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Commodity Export Diversification in Rwanda - Many Export Discoveries with Little Scaling-Up

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by Vandana Chandra, Ying Li, and Israel Osorio

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Currency Equivalents

(September 21, 2007)

Currency = Rwanda Franc
1 \$US = FRw 547

System of Measurement

Metric System

Abbreviations and Acronyms

ADAR	Agribusiness Development Assistance Project in Rwanda
ADSL	Asymmetric Digital Subscriber
AGOA	African Growth Opportunity Act
AIPA	Africa Institute for Policy Analysis and Economic Integration (in SA)
ASYCUDA	Computerized Tax Data Management
ATDT	Agriculture Technology Development and Transfer
AXIS	Management Information Systems Co.
BACAR	Commercial Bank of Rwanda
BCR	Banque Commerciale du Rwanda
BNR	Banque Nationale du Rwanda
BUD	Budget Deficit
BRALIWA	Breweries Group
CAS	Country Assistance Strategy
CEM	Country Economic Memorandum
CDF	Common Development Fund
CIMERWA	Cement Company
COMESA	East African Customs Union
CPI	Consumer Price Index
DAD	Development Assistance Database
DTIS	Diagnostic Trade Integration Study
DRC	Democratic Republic of Congo
EAC	East African Community
EBK	Kigali Belgian School
EDPRS	Economic Development & Poverty Reduction Strategy
EICV	Household Living Conditions Survey
ELECTROGAZ	Electrical /Gas Company
EMM	Economy-wide Multi-market
EU	European Union
EAC	East African Community
FALL	Rainfall
FDI	Foreign Direct Investment
FAO	Food and Agriculture Organization
FRIENDS	Fast Reliable Instant Effective Network for Disbursement of Services
FSAP	Fin. Sector Assessment Program
GACACA	Specially Elected Tribunals
GB	Grameen Bank
GT	Grameen Telecom
G2B	Government-to-Business

G2C	Government-to-Citizen
G2G	Government-to-Government
GDP	Gross Domestic Product
GoR	Government of Rwanda
GNFS	Goods and Non Factor Services
GNI	Gross National Investment
GNP	Gross National Product
HCAP	Labor Force
HV	High Value
HI	Herfindahl Index
ICT	Information Communication Telecommunication
IDA	International Development Association
IMF	International Monetary Fund
IFMIS	Integrated Financial Management System
ISAR	National Agricultural Research Institute
ISDN	Integrated Services Digital Network
ISPs	Internet Service Providers
ITU	International Telecommunications Unit
LT	Low Technology
M2	Narrow Money
MDG	Millennium Development Goals
MINAGRI	Ministry of Agriculture
MINECOFIN	Ministry of Finance and Economic Planning
MINICOM	Ministry of Commerce
MFI	Microfinance Institutions
MSSE	Micro and Small Scale Enterprises
MT	Medium Technology
NBR	National Bank of Rwanda
NGO	Non-Governmental Organization
NICI	National Information and Communication Infrastructure
NIS	National Institute of Statistics
NUR	National University of Rwanda
NTBs	National Tender Board
ODA	Official Development Assistance
OCIR-Café	Office des Cultures Industrielles Rwandais-Café
OCIR-Thé	Office des Cultures Industrielles Rwandais-Thé
ORTPN	Rwandan Office of Tourism and National Parks
PDL HIMO	Programme de développement local à haute intensité de main-d'œuvre, or Labor-Intensive Local Development Program
PPPs	Public-Private Partnerships
PIL	Partnership in Learning
PRS	Poverty Reduction Strategy
PRSC	Poverty Reduction Support Credit
RB	Resource Based
PRSP	Poverty Reduction Strategy Paper
RIA	Research ICT Africa
RITA	Rwanda Information and Technology Authority
R&D	Research and Development
RER	Rural Economy Review (Real Exchange Rate)
RIMS	Rwanda Industrial and Mining Survey

RINEX	Rwanda Internet Exchange
SINELAC	Societe Internationale d'Electricite des Grands Lacs
SOPYRWA	Insecticide Processing Plant
SOWARTHE	Tea Associations
STABEX	Import Tendering Board
TFP	Total Factor Productivity
TOT	Terms of Trade
UBPR	Union de Banque Pop. de Rwanda
UK-DFID	United Kingdom Department for International Development
UNIDO	United Nations Industrial Development Organization
UTEXIRWA	Textile Company
VAT	Value Added Tax
VECM	Vector Error Correction Model
VPP	Village Pay Phone
VSAT	Very Small Aperture Terminal Satellite
WDI	World Development Indicators

7. COMMODITY EXPORT DIVERSIFICATION IN RWANDA – MANY EXPORT DISCOVERIES -WITH LITTLE SCALING-UP

by Vandana Chandra, Ying Li, and Israel Osorio

7.1 INTRODUCTION

7.1 Increased diversification of commodity exports, and increased numbers of high-value commodity exports, are needed to generate employment and meet Government targets for poverty reduction. This chapter presents evidence that increased diversification of exports is linked to increased export and GDP growth. Yet, commodity exports in Rwanda are concentrated in a few commodities. Although a greater proportion of the population is engaged in sectors related to commodity exports as opposed to service-related exports, the service sector accounts for close to 50 percent of Rwanda's total exports of goods and services

7.2 **Diversification from traditional to non-traditional commodity exports is imperative for Rwanda.** The Government is focused on generating economic growth to raise incomes above the current level of \$250 per capita, but it faces some challenges. Exports, a key channel of economic growth, are caught in a low-growth trap. Export growth decelerated to only 9 percent nominal growth per year between 1996 and 2004, from its level between 1965 and 1990 of 20 percent per year.⁸⁹ Worse, excluding 2 or 3 primary commodity-based exports, very few other products have values of up to US\$50,000 in any year. Given the limited prospects of simply scaling up Rwanda's leading exports, the country's policymakers have almost no option but to turn to export diversification in the hope of accelerating export growth and economic development. Export diversification is indispensable for enabling Rwanda to graduate from a primary producer to a modern economy.

7.3 **The relationship between export diversification and export growth in SSA confirms that for stable, sustainable, and higher export growth, export diversification is necessary.** In addition to export promotion policies such as those which attract FDI, decision makers need to design policies to accelerate diversification of the export mix. The effect of diversification on export growth will be maximized if diversification shifts the export mix in the direction of manufactured or resource-based products (low or medium technology). This implies (i) sector-specific public strategies that can influence the export mix; and (ii) public investments in human capital and supporting infrastructure.

7.4 **This chapter finds that in the past five years, East Asia's burgeoning demand has opened up new markets that are likely to sustain rapid growth for Rwanda's minerals and metal exports.** But, while good for growth, such exports run the risk of reinforcing the trend in commodity exports based on unprocessed natural resources, relegating Rwanda's export basket to products defined by its natural comparative advantage. A structural transformation of the export basket, therefore, poses some hard questions. In what direction should Rwanda diversify? Which sectors? Should the Government be indifferent to the types of products exported, or should it necessarily support higher-value products? Should the Government prefer sector-specific to general export development strategies?

7.5 **In comparison to its neighbors and SSA, Rwanda's export mix is concentrated; the share of exports in the economy too small; and export growth is low, declining, and volatile.**

⁸⁹ Note that the period 1991-1995 is excluded due to the deleterious effect of the genocide.

Given that coffee and minerals (two types) account for 91 percent of its exports, these discouraging characteristics can only be altered if the Government implements a drastically different policy aimed at export diversification.

7.6 The challenge of export diversification in Rwanda is not about the paucity of new export discoveries. In light of its endowments, stage of development, and geography, Rwanda's export discoveries are many but small. The problem of export diversification is primarily a lack of scale in products other than coffee and minerals. Except for the latter, nearly all exports have miniscule values, and very few are larger than US\$100,000 in any given year. Each US\$1000 increment of a non-traditional export is a precious achievement.

7.7 This chapter provides insights into the export sector which policymakers may wish to use to inform an export diversification strategy for Rwanda. The chapter begins by examining how much Rwanda has diversified over the past decade. It then examines the degree of sophistication of Rwanda's exports. Finally, it examines commodity-specific and general constraints to export growth. The chapter concludes with options for reducing the degree of concentration of exports in Rwanda, despite the constraint of limited natural and human capital endowments and the challenge of developing economies of scale.

7.1.1 The Case for Export Diversification – To Promote Growth of Exports and GDP and Reduce Volatility

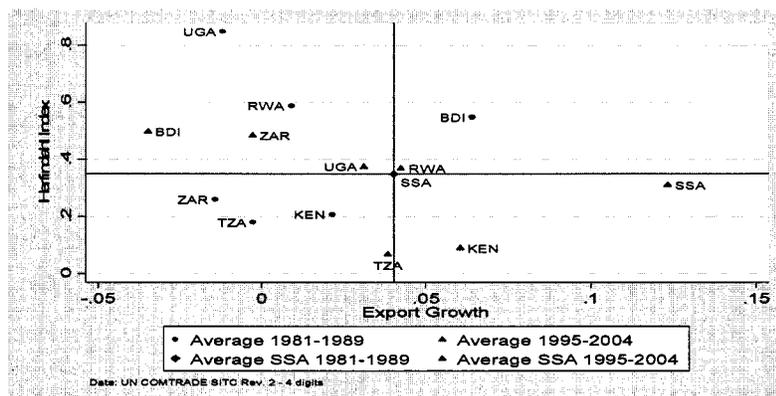
7.8 The relationship between export diversification and export growth for SSA confirms that for stable, sustainable, and higher-export growth, export diversification is necessary. Analysis of the links between diversification (measured by the Herfindahl Index, HI) and growth for SSA indicates that diversification helped SSA to transition from low to relatively higher export growth between the 1980s and the 2000s.⁹⁰

7.9 In the 1980s, Rwanda, Uganda and Burundi had some of the most concentrated export baskets in their sub-region and, indeed, SSA. Between 1980 and 1989, the share of coffee, the primary export product in these three economies, ranged between 70 and 95 percent, leading to an extremely high HIs, in the range of 0.6 and 0.85 (Figure 7.1), and to negative export growth. In comparison, the HI for SSA was just under 0.4 and the average export growth rate was about 3.4 to 4 percent per year. Between 1995 and 2004,⁹¹ as the share of coffee fell to about 50 percent, Rwanda and Uganda closed the gap with SSA – their HIs and average export growth rates reached the averages for SSA in the first period (1980-1989). However, by that time, the average for SSA had moved to the southeast quadrant – with even more diversification, although less than Rwanda and Uganda, SSA achieved significantly higher export growth rates of 8 to 9 percent per year (southeast quadrant in Figure 7.1).

⁹⁰ The Herfindahl index is used to measure the degree of diversification. It is computed as the sum of the squared shares of exports from each industry out of total exports..

⁹¹ By 1995, most countries in SSA had liberalized their trade, 1980-1989 and 1995-2004 are selected as points of comparison.

Figure 7.1: Export Diversification Causes Export Growth in SSA



Source: Chandra et al, based on UN COMTRADE, SITC-2 3digit.

7.10 It appears that the gains in export growth from export diversification, in the presence of trade liberalization, are sensitive to the initial level of export diversification. In the first period, Tanzania and Kenya had far more diversified export baskets than even SSA. Over the two decades, they enjoyed relatively high export growth in return for smaller changes in the HI. In contrast, weak diversifiers such as Rwanda and Uganda did not achieve higher export growth rates until they made significant progress in export diversification.

7.11 These observations were tested in a simple model for three time periods for Rwanda and its five neighbors – Uganda, Burundi, DRC, Tanzania, and Kenya (collectively called the sub-region) that share similar economic characteristics. In the fixed-effects model, export growth is defined as a function of a lagged change in the Herfindahl, used as a proxy for export diversification; the real exchange rate; and the two main commodity prices that drive exports – the price of coffee as a proxy for agricultural commodity prices, and the price of tin as a proxy for mineral prices. In addition, the technology content of exports, proxied by the share of primary and resource-based products (pprb), indicates the direction of export diversification. Various measures of trade liberalization – years of trade liberalization experience, economic freedom, freedom to trade internationally, and the level of trade (trade to GDP) – are included as controls to reflect structural change that affects growth over a longer term.

