavy intervention to promote the latter, initially though more liberal labor market policies but also through the tax system, part of the anti-export bias was offset. The institutional distinctiveness—that gave effect to segmentation—was the creation of EPZs. These were the heterodox aspects of Mauritius' openness strategy. However, it is the preferential access provided by Mauritius' trading partners, in sugar and textiles and clothing, and the resulting implicit export subsidization, that has allowed the anti-export bias to be fully offset. Thus, while there are shades of East Asian-style (particularly Korea and Taiwan) interventionism in Mauritius' trade and development strategy, a substantial role was played by trading partners (to a much greater extent than in the case of East Asia) in boosting trade performance. The emphasis on heterodox policies by Rodrik (1999a) therefore needs to be qualified.

But it should be underscored that while Mauritian policy offset the anti-export bias, neutrality rather than a pro-trade bias was achieved. In other words, Mauritian trade performance was average not exceptional as in the case of the tigers of East Asia. Thus, Mauritian trade

³¹ Because of the high coefficient of the initial growth rate (between 1960-75), the Rodrik regressions come very close to being a conventional growth regression for the period 1975-89 rather than a "change in growth" regression.

performance cannot explain Mauritius' exceptional growth performance. It was a super-grower but not a super trader.³²

But these are proximate rather than underlying causes of Mauritian growth success because the favorable trade environment and the creation of EPZs were not unique to Mauritius. Other developing countries had similar trade opportunities and adopted similar policies but failed where Mauritius succeeded. To some considerable extent, strong domestic institutions have contributed substantially to Mauritian success, and are a good candidate for underlying explanations of the Mauritian miracle. Compared with many developing countries, Mauritius has since independence been a democracy and developed strong participatory institutions.

The econometric results however suggest that even after accounting for the role of institutions there is a sizable unexplained component to Mauritian growth. Cross-country growth models, by definition, cannot capture country-specific idiosyncratic effects. In Mauritius, there were many. But one particularly important one, ironically, appears to be the very diversity and ethnic fragmentation that Meade lamented as a curse.

Diversity had three important benefits: it was a repository of communities (or diasporas) that turned out to have important linkages with the rest of the world, creating positive externalities for the country; it forced the need for economic balance that explains the preservation of the cash cow, namely the sugar sector; and third, it forced the need for participatory political institutions that were important in maintaining stability, law and order, rule of law, and mediating conflict.

First, the role of business and social networks in promoting trade and investment has attracted increased research interest in recent years. Casella and Rauch (1999) develop a model of trade that reflects the difficulty of introducing one's product in a foreign market. Access to local sources that can provide information about the market then facilitate entry and one prominent source of information transmission is coethnicity. A well-known example of the role of ethnic networks in trade is provided by the overseas Chinese who have created formal or informal societies that help in information flows and even at times in enforcement of contracts. Head, Ries and Wagner (1997) find that immigrants significantly increase trade between Canada and the source countries. Rauch (1999) presents evidence that common language and colonial ties play an important role in international trade.

³² Another factor that needs to be taken into account is the role of the services sector in Mauritius in explaining trade performance. Africa is afflicted by high trade costs. Despite its geographical remoteness, Mauritius has been able to keep transaction costs under control. Ports have been well managed and have rendered efficient service, the financial sector is well developed, and telecommunications fairly efficient.

Just as business and social networks are important for trade they are conceivably important for investment owing to similar mechanisms. Mauritius has a small Chinese population which played an important role in attracting the first wave of foreign direct investment flows from Hong Kong SAR. Entrepreneurs from Hong Kong SAR chose Mauritius as an investment location to circumvent the quotas on exports of textiles and clothing from Hong Kong SAR. In a similar vein, the offshore financial sector has grown because of the Indian diaspora which led to the signing of a double taxation treaty between Mauritius and India. As a result, Mauritian offshore centers have mediated large financial flows to India and Mauritius has become the largest investor in India.

Diversity had other important consequences. Here, one should emphasize a distinctive element of Mauritian diversity. There was a nice, almost symbiotic separation of economic and political power in Mauritius. Compared to resource rich countries in Africa for instance Ghana and Nigeria where the economic power and political power were vested in the same authority, Mauritius did not have a system of a ruling elite that derived economic power from the control over resources. Economic power was vested in the minority French community.