7.12 The hypothesis tested is whether export growth was caused by export diversification or was simply a manifestation of commodity price shocks. Export diversification did not occur in Rwanda and most of its regional neighbors until after structural adjustment in the mid-1990s. Prior to this period, export growth was driven primarily by the prices of the primary commodities – coffee and minerals – that dominated exports. High commodity prices led to export concentration. To determine whether non-traditional products contributed to export growth, the effect of commodity prices was netted out to obtain a non-price Herfindahl. The findings, indicated by the negative sign on the lagged change in the HI, show that over the long term (1975-2004), non-commodity price-related export diversification caused export growth in the sub-region, including Rwanda.⁹² While small, growth in primary and resource-based products⁹³ raised export growth. Diversification toward more sophisticated products with a higher

⁹² Note, a negative sign on the lagged change in the HI denotes an increase in export diversification,

⁹³ A list of products defined by their technology content – primary, resource-based, low tech, medium tech and high tech is presented in Annex 3 and will be discussed in a later section.

manufactured content was low and emerged slowly. For example, in Rwanda, diversification occurred from coffee to tin and other minerals, while in Uganda it was from coffee to fish. The effect of trade liberalization was insignificant, perhaps because the challenges of globalization have made it difficult for African exporters of primary commodities to compete in non-primary products. These findings are robust and indicate that in addition to the conventional export growth-promoting policies, special policies that spur export diversification are necessary.

7.13 Export diversification and growth were unrelated in the pre-structural adjustment period, 1975-1995, when coffee was the dominant export in Rwanda and the sub-region. Closed trading regimes, ad hoc curbs on economic freedom, the genocide in Rwanda, and unstable socio-political conditions in several countries disrupted economic development and stymied diversification. Even though most countries had liberalized by the late 1980s, the implementation of reforms did not begin until the early 1990s. The post- structural adjustment period, 1996-2004, however, has witnessed a remarkable turnaround. Export diversification has contributed significantly to export growth, although the shift from primary toward more manufactured exports, coveted by governments for greater economic development, has been weak. These findings are robust across a variety of specifications (Table 7.1).

7.14 A common belief is that special policies are unnecessary and a stable macroeconomic and liberal trading environment that attracts FDI is sufficient for export diversification. Undoubtedly, FDI has played an important role in the region in developing exports based on the latter's natural comparative advantage, especially in the mining industry. For example, FDI flows facilitated the boom in Tanzania's gold exports, which accelerated from a share of nearly zero in 2000 to more than 15 percent in 2005, and were Tanzania's largest export product. Similarly, FDI has been critical for Rwanda's mineral exports. But the crucial point is that without special export diversification-facilitating incentives, FDI has not flowed into non-traditional, high-value export sectors that are necessary to reduce dependence on primary products. Special incentives to attract FDI to Uganda's non-traditional exports, such as upland roses, fish fillets, organic cotton, textiles and garments, and animal products,⁹⁴ is also a good example. Table 7.1 shows the export growth model for Rwanda, Burundi, DCR, Kenya, Tanzania, and Uganda.

⁹⁴ See Chandra and Boccardo (2006) on export diversification and competitiveness in Uganda.

Table 7.1: Fixed Effects – Export Growth Model for the Sub-Region, 1975-2004
(Rwanda, Burundi, Dem. Rep. of Congo, Kenya, Tanzania and Uganda)
(Dependent variable: Export growth)

	1975-04	1975-95	1996-04	1975-04	1975-95	1996-04
Years of trade liberalization experience				0.010	0.035	0.010
Reegr	-0.350***	-0.340***	-0.330*	-0.340***	-0.330***	-0.260
Lagged change in the HI index of non-coffee price related exports	-0.690***	-0.110	-0.990***	-0.670***	-0.020	-0.980***
share of primary and resource based products in total exports	0.000	0.000*	0.000	0.000**	0.000**	0.000
Constant	-0.020	-0.020	0.020	-0.020	-0.040	-0.060
Fraser freedom to trade index - for trade related variables only				0.030**	0.070**	-0.110***
Fraser freedom to trade index for all variables associated with a liberal trading environment	0.030	0.190***	-0.190***			
Reegr	-0.340***	-0.350***	-0.620***	-0.340***	-0.350***	-0.360*
Lagged change in the HI index of non-coffee price related exports	-0.680***	-0.580	-0.950***	-0.670***	-0.027	-1.300***
Share of primary and resource based products in total exports	0.000*	0.000***	0.000	0.000**	0.000*	-0.002
Constant	-0.130	-0.880***	1.100***	-0.150*	-0.310**	0.650***
Ratio of imports to GDP				0.000	-0.004	0.007
Ratio of trade to GDP	0.003	0.000	0.006			
Reegr	-0.310***	-0.290***	-0.350**	-0.300***	-0.280**	-0.340**
Lagged change in the HI index of non-coffee price related exports	-0.700***	-0.040	-1.130***	-0.690***	-0.010	-1.110***
Share of primary and resource based products in total exports	0.000***	0.000*	0.000	0.000	0.000	0.000

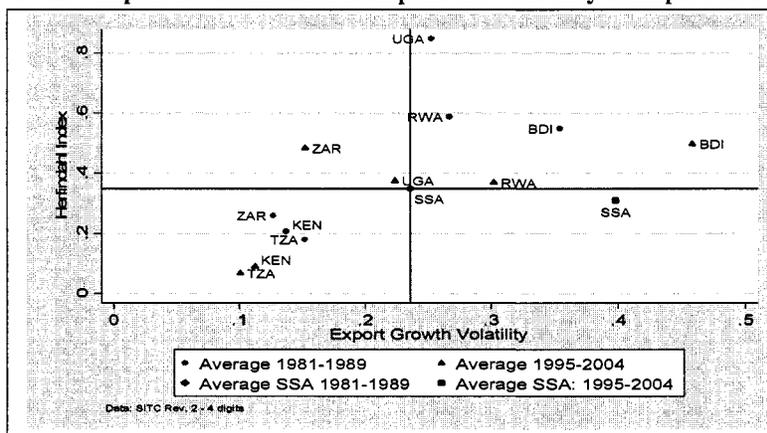
Source: Chandra et. al. (2006), using UN Comtrade, SITC2-3 digit and World Development Indicators databases
Observations: 134. Significance: ***1-5%; **5+ - 10%; *10+-15%.

7.15 Diversification from products that are more vulnerable to terms of trade shocks to products with relatively stable prices dampens the volatility of export growth. Rwanda's export growth was most volatile between the 1970s and 1990s when coffee accounted for nearly all of its exports. However, in the past 5 years, the emergence of minerals has accelerated diversification. Booming minerals prices have increased their share to over 40 percent of total exports. It is unclear for how long these offsetting prices will sustain stable growth. Typically, export diversification from one primary commodity to another rarely dampens export price volatility.

7.16 The nexus between export diversification and volatility of export growth is mapped in Figure 7.2. It illustrates that relative to the 1980s, in the past decade, Kenya, Tanzania and Uganda were the only countries that benefited from a reduction in export growth volatility as they diversified their exports. Most of the benefits ensued from diversification into more high value horticultural, fishery products and low tech manufactures such as garments that have stable prices. While Rwanda also underwent impressive diversification in the past five years, over the past 10 year period or the longer term, the effect of fluctuating coffee prices continued to worsen the volatility of overall export growth.

7.17 Looking ahead, the quality of diversification will matter for reducing the volatility of Rwanda's export growth. This will require scaling up exports of more processed and high value agricultural products, but especially manufactures.

Figure 7.2: Export Diversification Dampens the Volatility of Export Growth



Source: Chandra et al, based on UN COMTRADE.

7.18 **The set of six countries - Rwanda, Burundi, Democratic Republic of Congo, Kenya, Tanzania and Uganda - is used to examine the pattern of export diversification.** Over the years 1980 to 2004, two time periods are examined – 1980-1989 and 1995-2004. In the fixed-effects model, the pattern of export diversification, again proxied by the Herfindahl Index, is expressed as a function of the technological sophistication of the exported commodities. This is represented by primary products comprised of mostly unprocessed agricultural products (or primary products); resource-based products used as a proxy for good infrastructure and manufactured products denoted by low tech products (lt) used as a proxy for superior human capital. The same measures of liberalization are used to delineate how the technological content of exports changed.

7.19 **The hypothesis tested is that an increase in primary or resource based products led to greater diversification (lower HI), as both indicate horizontal and vertical diversification.** An increase in low technology products would imply that an increase in skills accelerates diversification. Previously, it was noted that export growth in SSA has been driven by diversification and liberalization. The current model examines whether diversification was helped or hindered by liberalization. Results are reported in (Table 7.2).

Table 7.2: Fixed Effect Model – Pattern of Export Diversification in African Countries, 1975-2004 (Dependent variable is the log of the Herfindahl Index)

	1975-2004		1975-1995		1996-2004	
	Region	SSA	Region	SSA	Region	SSA
Dep. variable: Log HHI						
Log of primary products as a share of total exports	0.302***	-0.077***	0.316***	-0.034	0.074	-0.082***
Log of natural resource-based products as a share of total exports	-0.116***	-0.157***	-0.076***	-0.117***	-0.163***	-0.148***
Log of low-tech products as a share of total exports	-0.056***	-0.019***	0.007	0.005	-0.105***	-0.161***
Log of GDP per capita	-0.860***	-0.111***	-0.579***	-0.138***	-1.790***	-0.278***
Constant	2.862***	-1.325***	1.956***	-0.872***	7.036***	-0.951
Fraser freedom to trade index - for trade-related variables only						
Log of primary products as a share of total exports	-0.058***	-0.070***	0.006	-0.078***	-0.047	0.028
Log of natural resource-based products as a share of total exports	0.235***	-0.052**	0.324***	-0.029	0.08	-0.027
Log of low-tech products as a share of total exports	-0.097***	-0.144***	-0.076***	-0.105***	-0.161***	-0.137***
Log of GDP per capita	-0.042**	-0.015	0.006	0.005	-0.103***	-0.113***
Constant	-0.815***	-0.396***	-0.576***	-0.286***	-1.665***	-1.045***
Fraser freedom to trade index for all variables associated with a liberal						
Log of primary products as a share of total exports	0.219***	-0.045*	0.361***	-0.022	0.012	-0.025
Log of natural resource-based products as a share of total exports	-0.100***	-0.134***	-0.085***	-0.091***	-0.161***	-0.132***
Log of low-tech products as a share of total exports	-0.058***	-0.025***	0.008	-0.002	-0.101***	-0.112***
Log of GDP per capita	-0.714***	-0.363***	-0.687***	-0.164	-1.538***	-0.957***
Constant	2.438***	0.697**	2.227***	-0.09	6.614***	3.244***
Freedom heritage						
Log of primary products as a share of total exports					-0.481***	-0.240***
Log of natural resource-based products as a share of total exports					0.173*	-0.101**
Log of low-tech products as a share of total exports					-0.081	-0.129***
Log of GDP per capita					-0.158***	-0.172***
Constant					-2.807***	-0.823***
Years of trade liberalization experience						
Log of primary products as a share of total exports	-0.048***	-0.001	-0.013	-0.022*	-0.054***	0.01
Log of natural resource-based products as a share of total exports	0.069	-0.039	0.304***	0.005	-0.052	-0.07
Log of low-tech products as a share of total exports	-0.080***	-0.175***	-0.068***	-0.124***	-0.168***	-0.250***
Log of GDP per capita	-0.038**	-0.021*	0.008	0.01	-0.042	-0.179***
Constant	-0.505***	-0.118*	-0.547***	-0.076	-1.211***	-0.239
Ratio of trade to GDP						
Log of primary products as a share of total exports	1.145***	-1.350***	1.818**	-1.191**	4.399***	-1.667
Log of natural resource-based products as a share of total exports	-0.001	-0.002***	-0.001	-0.003***	-0.005	-0.001
Log of low-tech products as a share of total exports	0.314***	-0.079***	0.295***	-0.035	0.197***	-0.088*
Log of GDP per capita	-0.115***	-0.154***	-0.077***	-0.115***	-0.131***	-0.148***
Constant	-0.053***	-0.018**	0.008	0.009	-0.087***	-0.151***
Constant	-0.942***	-0.128**	-0.569***	-0.078	-2.118***	-0.504**
Constant	3.403***	-1.129***	1.936**	-1.021**	9.305***	0.419

Source: Vandana, et. al. 2006, using UN Comtrade and World Development Indicators Databases.

Consistent with FE model for 6 countries using phones per thousand as proxy for infrastructure and ratio of services to GDP as proxy of development (see Annex). Observations: 134. Significance: ***1-5%; **5+ - 10%; *10+-15%.

7.20 The results indicate that for all three periods, in SSA and the sub-region there was an unambiguous increase in natural resource-based products such as fish, wood, processed food, processed minerals, livestock and related animal products, and that this led to more export diversification. This may have been because there is greater scope for moving from raw to processed products than from primary to processed products; i.e., it is easier to export frozen rather than fresh fish, as opposed to exporting roast coffee from unwashed beans. Exports that require a higher level of human capital, such as manufactures, supported diversification, though not during 1980-1989, when the economies were closed and vulnerable to domestic shocks. An increase in exports of pp supported diversification in SSA, but worsened it in Rwanda and the sub-region, where exports were already over-concentrated in coffee.

7.21 Unambiguously, liberalization affected export diversification positively. Over the longer term, the freedom to trade indices and trade liberalization contributed positively (shown by

the decline in the Herfindahl) to export diversification. Concentration in primary products usually worsens diversification, but a shift towards low tech and resource-based products reinforced it. Much of the latter may have been a coincidence, due more to rapidly growing demand for minerals by China, which boomed after the mid-1990s. The effects of emerging low-tech products, however small, occurred only in the post-structural period. A cross-section model for Rwanda and the sub-region also showed that land-lockedness was an important constraint to diversification.

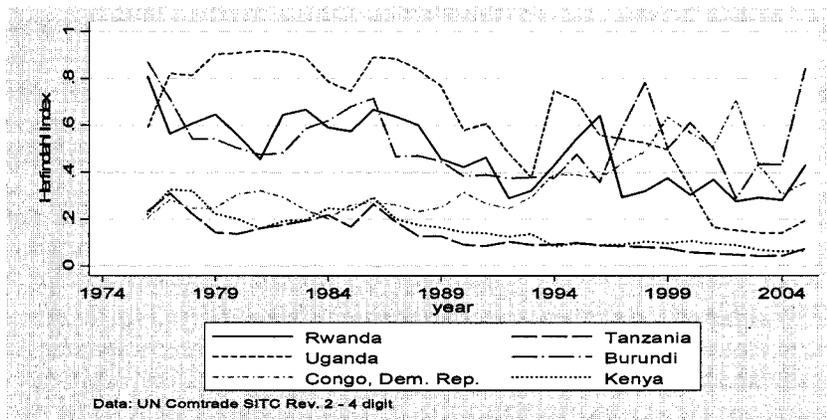
7.22 The analysis suggests that there are at least two pointers that can be useful in developing manufactured (low technology) and resource-based exports. These are the development of skills necessary for manufacturing, and the development of infrastructure to offset the land-lockedness as a disadvantage faced by Rwandan exporters. A further examination of the level of diversification in Rwanda, with a focus on specific commodities, demonstrates the importance of these factors.

7.2 HOW MUCH HAS RWANDA DIVERSIFIED?

7.23 Rwanda is far less diversified compared to SSA and five (Figure 7.3) neighboring countries that are quite similar to it in topography, climate, soil, and natural resources. In fact, at least two – Uganda and Burundi – even share its geographic disadvantage of being landlocked. Since the 1960s, the trends in Rwanda's pattern of export diversification have tracked a course similar to that of Uganda and Burundi. The Herfindahl Indices in these three countries moved together and ranged between 0.4 and 0.9, reflecting strongly concentrated export baskets that were dominated by coffee and ores (see Table 7.3 and Figure 7.5). In contrast, Tanzania, the only coastal country in the set and a coffee exporter, consistently enjoyed a well-diversified export basket, with the HI in the range of 0.3 to 0.1 (Table 7.3).

7.24 Typically, export diversification is a longer term process and Rwanda's case is a good example. A variety of export diversification measures jointly show that it has taken almost 35 years for Rwanda's HI to decline from around 0.5 during 1970-75 to 0.35 in 2004 (Table 7.3). Between the 1980s and 2000, the number of exported products valued at \$10,000 or more in Rwanda was only 37 in the 1970s; by 2000, it had risen to 73; and the share of the top 5 products in Rwanda's total exports declined from 93 to 89 percent. In the last five years (2000-2004), there was a slight reversal. The number of products exported declined and the share of the top 5 exports increased, pointing toward a potentially rising trend in export concentration. In comparison, Rwanda's neighbors were more successful in diversifying their exports. Uganda and DRC were as diversified in 1970 as Rwanda was in 2000.

**Figure 7.3: Rwanda and Its Landlocked Regional Neighbors
Are Far Less Diversified than Coastal Tanzania**



Source: Chandra et al 226; and UN Comtrade.

7.25 **The low level of export diversification in Rwanda and its neighbors can be explained by several factors, including sociopolitical events that eroded the export base in several countries, leaving little else than natural vegetation on the ground.** Examples include Uganda during the Idi Amin era (1971-1985), Rwanda during the genocide of 1994, and Tanzania during the Nyerere's socialist regime. The annihilation of the productive sectors and human capital during these conflicts limited exported products to those which survived the shocks. Coffee that grew naturally or minerals that did not need new investments in Rwanda and DRC are good examples. Other reasons for weak diversification are economic policies and institutions that left the export mix⁹⁵ to be determined by natural comparative advantage. Most of the trends in the HI also indicate a structural shift around 1995, a time when economic reforms in Rwanda and its neighbors initiated export diversification.

⁹⁵ In Uganda for instance, the Idi Amin era led to mass destruction of the economic base, causing export concentration in coffee, the crop that grows naturally in Uganda.

**Table 7.3: Different Measures of Export Diversification in Six Countries
1980-2004 (5 Year Average)**

Country Name	Year	No. of products exported (> 10,000 US\$)	Avg Herfindahl Index - 5 years	Sh. Of top 5 products	Sh. Of top 10 products	Sh. Of top 20 products
Burundi	1970	23	0.64	0.95	0.99	1.00
	1980	27	0.62	0.94	0.99	1.00
	1985	30	0.65	0.97	0.99	1.00
	1990	44	0.72	0.91	0.95	0.99
	1995	42	0.62	0.96	0.98	1.00
	2000	40	0.63	0.96	0.97	0.99
	2004	30	0.42	0.93	0.97	0.99
Congo, Dem. Rep.	1970	57	0.36	0.89	0.96	0.99
	1980	79	0.27	0.90	0.95	0.99
	1985	70	0.28	0.87	0.95	0.99
	1990	86	0.32	0.90	0.97	0.99
	1995	84	0.32	0.89	0.96	0.99
	2000	82	0.49	0.94	0.98	0.99
	2004	77	0.49	0.93	0.97	0.99
Kenya	1970	122	0.14	0.61	0.74	0.85
	1980	125	0.23	0.73	0.85	0.94
	1985	126	0.21	0.80	0.88	0.94
	1990	128	0.20	0.69	0.83	0.91
	1995	147	0.13	0.59	0.73	0.84
	2000	143	0.11	0.62	0.74	0.84
	2004	154	0.10	0.60	0.74	0.84
Rwanda	1970	11	0.50	0.97	0.99	1.00
	1975	21	0.43	0.97	0.99	1.00
	1980	27	0.57	0.98	1.00	1.00
	1985	41	0.59	0.96	0.99	1.00
	1990	37	0.60	0.95	0.99	1.00
	1995	42	0.49	0.90	0.96	0.98
	2000	51	0.45	0.91	0.95	0.97
	2004	46	0.35	0.94	0.96	0.99
Tanzania	1970	81	0.10	0.68	0.82	0.96
	1980	75	0.16	0.66	0.84	0.96
	1985	69	0.18	0.74	0.87	0.95
	1990	99	0.16	0.56	0.72	0.89
	1995	115	0.10	0.64	0.78	0.91
	2000	123	0.10	0.61	0.78	0.89
	2004	129	0.08	0.49	0.72	0.87
Uganda	1970	57	0.38	0.95	0.98	0.99
	1980	49	0.81	0.99	0.99	1.00
	1985	38	0.85	0.99	0.99	1.00
	1990	38	0.79	0.95	0.99	1.00
	1995	69	0.59	0.96	0.98	0.99
	2000	84	0.52	0.88	0.94	0.98
	2004	115	0.19	0.82	0.91	0.96

Source: Staff estimates, COMTRADE SITC 1.

7.26 The challenge for Rwanda lies in transforming its natural resource base, discovering high-value products, and scaling up existing (especially nascent) exports. Lake Victoria's vast fishery resources favored export diversification in Kenya, Tanzania and Uganda, but not in Rwanda. A sizeable fishing industry, good soil, and climate conditions suitable for floriculture and horticulture, along with policy interventions such as special support for Uganda's fishing

industry, and Kenya's floricultural exports, helped to lower the shares of the top three products in total exports.⁹⁶ However, landlocked Burundi, DRC and Rwanda have not had the same fortune.

7.3 EXPORT SOPHISTICATION IN RWANDA IS LOWER THAN ITS NEIGHBORS

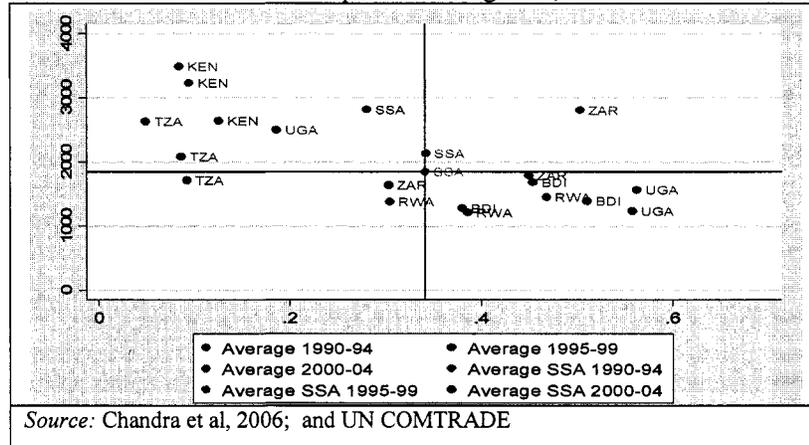
7.27 Compared to exporters in its neighborhood and SSA, Rwanda's export sophistication ranking is low (Figure 7.2). The Rodrik-Hausman export sophistication⁹⁷ (EXPY) scores reflect the technological sophistication of a country's exports when compared with its global competitors. A map of export sophistication scores shows that between 1990 and 2004, Rwanda's position was located mostly in the southeast quadrant of Figure 7.4 which indicates countries with the highest export concentration and lowest sophistication. By 2004, there was some diversification but almost no increase in its EXPY. This reflected the low sophistication of its exports due to the concentration of coffee and minerals.

7.28 There was some progress in export diversification between 1990 and 2004; however, in the last five years, Rwanda's export sophistication score slipped to below the SSA average. Within the region, even Uganda whose exports were once significantly more concentrated, has made impressive strides in diversifying its exports and achieving a higher sophisticated (EXPY) content by shifting from the southeast quadrant to the northwest. In fact, during 2000-2004, Uganda's export sophistication score was comparable to that of Tanzania, its coastal neighbor. In comparison, in 2000-2004, Rwanda's score was about US\$1,500 well below SSA's average of US\$2,500 in 1990-1995.

⁹⁶ In Uganda's case, openness to FDI, as well as collective efforts by the donors, the World Bank, and the Government of Uganda to establish and implement compliance with phytosanitary standards, facilitated scaling up of the country's world-class fish processing industry. In Kenya, the floriculture industry earned political favors through benign neglect when it was excluded from the regulation and Kenyanization that covered almost all other productive sectors. Flower exports were noticed by Kenya's political leaders because of their contribution to foreign exchange earnings; their profitability was prized by many well-connected Kenyan bureaucrats who had private businesses; and because of the difficulty in taxing non-durable exports. Initial political commitment and favoritism came disguised in the form of benign neglect of the sector, so that it could grow at a rapid pace as opposed to becoming another stagnating economic sector.