This had one important consequence: Mauritius managed to avoid one of the major mistakes made in most of resource-rich Africa, namely of killing the cash cow. Thus, agriculture and the resource sector were taxed in much of Africa (Ghana, Kenya, Tanzania). In part, this was imbued by ideology—the push toward import-substituting industrialization. But the newly-independent government in Mauritius—of a distinctly socialist persuasion—was as susceptible to this siren call.³³ Yet, the call was resisted. Political economy played an important role. The cash cow in the case of Mauritius was the sugar sector and owned predominantly by the minority French community. On the one hand, it was farsighted of the majority Indian community not to have nationalized or heavily taxed this sector. Equally, the economic elite—the French—exercised their clout and ensured that an adverse outcome to them did not result. The fact of the cleavage between the economic elite (a political minority) and the political elite and the need to achieve balance between the two in a newly-independent state thus ensured the fortunes of the sugar sector.

In return for guaranteeing the rights of the sugar owners, the political majority did implicitly extract a compromise in terms of transferring some of the rents from sugar to itself. One important aspect of this transfer was a large, relatively well paid, civil service (staffed predominantly by the majority Indian community) and a generous system of social protection, particularly related to pensions. The success of the sugar industry in Mauritius can thus be seen as an example of what can be termed as optimal rent sharing between the political (predominantly Indian) and economic elites (predominantly non-Indian).

³³ The first Prime Minister, Sir Seewoosagur Ramgoolam, was a Fabian socialist and wedded ideologically to a socialist model of development.

Diversity also had important political consequences. To some extent, Mauritius had no choice but to evolve such institutions. Just prior to independence, in a referendum on this question, 44 percent of the population (virtually the entire non-Indian population) rejected independence and wished to stay as a British colony. Assuaging the misgivings of such a large section of the population made participatory politics in the post independence era a necessity.³⁴ These institutions have ensured free and fair elections, the rule of law, a vibrant and independent press, and respect for property rights all of which has made Mauritius an attractive investment location.

Thus, both politics and the economics were shaped by the diversity of the population and the need to accommodate it in the face of large fissures. Another less well known choice made by Mauritius, which in retrospect seems a farsighted one is related to the sugar quota. Mauritius in the 1970s was offered the choice between access at the then high world price with limited quotas and access at a lower domestic EU price but with higher guaranteed quotas. Many countries chose the former attracted by the high price prevailing at that time. Mauritius chose the latter. The larger quantitative access, combined with the pressure from the domestic EU producer's lobby which raised domestic EU prices, handed Mauritius huge rents, which proved to be vital in financing private investment and generating growth.

One clear message is that attempting to replicate the Mauritian experiment might be hazardous for other countries, in part because the trading environment is now less favorable. Preferential margins for African countries will slowly but inevitably decline as global liberalization proceeds apace. Perhaps, more importantly, it may be difficult for other countries to replicate the key elements of the Mauritian globalization strategy—heavy intervention, extensive subsidization, and targeting, including through the creation of EPZs—because the preconditions for ensuring that an interventionist strategy succeeds, notably, the quality of domestic institutions and political processes, may not be in place.

³⁴ The extraordinary effort devoted to assuaging minority interests is reflected in the 'best loser' system introduced under the British which guaranteed adequate representation to all the communities in Mauritius, even if they did not emerge victorious in elections. This system has helped to keep the participation and interest of the minorities groups in the democratic process.