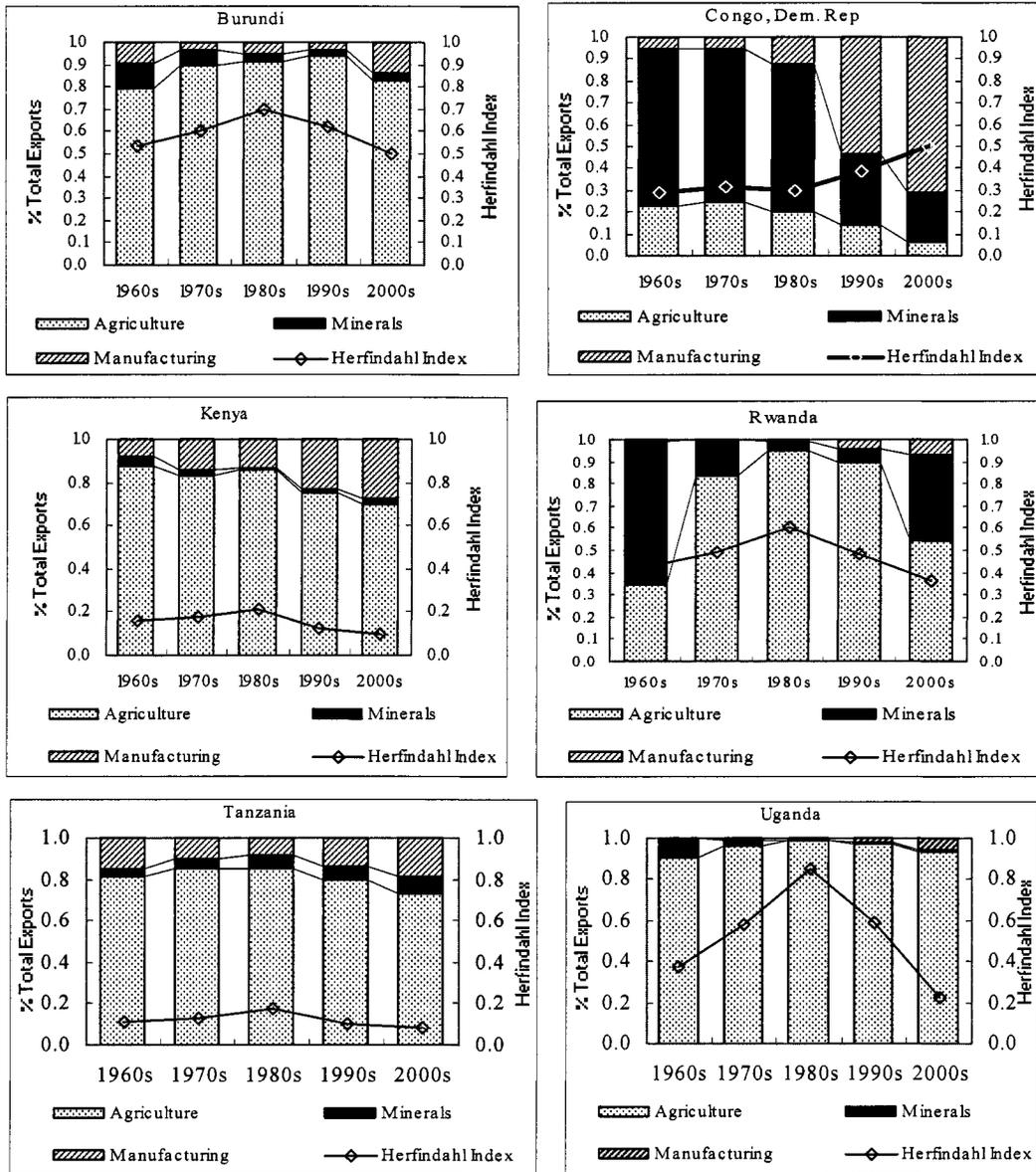
⁹⁷ The Rodrik-Hausman export diversification index compares the level of sophistication or the income level implicit in a country's exports. In Rwanda's case, its coffee exports, weighted by its GDP per capita and share of coffee in total exports and in world exports of coffee, are weighted by similar statistics from Brazil, Kenya, Tanzania, Ethiopia, Vietnam, and other coffee exporters. Its mineral exports are weighted by similar statistics from minerals exporters.

Figure 7.4: Rodrik-Hausman Score of Export Sophistication - Rwanda Needs To Catch Up with Its Neighbors, 1990-2004



7.29 **Rwanda' export position is disappointing, but its vast natural endowments are largely underexploited, suggesting an abundant potential for catching up with its regional neighbors.** One option is to follow in the footsteps of its more prosperous neighbors; i.e., gradually move away from over-dependence on minerals and coffee and toward agricultural exports. The share of such products in the more diversified export baskets of Tanzania, Uganda, and Kenya ranges from 69 to 93 percent, compared to 54 percent in Rwanda (Figure 7.5). This may be a limited option, however, given that Rwanda has limited arable land as a result of one of the highest population densities in SSA. The other option is to exploit more of its natural resource base, which implies that in addition to high-value crops, it needs to produce more mineral-based and chemical-based higher-value *manufactured* products. For either option, the crux of the diversification challenge is a larger number of products, higher-value non-traditional products, and more manufactured and processed products, as opposed to the raw coffee and minerals that presently dominate Rwanda's export basket.

Figure 7.5: The Structure of Exports - Rwanda and Neighboring Countries, 1960s to 2000s (In unit as indicated)



Source: UN COMTRADE.

7.4 EVOLUTION OF EXPORTS – THE EMERGENCE OF MINERAL EXPORTS

7.30 In the past five years, the emergence of mineral products in Rwanda has helped to increase export diversification in Rwanda. The predominance of coffee in its export mix has diminished dramatically as the share of minerals, metals, and chemicals has increased – in 2003-2004, the shares of these two main product lines in total exports were each about 40 percent. Global demand was a key driver of the diversification, signaling a combination of sensitivity to global forces and a diversification toward new export markets.

7.31 Export diversification from coffee to minerals mattered in two ways: it dampened the vulnerability of exports to coffee price shocks; and it introduced a new source of growth for at least the next decade, or certainly for as long as China continues to grow at double digit rates. Diversification *toward* minerals in Rwanda has occurred alongside diversification *within* the minerals category. Exports of several nascent minerals have emerged in the past few years, mostly in response to the forces of globalization, dominated by China. The rapid increase in demand from China's burgeoning industrial sectors boosted the demand for non-ferrous ores, which were previously imported in small quantities by the European Union and the US. Tin ores, imported almost exclusively by Malaysia in the past, got a boost with surging demand from Malaysia, Thailand, Singapore, and China. Demand for tungsten, which earlier came from only the US, increased rapidly as Germany, the Netherlands, and China joined the list of importers

7.32 In addition to coffee and minerals, at a lower⁹⁸ level of disaggregation in 2003-2004, Rwanda exported about 18 products that had a share of at least 0.05 percent in its export basket. Including miniscule products, the total share of manufactures was only 6 percent in 2003-2004. Albeit small, this development represents a 50 percent increase in manufactured exports compared to the 1990s. Excluding minerals, Rwanda's non-traditional exports reflect the diversity of its rich natural resource base with potential for processing in several directions.

7.33 In Rwanda's export basket, there were many low-volume, high-value products such as vegetables and fruits, flowers, tubers and foliage, and other materials of vegetable origin (seeds, oils, and so on). Examples of crude or unprocessed commodity exports are various types of raw animal skins; minerals, metals and chemicals; and wood and forestry products such as gums and resins. Rwanda's export mix also contained miniscule amounts of processed or manufactured products, including chilled vegetables, dairy products(cream and preserved milk), beer, dried and salted animal hides and processed skins, mineral and chemical fertilizers, polyethylene, cement, leather, paper and products, furniture, yarn, alloys transformed into sheets and rolled metal plates, fabrics and so on. Unmistakably, the defining characteristic of the non-coffee, tea, and minerals export mix was a lot of variety and numerous products of minuscule weight.

7.5 EXPORT DISCOVERIES –MANY, WITH LITTLE SCALING UP

7.34 In 2004, excluding coffee, tea, and tin, Rwanda exported at least 180 non-traditional commodities, which accounted for roughly less than 9 percent of its exports (Annex Table 12). Export discoveries were examined over two periods: 1976-1989 and 1995-2004. Products with near negligible values were excluded. A product was classified as an export discovery if its value doubled between the two periods.⁹⁹ This methodology shows that there were only about 33-35 export discoveries of critical mass (Table 7.4). While no single product emerged with a big bang, all added miniscule but increasing values to non-traditional exports. As Rwanda's total exports were only US\$97 million in 2004, every export discovery, even if as small as US\$1000, was a significant in relative terms.

⁹⁸ At SITC2 – 3 digits, the number of products exported was 18. At a finer level, i.e., SITC2 – 4 digits, the number was 170.

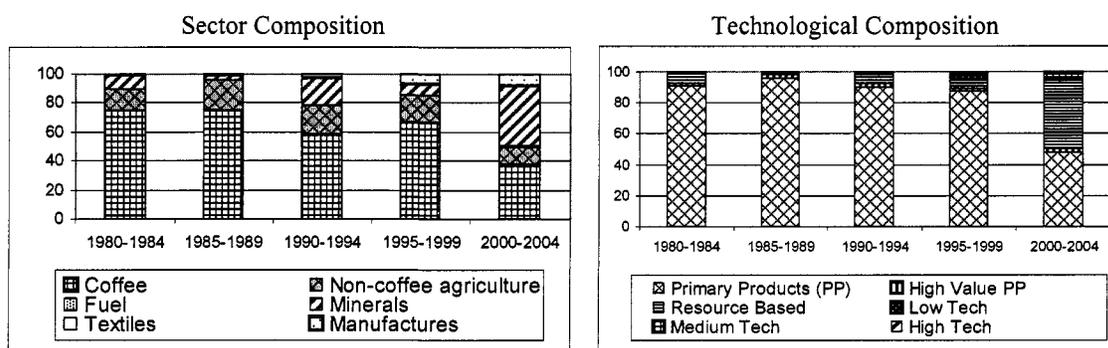
⁹⁹ This definition of export discovery has been designed for small countries in Sub-Saharan Africa. Klinger and Ledermen (2006) use a cut-off point of US\$10,000 to identify export discoveries.

7.5.1 Technological Content of Export Discoveries

7.35 A useful indicator of the sophistication or quality of an exported product is its technology content.¹⁰⁰ Accordingly, products are labeled as follows: processed or unprocessed products with a high value-to-weight ratio are high value (HV); raw products are primary (PP); minerals and metals are resource based (RB); simple manufactures are low technology; and processed minerals and wood are medium technology. An application of this definition to Rwandan exports reveals that a variety of high value, resource based, low technology, and some medium technology products have recently emerged in Rwanda's export basket (Figure 7.6). The high technology class of exports comprises fruits, vegetables, flowers, and dairy products. Low technology products comprise processed animal skins, leather, and animal oils; and medium technology products comprise pulp and related products, chemicals, fertilizers, and the like. Rwanda exports a large variety of primary products across various agricultural categories, as well as a fast growing range of resource based products such as processed and raw minerals (Table 7.4).

7.36 There have been many export discoveries, but at a low volume and scale.¹⁰¹ Export discoveries have been identified for high-value agricultural products (such as horticulture products), unprocessed commodity exports, and manufactured goods. Bananas have been the largest agricultural high-value discovery, increasing from US\$5000 to US\$75,000 between 1976-1989 and 1995-2004. In the case of hides and skins, which are locally produced for leather exports, the export value increased from US\$23,000 in 1976-1989 to US\$166,000 in 1995-2004, illustrating success in export diversification along the supply chain, from raw hides and skins to a manufactured export. The textiles chain represents the most sophisticated discovery, involving cross-sectoral synergies. An example is the use of chemicals to produce fabrics made from yarn and imported cotton, and exports of light technology-based garments and outerwear made from locally available materials. Some of these product lines have exports in excess of US\$100,000.

Figure 7.6: Sector and Technological Composition of Exports



Note: PP = primary; RB = resource based; LT = low tech; MT = medium tech; HT = high tech.

Source: Chandra et al, 2006; and UN COMTRADE (Rwanda mirror data).

7.37 The processing of mineral and metal-related commodities into medium-technology manufactures (metal scrap, salts, anthracites, aluminum alloys) has contributed to the

¹⁰⁰ Lall (2001).

¹⁰¹ Export discoveries are defined here as products whose export value doubled between the two periods studied, 1976-1989 and 1995-2004. Products with near negligible values were excluded, given the small size of Rwanda's economy.

increase in export values of non-ferrous ores and concentrates, from US\$2.5 million during the 1976-1989 period to US\$12.1 million in 1995-2004. The large variety of export discoveries in resource-based minerals and metals suggests that there is potential in this area that has been largely unexploited. The emergence of new minerals such as coltan, used in the manufacture of cellular phones, can be a good source of growth in the short to medium term. Other natural resources whose exports exceeded US\$100,000 are anthracite and aluminum and its alloys.

7.38 The small scale of discoveries highlights two crucial points: (i) the problem of commodity export diversification in Rwanda is scaling up miniscule discoveries. In 2004, even though 2 traditional products accounted for more than 51 percent of total exports, the large number of non-traditional export discoveries indicated that the constraint was not the lack of new and viable products, but their small values. Of the remaining 49 percent of exports which were non-traditional exports, tin ores and concentrates and non-ferrous ores accounted for 40 percent while all other products summed to only 9 percent. (ii) Every export discovery, even if relatively small in scale, was important.

Table 7.4: Growing Exports and New Discoveries in Rwanda, 1976-2004
(In unit indicated)

Techcode	Products Name	Number of Transactions			Average Transactions (US\$)		
		1976-85	1986-89	1995-99	2000-04	1976-89	1995-04
Manufacturing Products							
LT	Tarpaulins,sails,awnings,sunblinds, tents, etc.	0	0	3	4	-	75,828
RB	Portland cement, ciment fondu, slag cement, etc.	1	0	5	5	5,571	134,445
LT	Containers, of glass, used for conveyance or packing	0	0	1	2	-	63,219
Wood and Paper							
RB	Manufactures of wood for domestic/decorative use	10	4	5	5	12,795	45,190
RB	Manufactured articles of wood,n.e.s	0	2	2	3	952	29,848
LT	Registers, exercise books, note books	1	1	1	3	3,520	34,232
LT	Art. commonly used for Dom. purposes, pot scourers	3	0	2	3	4,461	30,130
LT	Chairs and other seats and parts	0	2	1	5	2,373	15,955
LT	Other furniture and parts	5	2	3	3	17,924	96,738
LT	Picture postcards, greeting cards	5	2	5	4	2,647	10,454
Textiles							
LT	Leather of other hides or skins	3	1	2	2	23,311	166,516
LT	Yarn contain.85% by wgt.of synth.fi	2	0	4	4	5,484	17,264
LT	Yarn of regenerated fibres, not for retail sale	1	1	3	2	14,707	31,975
MT	Fabrics, woven of continuous synth. textile materials	1	0	2	3	4,911	11,101
MT	Fabrics, woven contain.85% of discontin. synth. Fiber.	0	2	2	2	4,569	14,953
MT	Fabrics, woven ,of discontinuous synthetic fibers	0	0	4	4	-	278,461
LT	Blouses of textile fabrics	0	0	1	3	-	7,767
LT	Other outer garments of textile fabrics	2	0	4	4	4,814	79,926
LT	Other outer garments & clothing, knitted	2	1	2	2	4,966	14,968

Source: Chandra et al (2006) based on UN COMTRADE.

7.5.2 Market Failure is a Key Factor Constraining Scaling Up

7.39 In addition to the issue of the scale of new discoveries, some existing non-traditional exports seem to be on a declining trend in Rwanda's export basket (Table 7.5). Reversing the definition that we used for discoveries shows that declining exports are concentrated in three

product categories: (i) agricultural high-value exports whose values plummeted from nearly US\$1 million in the 1976-1994 period to only about US\$667,000 during 1995-2004 in the case of floriculture exports; and from US\$1.6 million in 1976-1994 to US\$40,000¹⁰² during 1995-2004 in the case of plant seeds; (ii) animal products such as goat skins and related products; and (iii) low-tech manufactures of footwear and travel bags from leather.

7.40 The discussion in Chapter 3 on the constraints to growth, coupled with analysis of growth prospects for the agriculture sector, suggests that the observed declining trends are related to the need for improved training in handling, standards, and quality. For example, World Bank (2006a, p. 32) reports that “in the case of hides and skins, poor post-slaughter treatment attributable to a lack of specialized equipment, low levels of human capacity, and deficient coordination along the value chain, results in severe degradation of hides and skins, which then often receive significant quality discounts in international markets. Hides and skins exports currently amount to approximately 2,000 tons per year, more than 90 percent of which is low-value dry leather and less than 10 percent is higher-value wet blue leather....”

Table 7.5: Diminishing and Disappearing Exports in Rwanda, 1976-2004
(In unit indicated)

Tech code	Product Name	Number of Transactions				Average Transactions (US\$)	
		1976-85	1986-89	1995-99	2000-04	1976-89	1995-04
Agricultural Products and Food							
HV	Other fresh or chilled vegetables (excluding potatoes, tomatoes and leguminous)	9	4	5	2	339,171	8,636
HV	Fruit, fresh or dried.	7	4	5	5	38,062	18,244
PP	Pepper ; pimento	10	4	1	1	70,582	16,503
PP	Goat & kid skins, raw (fresh, salted, dried, pickled	9	4	5	5	2,609,895	387,618
PP	Bones, horns, ivory, hooves, claws, cora	8	4	2	0	65,731	17,625
PP	Plants, seeds ,fruit used in perfumer	8	4	3	2	1,644,796	40,209
HV	Bulbs, tubers & rhizomes of flowering or foliage / Cut flowers and foliage	9	4	5	5	1,000,770	666,831
Textiles							
LT	Travel goods, handbags, brief-cases, purses, sheath	6	3	2	3	28,551	2,181
LT	Footwear	4	3	2	5	58,824	7,123
Minerals and Metals							
LT	Jewelry of gold, silver or platinum	5	2	1	2	3,219	1,429

Source: Chandra, et al, based on UN COMTRADE

7.41 In the case of horticulture products, the need for organic certification is a major requirement that is difficult to fulfill without quality certification services. Given the high standards for fresh vegetables and fruits for the international export market (primarily Europe), and the susceptibility of these crops to diseases, only commercial farms or very well-structured farmers’ associations would be able to supply the required standardized and consistent export quality. The European market imposes traceability requirements that are difficult to fulfill by informal small-scale producers. In addition, there are constraints posed by the lack of adequate infrastructure. World Bank (2006a, p.52) reports that technical constraints include: “...(i)

102 This decline seems exaggerated and is probably due to a re-classification. It will be validated during the field visit.

infrequent cargo flights with limited capacity and high cost of transport¹⁰³; (ii) lack of cold storage and handling facilities at all stages of the chain; (iii) lack of technical knowledge at all levels; (iv) absence of certification and quality control services and laboratories; and, (v) absence of specific inputs and cheap packaging material....”

7.42 The scaling up of exports has been constrained by the low base from which the country is starting, and by barriers to trade that have significantly increased costs. The destruction of property and assets in 1994 put the country at a lower starting base, which was compounded by years of neglect, lack of investment, and little or no maintenance of economic services. For example, many coffee trees were destroyed, but investments to replace destroyed and low-producing trees, and to develop a stock of improved varieties, were not made until 2004. The destruction also led to similar declines in exports from other sectors, such as tea and livestock.

7.43 The main barriers to trade have been energy, transport, and ICT. Energy costs have been a significant deterrent to the expansion of manufacturing and processing activities.¹⁰⁴

7.44 In the case of transport, reduced cost would increase access and significantly increase the returns to farmers. Measures to improve roads and generate sufficient competition among transport providers should lead to lower transport costs and translate to higher returns for farmers. Discussions in Chapter 3 of Volume 2 of this report also show that for the case of coffee, improved access to rural roads would greatly increase farmers’ income.

7.45 The high cost and unreliability of using corridor routes to reach gateway ports are severe impediments to Rwanda’s capacity to access world markets. The cost per ton of transport from Kigali to Mombasa can be as much as 70 percent higher than between Kampala and Mombasa. Overall, transportation costs translate to a 30 to 50 percent increase in the cost of trade. In addition, there are extreme delays in the transit of goods from Rwanda along the corridors. The average transit time between Kigali and Mombasa is four weeks. The long delays arise from congestion in the ports as well as procedural obstacles, which account for up to half of the time in transit. The rehabilitation of roads and adoption of measures to reduce congestion and administrative procedures would substantially reduce transit times and costs. Other measures could include development of a transportation network with neighboring countries, which would lower cost and increase efficiency by reducing border transactions.

7.46 For the transport of perishable and high-value goods such as horticultural products, the lack of regular flights to major markets and poor handling facilities are major obstacles. Problems with the screening of airfreight can lead to serious delays; when a scanner breaks down due to electricity surges, a repair crew has to be flown in from South Africa. This leads to manual inspection of cargo, which can take a substantial number of days and additional delays for a large container. There are also insufficient cold storage facilities at the airport.

¹⁰³ Airfreight rates are about €2.30/kg for the European market and €1.60/kg for the Middle East and South Africa markets. This rate is relatively high compared to that paid by Rwanda’s competitors, mainly South Africa and Zambia, where output is increasing. Kenyan and Ugandan exporters have direct airline connections. Airfreight rates to Europe are estimated at US\$1.57/kg from South Africa and US\$1.30-1.50/kg from Zambia. At these rates, Rwandan exporters will be starting out at a competitive disadvantage, and the negotiation of a more beneficial rate will be critical to success (World Bank 2006a).

¹⁰⁴ Diagnostic Trade Integration Investment Survey (DTIS), 2005. See also Chapter 5 of this volume.

7.47 **ICT will be an important factor in providing households and firms with access to market information, direct contact with buyers, and linkages to financial institutions and government.** These links are particularly important for export diversification. Measures to improve access to low-cost ICT services will be important in determining the flow of information into and out of rural areas, as well as the extent to which rural households can effectively participate in trade and shift into market-oriented and commercial activities. Such measures will depend on the availability of energy in rural areas, and the development of skills relevant to the sector.

7.48 Finally, the lack of research and extension poses a significant barrier to the adoption of new methods and approaches to increase agriculture production. **Farmers will need advice, based on sound research, on ways to move into new initiatives that require new techniques and skills.** In the case of coffee, for example, roughly half a million farmers will require extensive training in all aspects of production, from planting to care and maintenance to harvesting, handling, and transportation.

7.6 SECTOR-SPECIFIC STRATEGIC FOCUS TO PROMOTE DIVERSIFICATION

7.49 As noted in the Rwandan Development Gateway Project report, “ after independence, the export sector covered agro-industrial companies based on coffee, tea, sugar, processed fruits and pyrethrum as well as a tannery. Import substituting industries were also introduced. The current generation of Rwandan industries includes chemical companies, building materials, printing offices, agro-industries, wooden products, textiles and service industries.”

7.50 **The abundance of export discoveries in Rwanda suggests that entrepreneurial firms and farmers are able to transform creative ideas into exports.** In fact, even in the aftermath of the genocide, there were many discoveries across sectors (Table 7.4). However, the failure to scale up indicates that the factors driving discovery are different from those necessary for reducing the dominance of commodities in the export mix.

7.51 Export discoveries are the result of good fortune; but export discoveries transformed into export product lines are the result of strategic nurturing, driven by a variety of factors, including production technologies, technological standards, type of land or soil, climate, production facilities, transport logistics, and market information. The factors needed to nurture an export discovery are quite distinct and often sector specific, even for seemingly similar products, such as those in the class of agricultural products. The land, water, new farm technologies, phytosanitary regulations, and air transport that enable high-value horticultural products to be airlifted to the quality-conscious European markets are of little use in nurturing the development of the animal products chain. The latter needs fixed foreign investment in tanneries, as well as electricity, new production technologies, and road/rail transport to transform skins and hides into leather for overseas markets. Diversifying away from wood into higher-value manufactured products, such as pulp, requires factors that are quite different from the skills required by the furniture sector, which sources wood.

7.52 Each sector has its special logistical and marketing requirements. Exploring new markets for coffee and tea with international coffee marketing firms is very different from, for example, doing business with Asian firms in the market for raw minerals. Skills requirements also vary across sectors. The skills of agronomists needed for horticultural production are non-transferable to the leather, minerals, or chemicals export sectors. Such realities suggest that there may be

larger gains from focusing on a few sectors with the greatest export potential, given limited resources and capacity.

7.6.1 Which Sectors Have the Greatest Export Potential?

7.53 An examination of trends in export destination and world demand for strategic exports from Rwanda, and their destination, provides an indication of which exports have the greatest potential. For example, exports to East Asia (China, Hong Kong, Malaysia) have increased from a nearly negligible share of total exports until 1999, to about 27 percent of exports over the period 2000 to 2004 (Table 7.6).

Table 7.6: Rwanda's Export Destinations, 1978-2004
(Percent of total exports)

Partner Country	1978-1989	1990-1993	1995-1999	2000-2004
Germany	28.68%	28.10%	30.60%	13.60%
China	0.01%	0.50%	1.60%	11.90%
Hong Kong, China	0.00%	0.00%	0.10%	10.90%
Netherlands	4.10%	13.90%	8.30%	7.80%
United States	20.80%	8.60%	7.30%	7.70%
Belgium	0.00%	15.80%	6.50%	5.90%
Pakistan	1.70%	8.90%	9.80%	5.70%
South Africa	0.00%	0.04%	0.50%	3.80%
Malaysia	0.00%	2.50%	0.90%	3.80%
United Kingdom	4.30%	3.30%	3.60%	2.80%
	59.50%	81.60%	69.10%	73.90%

Source: Staff's calculations

7.54 **The emergence of East Asia opened up large opportunities for Rwandan exporters, allowing them to export some non-traditional products that were, until recently, limited in their traditional export markets.** However, export market diversification has been very product specific, and has benefited mostly exporters of minerals and metals. In terms of traditional trading partners, these continue to be important for its export sector, even as demand for Rwanda's non-traditional products has picked up in the EU and the US. New demand for Rwanda's traditional exports has also emerged in European countries with which Rwanda has not previously traded. A good example is the demand for Rwandan coffee in Poland, Ireland, Hungary, and Greece.