References

- Acemoglu, D., S. Johnson, and J.A. Robinson, 2000, "The Colonial Origins of Comparative Development: An Empirical Investigation," *National Bureau of Economic Research Working paper*, WP/00/7771.
- Berthelemy, J.C., and L. Soderling, 2001, "Will There Be New Emerging Markets in Africa by the Year 2020?," mimeo, OECD Development Center.
- Bhavnani, R., A. Subramanian, and N. Tamirisa, "Globalization and African Trade," *International Monetary Fund Working Paper* (forthcoming).
- Cashin, P., and C. Patillo, 2000, "Terms of Trade Shocks in Africa: Are they Short-Lived or Long-Lived," *International Monetary Fund Working Paper*, WP/00/72.
- Coe, D., E. Helpman, and A. Hoffmaister, 1997, "North-South R&D Spillovers," *Economic Journal*, Vol. 107, pp. 134–149.
- Collier, P., and W. Gunning, 1999, "Explaining African Economic Performance," *Journal of Economic Literature*, Vol. 37, pp. 64–111.
- Collins, S., and B. Bosworth, 1996, "Economic Growth in East Asia: Accumulation Versus Assimilation," *Brookings Papers on Economic Activity* 2: 135–91.
- Dalmazzo, A., and G. de Blasio, 2001, "Resources and Incentives to Reform: A Model and Some Evidence on Sub-Saharan African Countries," *International Monetary Fund Working Paper* (forthcoming).
- Easterly, W., and R. Levine, 1997, "Africa's Growth Tragedy: Policies and Ethnic Divisions," *Quarterly Journal of Economics*, pp. 1203–1250.
- Gulhati, R., and R. Nallari, "Successful Stabilization and Recovery in Mauritius," *EDI Development Policy Case Series*, World Bank.
- Hall, R.E., and C.I. Jones, 1999, "Why Do Some Countries Produce So Much Output Per Worker Than Others?," *Quarterly Journal of Economics*, pp. 83–116.
- Head, K., J. Ries, and D. Wagner, 1997, "Immigrants as Trade Catalysts" in *The People Link: Human Resources Across the Pacific*, W. Dobson, and A. E. Safarian (eds.). The Hong Kong SAR Bank of Canada Papers, Volume 3.
- Hein, C., "Multinational Enterprises and Employment in the Mauritian Export Processing Zone," *International Labor Office, Working Paper No. 52*, Geneva.

- Hinkle, L.E., and A. Herrou-Aragon, 2001, "How Far Did Africa's First Generation Trade Reforms Go?," mimeo, World Bank.
- Jagers, K., and T.R. Gurr, 1995, "Tracking Democracy's Third Wave with Polity III Data," *Journal of Peace Research*, 32, pp. 469–482.
- Mauro, P., 1995, "Corruption and Growth," *Quarterly Journal of Economics*, p 110, pp. 681-712.
- Meade, J.E., et al., 1961, "*The Economics and Social Structure of Mauritius—Report to the Government of Mauritius*," London: Methuen.
- Milner, C., and A. McKay, "Real Exchange Rate Measures of Trade Liberalization: Some Evidence for Mauritius," *Journal of African Economies*, Vol. 5, No. 1, pp. 69–91.
- Rauch, J., 1999, "Networks Versus Markets In International Trade," *Journal of International Economics*, 48: 7–35.
- Rauch, J., and A. Casella, 1998, "Overcoming Informational Barriers to International Resource Allocation," *National Bureau of Economic Research Working Paper*, WP/98/6628.
- Rodriguez, F., and D. Rodrik, 1999, "Trade Policy and Economic Growth: A Skeptic's Guide to Cross-National Evidence," *National Bureau of Economic Research Working Paper*, WP/99/7081.
- Rodrik, D., 1997, "Trade Policy and Economic Performance in Sub-Saharan Africa," Paper prepared for the Swedish Ministry for Foreign Affairs, November.
- Rodrik, D., 1999a, "*The New Global Economy and Developing Countries: Making Openness Work*," Overseas Development Council, London.
- Rodrik, D., 1999b, "Where Did All the Growth Go? External Shocks, Social Conflict, and Growth Collapses," *Journal Of Economic Growth*, Vol. 4, pp. 385–412.
- Romer, P., 1992, "Two Strategies for Economic Development: Using Ideas and Producing Ideas," Proceedings of the Annual Conference on Development Economics.
- Sachs, J.D., and A. Warner, 1995, "Economic Reform and the Process of Global Integration (with comments and discussion)," *Brookings Papers on Economic Activity 1*: 1–118.
- Sachs, J., and A. Warner, 1997, "Sources of Slow Growth in African Economies," *Journal of African Economies*, Vol. 6, pp. 335–76.
- Sachs, J.D., and J.W. McArthur, 2001, "Institutions and Geography: Comment on Acemoglu, Johnson and Robinson (2000)," *National Bureau of Economic Research Working Paper*, WP/01/8114.

Subramanian, A., and others, 2000, "*Trade and Trade Policies in Eastern and Southern Africa,*" International Monetary Fund Occasional Paper Number 196, Washington, D.C.

Subramanian, A., and N. Tamirisa, "Africa's Trade Revisited," *International Monetary Fund Working Paper, WP/01/33.*

United Nations, 2000, "Human Development Report," New York.

Wellisz, S., and P.L.S. Saw, 1993, "Mauritius," in *The Political Economy of Poverty, Equity, and Growth*, ed. R. Findlay, and S. Wellisz. New York: Oxford University Press.