7.55 **Driven by growth in China, non-ferrous minerals – which were, until the late 1990s, an under-unexploited natural resource worth less than 2 percent of total exports – have surged dramatically, to become Rwanda's second largest export product.** China's growth raised the demand for Rwanda's minerals and ores, comprising mainly non-ferrous ores such as titanium, vanadium, and molybdenum, by 116 percent per year between 1997 and 2004. Exports of these minerals and metals increased from US\$ 635,000 in 1997 to US\$16 million in 2004. China presently accounts for 82 percent of Rwandan exports of ores, and its demand almost single-handedly altered Rwanda's export mix. Import demand for the same products, as well as other minerals in the region, from Hong Kong (China), Japan, Singapore, and Thailand – has also surged since 1997, reflecting the shift toward a certain pattern of industrial production and trade in East Asia's middle-income economies. In Hong Kong, for example, imports of Rwandan minerals averaged about US\$6 million and grew at 177 percent per year during 2000-2004.

7.56 **The demand for Rwanda's other non-traditional exports – tin and tin alloys, metal sheets, chemical and other metallic alloys – increased in Hong Kong, Thailand, Singapore**

(mostly tantalum), and Malaysia long before the surge in the demand for ores. A leading reason for exports of tin and its alloys to Malaysia, at one time a leading producer of tin, is due to the increase in wage levels, which have made Malaysia's tin mining industry uncompetitive. Apparently, instead of sourcing tin from its own mines, it is more cost effective for Malaysia to import the metal from Rwanda and process it in its refineries. East Asia has also opened the doors to Rwanda's newly discovered manufactured products such as synthetic fibers and hides and skins (leather). Some animal skin product discoveries were, until 2000, exported predominantly to Italy. In 1999, Hong Kong began importing bovine products from Rwanda; by 2001, its share equaled Italy's, and by 2004, it had crowded out Italy.

7.57 About 37 percent of Rwanda's exports are directed to its traditional European partners – Germany, Belgium, the Netherlands, UK, Germany, and France. In addition to coffee and tea, many export discoveries – fresh fruits and vegetables, plants, saps, extracts, cut flowers, wicker articles, mineral ores and metals (tungsten, anthracite, metals, steel plates) are facing steadily rising demand. Even demand for one of Rwanda's old exports – animal products, especially hides and skins – is still strong in Italy, its oldest trading partner in this product line.

7.58 Beyond its old markets, Rwandan exporters have also discovered new markets in Europe. While the share of its new European trading partners – Ireland, Poland, Hungary, Spain, Greece, the Czech Republic, and Turkey – is presently minuscule, their demand for Rwandan exports is in the rise. Turkish demand for Rwandan yarn made of regenerated fiber, as well as pulp and chemical products and re-rolled iron and steel coils is typically below close to US\$100,000.

7.59 However, Rwanda's exports to the U.S. have declined from 21 percent of total exports in the 1980s to about 8 percent over the period 2000-04. The bulk of Rwanda's exports to the American market have historically comprised coffee, tea, minerals, and metals. Other exports, such as textile-related products (regenerated fibers, textiles, garments, bags, etc.), have rarely been larger than US\$4000. Yet, starting in 2005, special USAID efforts to develop Rwanda's exports boosted exports of non-traditional products such as basketwork and wickerwork to stores such as Macy's. A decimal point worth of Macy's imports translated into a huge opportunity for Rwanda's exporters. The jump in the value of handicrafts from almost zero to US\$ 90,000 is a sign of the enormous untapped opportunities that AGOA offers to Rwanda's non-traditional products exporters. AGOA has enabled Rwandan exporters to diversify vertically within the coffee product chain. The recent partnership between Starbucks and Rwandan coffee producers, again with the help of USAID, has enabled exports of washed coffee beans, a higher-value product. There is large scope for further exploring the development of specialty coffee, the demand for which is rapidly growing, or the long list of other products that are AGOA eligible and therefore duty free and quota free.

7.60 Regional markets provide another opportunity for the growth of Rwanda exports; however, it seems far more challenging for Rwanda to export within the region than to export out of Africa. In the past five years, South Africa has emerged as the new African destination for Rwandan minerals, metals, and chemicals-related exports. Within the region, the market is much smaller, and the natural endowments of the neighboring economies quite similar. Exporters in Uganda, Tanzania and Kenya produce many of the same products,¹⁰⁵ but enjoy far more developed and diversified domestic markets, which enables economies of scale in production. This creates tough competition for Rwandan exporters, who are also handicapped

¹⁰⁵ Examples are fresh fruits and vegetables, flowers, fabrics, garments, wood and related products, metal products etc..

because of higher transport costs associated with land-lockedness. To all three markets, Rwanda exports fabrics (synthetics), beer, chemical products (insecticides, fertilizers), and metal products. In Burundi, Rwandan exporters enjoy a larger market and are able to sell cement. All recorded exports to the immediate region were only US\$1.8 million in 2004, and accounted for percent 2 of total exports. However, there appears to be a large volume of unrecorded trade across borders.

7.6.2 Which Sectors Should Government Support?

7.61 **The trends in demand for Rwanda exports suggest that the greatest potential lies in horticulture/floriculture products, leather and textiles, processed fruits and vegetables, mining, tea and processed coffee.**¹⁰⁶ Each sector or commodity chain would benefit from a sector-specific export promotion plan to identify and link directly to external buyers – thus bypassing local auction markets, such as those for coffee and tea. This approach has been adopted for coffee for Starbucks and handicrafts for Macy’s, and could be explored for the main export discoveries – minerals, chemicals, textiles, pyrethrum, wood, livestock, hides and skins, flowers, and horticultural products.

7.62 **Minerals and metals.** This sector is the least diversified vertically – its first two tiers comprise resource based products, the demand for which has boomed in the past five years due to rising demand for minerals from China and the electronics industry. The *first* tier’s five or six raw commodities¹⁰⁷ have been the main drivers of overall export diversification and export growth in the past 5 years.¹⁰⁸ The diversification story is dominated by tin and non-ferrous ores, which account for 40 percent of total exports.¹⁰⁹ No public intervention is required to develop this tier, except for regulation to address environmental issues.

7.63 The *second* tier of the product chain accounts for several export discoveries with promise of rapid scaling up – alloys, concentrates, scrap and pulverized products – that have potential for heavy manufacturing, though perhaps not in the medium term, and not in all resource base products. REDEMI, the state-owned mining company, intends to offer its undeveloped beryllium, kaolin, and peat deposits, as well as its present facilities, for sale in 2007. REDEMI, COPIMAR and other companies operate processing facilities for Columbium (Niobium) and Tantalum at Gatumba; for cassiterite at Rutongo; and for wolframite at Nyakabingo.¹¹⁰ Portland cement, a resource base export, is operated by Cimerwa, Rwanda’s only producer of cement. Nearly all the firms operating in this tier, even if only one in each mineral sub-sector, are constrained from scaling up as long as the Government does not take measures to increase the supply of electricity. Except for power, the Government’s other plans to privatize REDEMI’s activity in this tier appear to be adequate for the industry’s development. Preserving the status quo or improving the situation – i.e., scaling up tiers one and two of the minerals product chain – simply requires that Government ensure a steady supply of power to the minerals industry. This would preserve the concentration of the export mix.

¹⁰⁶ Tea, coffee, horticulture, and handicrafts were also noted as candidates for sector-specific targeting in the Diagnostic Trade Integration Study (World Bank, 2005).

¹⁰⁷ Rwanda’s main mineral exports are columbium, tantalum, tin and tungsten

¹⁰⁸ The increase in production was mainly due to greater demand for cassiterite (tin product), coltan, and wolframite. Cassiterite accounted for 16% of Rwanda’s exports in 2004. The demand for tin has been increasing in recent years, especially in China, due to its use in making consumer electronics and the ban imposed by EU on lead solders in electronic devices (Thomas R. Yager, 2004).

¹⁰⁹ Rwanda’s exports also include re-exports from sources in DRC, but there is no clear record of how much comes from DRC.

¹¹⁰ Yager (2004).

7.64 Unlike the first two tiers, scaling up the *third* tier of manufactured products – metal scrap, waste, plates, sheets, and strip from wrought metal (all medium technology products) – *needs special government effort*, as does the rehabilitation of the Metal Processing Association’s tin smelter at Gisenyi.

7.65 Several entry points are possible to provide an enabling environment for the sector:

- Outdated technology which in some sectors (i.e. tin smelting in 2004), led to pollution and excessive consumption of electricity. Given the potential of tin and its products, this disappearing manufactured export provides a perfect example of a tier that has scale economies and needs large scale investments for technological upgrading.
- Shortage of adequately trained workers.
- Presence of scale economies that deter private firms as the profitability of the manufactured metals products is unknown at this point – i.e. information externality.
- Coordination failure associated with mine-specific dilapidated infrastructure etc.
- Land-lockedness that raises the costs of transport to the coast.

7.66 **The mining sector is characterized by small producers; and the Government can take advantage of this aspect of the industry to attract investment.** First, organizing producers into cooperatives would enable them to take advantage of economies of scale. It would also promote investment in the sector and facilitate the provision of training in modern mining and processing techniques. Facilitating the formation of partnerships between domestic producers and foreign investors would also help to modernize the sector, given the shortage of adequately trained workers. Forming public-private partnerships to support prospecting would improve the information base on the stock of mineral resources. Partnerships would also be of benefit in establishing the profitability of manufactured metal products, and would mobilize private investment to rehabilitate dilapidated and outdated machinery. As noted throughout this chapter, improving the transport and electricity infrastructure is also important for attracting investment.

Box 7.1: The Case for Refined Tin Exports

The aluminum product chain has grown rapidly in recent years – its exports increased from US\$15,000 per year in the 1980s to US\$290,000 per year 1995-2004, primarily because of demand from China. However, vertical diversification within the chain has stalled. Presently, Rwanda exports raw aluminum and tin to Malaysia for refining and re-export. There seems to be a case for Government to facilitate the transition from raw minerals to alloys and manufactures, as the demand for mineral products most likely will grow regionally and in East Asia.

7.67 **Chemicals.** The first tier of Rwanda’s chemicals product chain is based on diverse, naturally available organic and inorganic chemicals which are presently not available at adequate levels for production. In 2004, chemicals had a share of only 0.06 percent in Rwanda’s total exports of US\$97 million. Although they have links to higher-value second and third-tier products, each link is miniscule. In 2003-2004, cyclic hydrocarbons, polyethylene, metallic oxides, and chemical fertilizers were some of the leading manufactured/processed chemical products that were exported directly. There is also potential for scaling up the production of carbon black, a specialty product added to rubber tires, derived almost exclusively from the burning of natural gas.

7.68 Scaling up of this sector is important for scaling up the overall export sector. Chemical products provide useful inputs for other export sectors – agricultural food, forestry/wood and paper, animal skins and hides, and textiles. They are also used to process products from other sectors for export. For example, the sector processes flowers to produce extracts that are used to manufacture perfumes, pesticides, and fertilizers.

7.69 The most important chemical exports are derived from Rwandan pyrethrum flowers, which have a high concentration of pyrethrums. Rwanda is one of the largest producers of pyrethrum in the world, and its pyrethrum concentrate is exported mainly to the US under AGOA, and to Kenya and South Africa. Presently, Sopyrwa, the pyrethrum producing company, exports crude pyrethrum extract to be refined abroad. Rwanda can also use its flowers for oil distillation or solvent extraction of other products, such as paprika. A pyrethrum spray formulation, which adds value to the product, is available from the Pyrethrum Board of Kenya.¹¹¹

7.70 Expansion of the Pyrethrum sub-sector is constrained by a dormant refining unit – due partly to electricity supply – which, if operational, could allow Sopyrwa to complete the refining process and capture significant additional value added. To partly address the electricity issue, a critical sector-specific action would be to introduce solar¹¹² dryers to dry flowers.¹¹³ Below-capacity production of pyrethrum means that Rwanda is not taking advantage of high demand in the world market and existing preferential trade arrangements with the United States and the European Union.

7.71 **Textiles:** Exports from this sector comprise one of the larger product chains with newly discovered exports of nearly US\$ 500,000 in 2000-04. The potential of this sector for export diversification far exceeds that of others, especially because it produces manufactured goods which have a stable and growing demand, it enjoys special preferences in the US market, and its growth is not constrained by Rwanda's relatively less skilled labor force.

7.72 Rwanda is one of the few AGOA eligible countries in SSA that can export textiles, yarn and fabric without cultivating cotton. This should flag it as an attractive location for textile and garments producing multi-national corporations, similar to those in Lesotho, SSA's largest garment exporter to the U.S. However, currently, there is only one major privately owned textile firm, UTEXRWA that operates in Kigali. In operation since 1985, the firm employs 1000 workers, in cut make and trim operation to produce up to 6,000 garments each day from fabric made of raw cotton from Uganda and Tanzania, and polyester fabric made in South Africa. The firm has rapidly expanded in the last few years to become an integrated textile company with spinning, weaving, dyeing, printing, and apparel-making capabilities. It maintains a designs library of more than 2,000 products and can easily add to current production and shift manufacturing lines within days to meet new demand.¹¹⁴ Other small textile weaving companies are also expanding, including a firm that specializes in hand-loomed textile products.

¹¹¹ "Agribusiness in Sustainable Natural African Plant Products (ASNAPP) Natural Products Assessment: Potential for Economic Growth and Trade in Rwanda," Chemonics for USAID (2002). prepared by Chemonics International under ADAR, July 2002.

¹¹² This would eliminate the need for harvesting fuel wood to fire the ovens, thus contributing to improved and sustainable environmental management.

¹¹³ Agribusiness Development Assistance Project in Rwanda (ADAR), Second Quarter Progress Report, Chemonics for USAID (2004).

¹¹⁴ "Investment Climate Statement – Rwanda," US Department of State (2005).

www.state.gov/e/eb/afd/2005/42425.htm.

7.73 Exports from the textiles sector comprise one of the larger product chains, with newly discovered exports of nearly US\$500,000 in 2000-2004. The potential of this sector for export diversification far exceeds that of other sectors, because (i) it produces manufactured goods for which there is a stable and growing demand; (ii) it enjoys special preferences in the US market; and (iii) its growth is not constrained by Rwanda's relatively less skilled labor force. However, high utility costs have been a constraint to production. While export discoveries of almost US\$500,000 in 2000-2004 have triggered rapid growth in the sector, Rwanda is not yet fully exploiting its textiles and garments exports potential, which would enable it to take full advantage of AGOA and scale up.¹¹⁵

7.74 One of the potential exports being considered in Rwanda is silk textiles. The case of this nascent industry may have lessons for other sectors. Silk is not native to Rwanda, but with help from the UN's Food and Agricultural Organization (a), and in cooperation with the *Institut des sciences agronomiques du Rwanda* (ISAR), under the Ministry of Agriculture,¹¹⁶ mulberry trees have been planted in the Butare region, as a first step toward silk production. A similar approach could be adopted for other export sectors.

7.75 Wood. In 2000-2004, Rwanda exported about US\$270,000 worth of newly discovered second and third-tier manufactured wood products, such as pulp, cellulose, and paper, most of which were either resource based or light technology manufactures. Exports of furniture, a second-tier, low-tech product, have recently exceeded US\$100,000 per year, signaling the potential for rapid growth in that sub-sector. While the sector is vertically diversified, however, scaling up is stalling. The low and unreliable supply of electricity is one important factor affecting the sector; and an equally important factor is the availability of skilled labor.

7.76 Wickerwork exports are a perfect example of how, because of Rwanda's small size, a single firm's entry can turn into a large (for Rwanda) export industry. Until 2004, wicker basket and hat exports averaged US\$24,000 per year. Through support from a USAID project, one enterprising woman's contact with the Macy's department store caused the industry's exports to increase to US\$25,000 in 2005. The challenge will be to continue to meet increasing demand while maintaining quality. Special public interventions to create networks and informational externalities have significantly increased exports and investments in new production centers. The recent development of a handicraft production training program should help to further expand this promising export industry.

7.77 In the case of handicraft production, there has already been a move to explore more opportunities in the US market under the umbrella of African Growth and Opportunity Act (AGOA). It should also be possible to explore other markets in Europe. To increase sales, a handicraft marketing program will be needed, as will handicraft production training.

¹¹⁵ "The African Growth and Opportunity Act: Achieving Success through the African Global Competitive Initiative," June 2006, www.agoa.gov

¹¹⁶ "Rwanda: Diagnostic Trade Integrated Study." World Bank (2005).

Box 7.2: Rwandan Handicrafts Exports

The handicrafts industry in Rwanda is largely informal; artisans use local material to produce handicrafts and sell them locally. Some of the crafts produced are metal works, stone cuttings, basketwork, pearl work, and some leather products. Women in Rwanda have been weaving baskets for years, mostly for decorative purposes at home or to sell locally. After the genocide, a local woman started organizing the weavers and selling their products in craft fairs in the US. A woman's rights activists in the US presented a proposal to Macy's, and the baskets were sold for the first time during the 2005 holiday season. Currently, there are 1,500 women weavers employed in this project. They sell the larger, foot-high baskets for about \$20 each, and smaller ones for about \$5. Since many weavers produce half a dozen of the large baskets a month, that means they can earn \$120, better than the average per capita monthly income of US\$100.¹¹⁷

7.78 **Livestock.** Instead of starting with exports of live animals and meat, Rwanda's livestock product chain, which accounted for less than 2 percent of total exports, begins at the second tier with high-value animal products (hooves, claws, bones, ivory) and light and medium technology manufactures. The five tiers in the livestock chain offer increasing diversification potential, moving up from a large variety of animal skins and hides to leather and related products. In spite of the export potential, however, scaling up in this industry is stymied by two mutually reinforcing forces. First, exports of higher-value skin products, such as footwear and travel bags, are rapidly slowing down, indicating a loss of global competitiveness. Further progression in the same direction is likely to lead to a disappearance of these two links in the product ladder. Second, raw animal skins, the most lucrative traditional export product, are also disappearing. Rwanda traditionally exported 80 to 90 percent of skins and hides and leather to Italy, and more recently to some East Asian countries, but shrinking exports suggest that domestic supply constraints are probably to blame. If so, the industry is threatened from the first as well as the top tiers and is unlikely to survive. Leather export discoveries are a rare exception to other export products in the livestock sector.

7.79 What explains the diminishing size of animal skin-related exports? Market analysis shows that globalization is pushing the tanning industry from Italy and Spain, the traditional importers to China and Thailand. While some of this adjustment is visible in the direction of Rwandan exports, the diminishing size of the market remains unexplained. Rwanda and its five regional neighbors exported half of one percent of total hides and skin exported to Italy in 2004, representing sharp declines in exports, and signaling a regional loss of competitiveness. Since 2001, China has become the largest importer of hides and skins. Some analysts believe that China is trying to cut down its import of raw products due to environmental concerns, and will increase the import of semi-processed (wet-blue) products.¹¹⁸ This should open the door to processed skins exports for Rwanda.

7.80 **To take advantage of these global trends in the hides and skins sector, a national strategy is needed to support production, and to invest in upgrading slaughterhouses and collection systems to ensure consistent quality.** A key component of the strategy would include training in handling, to ensure consistent quality. Organizing small leather producers into

¹¹⁷ Poolos (2006), "Rwandan Women Weave New Future from Baskets," Awakened Woman e-magazine, (March 1). www.awakenedwoman.com.

¹¹⁸ Food and Agricultural Organization (2006), "Consultation on Hides and Skins," Arusha, Tanzania, (February 1) Put both in bibl

production units would also help in establishing a value chain and give them access to market information and finance.

7.81 Edible agricultural products. This sector is well diversified horizontally, to support several product chains that produce high-value fresh fruits, vegetables, legumes, malt, and coffee and tea for export. While scaling horizontally can be sufficient in the short term, there is ample scope for vertical diversification toward processed foods in the longer term. Presently, Rwanda exports frozen and chilled products, but potential exists for further transformation into manufactured foods such as jams, canned and bottled products.

7.82 Rwanda's favorable climate, relatively cheap labor force, and proximity to European markets give it some comparative advantage in producing horticulture products. The demand for horticulture products in the European market has grown very strongly. Compared with year 2000, the demand for fresh vegetables had increased by 61 percent and fresh fruit by 66 percent in 2004.

7.83 Scaling up has several obstacles, however. Perishable horticulture products require post-harvest technologies, and quick and regular transportation. It also needs economies of scale, which are difficult to achieve in Rwanda because of its small size. Annual exports of horticulture products in 2002-2004 averaged US\$643,000, accounting for one percent of total exports. Further, production patterns have been unstable, usually driven by exports of one product.¹¹⁹ A USAID report in 2001¹²⁰ stated that there was sufficient air capacity out of Kigali to Europe and South Africa. However, there were no binding contractual arrangements between air carriers and exporters; and because of low production of exporting goods, exporters had no bargaining power to negotiate a favorable schedule.

7.84 These externalities provide a case for special support for the horticulture industry. Examples¹²¹ of how Uganda, Kenya, India, and even Chile scaled up in horticultural exports may have some relevance for the Government. Specific interventions in those cases included public provision of post-harvest technologies for grape growers' cooperatives (India); refrigeration facilities (Kenya); foreign consultants who brought superior farm technologies (Chile); and government-donor partnership (Uganda).

7.85 There are significant prospects for exports in a number of key products where global market trends are positive, if yields and quality can be increased. Rwanda has the opportunity to benefit from preferential access to the EU market under the Everything but Arms (EBA) and the US market under AGOA. As an example, consider the case of scaling up banana, the top cash crop in Rwanda, which has been problematic. Banana growers face declining yields due to poor soil fertility, as well as pests and diseases. Currently, ISAR (Institut des science agronomique du Rwanda, or the National Agricultural Research Institute)¹²² is conducting research to improve productivity and yields for small producers, and is also promoting cooking and dessert bananas as

¹¹⁹ As an example: the United States was the principal importer of some unspecified vegetable materials (recorded as "other material of vegetable origin") from Rwanda. A quick rise of the US market in late 1980s to early 1990s boosted the sector. But sudden stop of export to US since 1993 dragged it down to the bottom. With very limited capacity, it is a more feasible strategy for exporters to focus on one sector and one market.

¹²⁰ "ATDT Banana Project – Rwanda" www.isar.cgiar.org/atdt/Banana/banana.htm.

¹²¹ Chandra, V (ed.). 2006. *Technology, Adaptation and Exports: How some developing countries got it right*. World Bank

¹²² ISAR stands for *Institut des science agronomique du Rwanda*, or the National Agricultural Research Institute (NARI).

exports ATDT Banana Project). The experience of developing countries in arresting declining yields as in the case of maize on small farms in India may be useful for Rwanda

7.86 In Rwanda, sector-specific support for horticulture implies crop-specific support for special crops such as passion fruit, the most highly prized fresh fruit by European consumers. Demand for its juice and puree is also high. But scaling up is obstructed by crop diseases; the producers are finding it hard to obtain disease-free seeds for cultivation. USAID's ADAR¹²³ project has worked with passion fruit producers and Rwandan exporters to increase the production of export-quality fruit and develop appropriate post-harvest handling and export strategies¹²⁴; and a local company called SHEMA FRUITS plans to export passion fruit puree to Europe. There are also plans to build a factory to manufacture products such as passion fruit pulp, for export to makers of ice cream, sherbet, and pastry in Europe and the US. ADAR is also helping farmers to manage disease with minimum use of pesticides. These examples illustrate the kinds of measures that are needed to scale up horticultural exports in Rwanda.

7.87 To some extent, scaling up of the horticultural exports will depend on the alleviation of the key constraints to improve access to transport, finance, and energy, and achieve more effective organization of the rural sector. But most of the scaling up will depend on the Government's efforts to identify the sub-sector specific and crop-specific obstacles to exports. *Currently, there is no organized strategy to develop Rwanda's horticulture sector.*

Box 7.3: Scaling Up and Diversification in Coffee

In the past year, the raw coffee product tier has diversified vertically into roasted coffee, an unimaginable feat for Rwanda. Rwanda has the right natural conditions to grow high-quality Arabica coffee; and the Government identified the growing demand for high-quality coffee in the world market and has pursued this market segment.

Rwanda's hilly terrain, 41 percent of which is arable, gives it a natural advantage in producing coffee. However, even though coffee production costs are lower in Rwanda than in other countries, high processing and transportation costs make it difficult for Rwanda to compete with Brazil, the largest producer of Arabica Coffee. The Government realizes that Rwanda could benefit by producing high-quality coffee for niche markets. One suggestion was for small farmers to grow improved varieties derived from the Bourbon line (such as Caturra and Catuai), and take them to central washing stations for washing.¹²⁵ USAID spent more than US\$10 million in building infrastructure, training farmers, organizing cooperatives, and building washing stations. Starbucks visited Rwanda in 2004 looking for variety in their premium coffees and selected Rwandan Blue Bourbon, and also provided training to local producers. As a result, Rwanda went from producing no specialty coffees in 2001 to producing 1,200 tons last year, earning US\$3 million, mainly from US importers – Green Mountain Coffee Roasters of Vermont, Community Coffee of Louisiana, Starbucks, Sustainable Harvest, Bull Run Coffee Roasters, Intelligentsia, and Thanksgiving Coffee. Coffee exports were expected to reach US\$6 million in 2006.¹²⁶

7.88 **In the case of tea and coffee, priority measures for improving productivity include improving access to finance and inputs; disseminating information; and establishing and enforcing standards.** For the coffee sector, measures are also needed to improve the capacity of

¹²³ ADAR stands for Agribusiness Development Assistance Project in Rwanda, funded by USAID.

¹²⁴ USAID (2004). Rwanda Integrated Strategic Plan 2004-2009, Volume 1 (January).

¹²⁵ "Considerations for Initiating a Specialty Coffee Industry in Rwanda," ADAR Project, Chemonics for USAID (2002).

¹²⁶ "The African Growth and Opportunity Act: Achieving Success through the African Global Competitive Initiative," (2006). www.agoa.gov.

washing stations, which often operate below capacity due to water and electricity shortages. Further, the current installed capacity of washing stations can process only half of the beans produced, and more washing stations will need to be built.

7.89 Increased productivity in the tea sector will require training on care of the bushes, and a pricing and privatization policy that will provide the right incentives to farmers to improve quality. There is also a need to improve the business environment to encourage investment in factories currently operating below capacity.

7.6.3 Sector-Specific Policy Obstacles May Be the Critical Constraint

7.90 In sectors where there are many small exporters, scaling up requires addressing sector-specific obstacles such as pests, diseases, and lack of access to modern technologies. Further, small exporters need assistance in negotiating air transport. In some cases, Government will need to intervene, probably with the help of donors, to reach foreign buyers. Often one buyer is sufficient – Macy’s and Starbucks are examples. Wooing one large firm to start processing fruits and vegetables may be necessary, as this is unlikely to happen on its own. The Government can also enable scaling up by promoting the Rwandan brand name and enacting regulations to maintain quality control, especially in agricultural exports.¹²⁷

7.91 In many cases, Rwandan exporters can benefit from preferential trade arrangements with the EU and the US. Special efforts to unravel what is needed to scale up imports in each sector may help Rwandan exporters to move faster into more manufactured products. Collaboration with foreign buyers and firms may facilitate this effort.

7.92 Access to investment and working capital for commercial agriculture is extremely limited. As noted in Chapter 5, currently only 2.3 percent of bank credit is used to finance activities in agriculture (which employs more than 90 percent of the population and produces 40 percent of GDP).¹²⁸ Microcredit by itself will not suffice; it is necessary to extend bank finance to the rural sector to commercialize farming. This issue needs to be addressed in the context of the strategy to develop the financial sector, which is currently being developed and implemented.

7.93 Excessive fragmentation of farming due to the small size of farms is a major constraint for horticulture and floriculture. As land is consolidated, bank finance can play an important role in helping large-scale farming to become viable. There is also a need to link rural producers to local, national, regional, and international markets. Cooperatives have the potential to play a strong role, provided they have the legal status to support farmers in marketing their products, as in the case of MAHA grapes in India.¹²⁹

¹²⁷ A good example is Chilean wine, promoted aggressively by Pro Chile and Chile Vid (Chandra ed., 2006).

¹²⁸ DTIS: Diagnostic and Trade Integration Study, World Bank (2006)

¹²⁹ Bridging the Knowledge Gap in Competitive Agriculture: Grapes in India (V. Chandra ed.), 2006.

Box 7.4: The African Growth and Opportunity Act

Rwanda is one of beneficiary countries of the African Growth and Opportunity Act (AGOA) of 2000. AGOA promotes two-way trade between US and Sub-Sahara African countries by providing beneficiary countries with the most liberal access to the US market available to any country or region with which the US has no Free Trade Agreement.

AGOA offers Rwanda several special opportunities for export diversification, but these cannot be accomplished with a single stroke of the policy pen. Diversification within each product chain requires concerted effort. Rwandan coffee and wicker basket exports are two examples.

By investing in local infrastructure and coffee washing stations, and by supplying technical training and support, USAID fostered the development of the Rwandan specialty coffee industry. The Rwandan coffee industry went from producing no specialty coffees in 2001 to producing 1,200 tons in 2005, yielding approximately US\$3 million in sales, mainly to the US. Exports of specialty coffee were projected to reach US\$6 million in 2006.

Source: www.agoa.org.

7.6.4 General Constraints to Export Diversification

7.94 **In almost all sectors, landlockedness and lack of sufficient power are problems. Provision of more energy, probably from Lake Kiwu's natural gas project, as well as better rail, road, and air transport, seem indispensable for faster export diversification.** One way to achieve this may be *regional integration*, which is important for Rwanda, not only to expand its market, but also to improve the business environment and enhance competition.

7.95 **A transportation network with neighboring countries will reduce border transactions and delays, leading to lower cost and greater efficiency.** In 2004, the Governments of Burundi, Congo (Kinshasa), and Rwanda discussed the rehabilitation of the Ruzizi I hydropower station in Burundi. Repairs to Ruzizi I would increase capacity from 28.2 MW to 39.6 MW, and allow the plant to export power to Rwanda. There have also been discussions to rehabilitate Ruzizi II and the possibly construct Ruzizi III.

7.96 **Currently, transportation costs are pushing up the cost of trade by an estimated 30 to 50 percent.** Targeted support for infrastructure will probably help, as the Government cannot improve it economy-wide at once. In particular:

7.97 Better air transport will help high-value, low-volume goods to be flown directly to external markets. Ideally, the investment would come from the private sector; however, Government may need to intervene.

7.98 The cost of transport from Kigali to Mombasa is 70 percent higher than from Kampala to Mombasa. There are extreme delays along transport routes, especially main transit corridors. The average time from Mombasa to Kigali is 4 weeks. Rural transport costs from the farm gate in Rwanda to Mombasa are 80 percent of the farm gate price; while from the farm gate to Kigali is about 40 percent. This amounts to an implicit tax on coffee and other exportables (DTIS, 2006).

7.99 Two straightforward solutions: build corridor routes that provide access to gateway ports and world markets; and provide rural roads that link agricultural areas to local markets.

7.100 The regional development of power systems will increase the availability and reduce the cost of electricity which is one of the major deterrents to doing business in the country. Regional capital markets will enable government to borrow at lower costs and encourage competition. Rwanda can also benefit by becoming the distribution center for the sub-region. Rwanda has the advantage of greater security for people and property and a lower level of corruption compared to its neighbors. The country is already re-exporting to DRC, Tanzania, Uganda, and Burundi. The development of ICT structure will help Rwanda become a regional distribution center for exports. Another benefit may be better employment opportunities for semi-skilled and unskilled labor, due to greater mobility. The country's agriculture sector may benefit from greater demand. However, since most agricultural trade is informal, it will be hard to assess the benefits to that sector.¹³⁰

7.101 Finally, capacity issues are a constraint faced across all sectors. Most entrepreneurs in the private sector do not have the training, experience, and skills needed to manage their business competitively. There is a need to provide technical, managerial, and international marketing training programs for private entrepreneurs and managers; and to develop sector-specific skills. Examples include skills for managing coffee and tea plantations; applying new agricultural technologies on farms, operating minerals and metals factories, linking to a supply chain, and marketing.

7.102 The Government has established several public sector institutions to support the private sector. However, the private sector needs help in adopting and implementing management, quality, safety, environmental, and other standards and certifications. Currently, Rwanda has no quality certification or management systems, and both have to be in place before the country can enter high-value markets.

7.7 CONCLUSION

7.103 First, eliminate the barriers to trade. Foremost among these is the electricity problem, which constrains the capacity of processing plants. The recent investment in Lake Kivu methane gas development should help to reduce the cost and increase the reliability of electricity in the long term. Second, invest in rural roads to link rural households and small producers to markets. Third, identify sector-specific constraints to productivity, to help develop the value chain and increase producers' access to training and finance. Fourth, facilitate and promote engagement of the private sector. Fifth, provide assistance to producers' organizations, including training in the use of improved inputs and microfinance, to promote the transition to increased market production or new activities. There would need to be coordination across agencies, with primary responsibility for organizing agricultural producers coming from MINAGRI; and for other producers coming from MINICOM. RIEPA would have the role of trade promotion outside the country.

7.104 Putting in place measures to link producers to local, national, regional, and international markets will require identifying viable export chains and organizing producers to link them to these value chains. Sectors with growth potential that can benefit from value chains include tourism, textiles and silk production, hides and skins, horticulture, fruit juice manufacturing and processing, furniture making, and mining.

¹³⁰ Imani Development Group (2006)

Annex Table 9: Export Diversification, Growth, and Share of Exports in GDP, 1970-2004

	1970	1975	1980	1985	1990	1995	2000	2004
Burundi								
Avg Herfindahl Index - 5 years	0.64	0.59	0.62	0.65	0.72	0.62	0.63	0.42
Avg Exports / GDP - 5 years	0.10	0.10	0.13	0.10	0.10	0.10	0.08	0.07
Avg Export Growth - 5 years	0.01	0.14	0.22	0.02	0.00	0.20	-0.16	-0.07
Share of top 5 exports	0.95	0.93	0.94	0.97	0.91	0.96	0.96	0.93
Correlation - export gr. & HI 1970-04								0.16
Congo, Dem. Rep.								
Avg Herfindahl Index - 5 years	0.36	0.35	0.27	0.28	0.32	0.32	0.49	0.49
Avg Exports / GDP - 5 years	0.18	0.13	0.13	0.19	0.26	0.20	0.25	0.19
Avg Export Growth - 5 years	0.16	0.10	0.13	-0.04	0.07	-0.02	-0.06	0.04
Share of top 5 exports	0.89	0.83	0.90	0.87	0.90	0.89	0.94	0.93
Correlation - export gr. & HI 1970-04								-0.30
Kenya								
Avg Herfindahl Index - 5 years	0.14	0.12	0.23	0.21	0.20	0.13	0.11	0.10
Avg Exports / GDP - 5 years	0.30	0.29	0.30	0.25	0.24	0.34	0.27	0.26
Avg Export Growth - 5 years	0.07	0.19	0.18	0.00	0.04	0.11	-0.01	0.09
Share of top 5 exports	0.61	0.62	0.73	0.80	0.69	0.59	0.62	0.60
Correlation - export gr. & HI 1970-04								0.08
Rwanda								
Avg Herfindahl Index - 5 years	0.50	0.43	0.57	0.59	0.60	0.49	0.45	0.35
Avg Exports / GDP - 5 years	0.10	0.10	0.16	0.11	0.08	0.06	0.07	0.09
Avg Export Growth - 5 years	0.14	0.52	0.23	0.02	0.10	-0.17	0.08	0.10
Share of top 5 exports	0.97	0.97	0.98	0.96	0.95	0.90	0.91	0.94
Correlation - export gr. & HI 1970-04								-0.19
Tanzania								
Avg Herfindahl Index - 5 years	0.10	0.10	0.16	0.18	0.16	0.10	0.10	0.08
Avg Exports / GDP - 5 years					0.13	0.16	0.15	0.17
Avg Export Growth - 5 years	0.06	0.09	0.10	-0.07	0.06	0.10	-0.01	0.12
Share of top 5 exports	0.68	0.64	0.66	0.74	0.56	0.64	0.61	0.49
Correlation - export gr. & HI 1970-04								-0.49
Uganda								
Avg Herfindahl Index - 5 years	0.38	0.50	0.81	0.85	0.79	0.59	0.52	0.19
Avg Exports / GDP - 5 years	0.24	0.16	0.15	0.12	0.09	0.09	0.12	0.13
Avg Export Growth - 5 years	0.10	0.04	0.18	0.02	-0.10	0.33	-0.11	0.07
Share of top 5 exports	0.95	0.95	0.99	0.99	0.95	0.96	0.88	0.82
Correlation - export gr. & HI 1970-04								-0.06

Source: COMTRADE data, based on Staff estimates.

Annex Table 10: Besides Coffee and Minerals, What Else Does Rwanda Export?
(Products in total exports with a share of at least one half percent in total exports – SITC2 – 4 digit)

SITC2	Product Name	1976-77	1980-81	1984-85	1990-91	1998-99	2000-01	2002-03	2004
00.	Food and live animals								
224	Milk & cream,preserved, concentrated	--	--	--	--	0.1	--	--	0.1
545	Other fresh or chilled vegetables	0.1	0.3	0.0	0.2	0.0	--	0.0	0.0
711	Coffee,whether or not roasted	81.4	69.6	75.2	64.5	50.9	38.0	37.2	42.2
723	Cocoa butter and cocoa paste								
741	Tea	6.9	8.3	11.8	11.8	12.5	9.8	4.7	8.5
	Subtotal	88.4	78.3	87.1	76.5	63.5	47.9	42.0	50.8
01.	Beverages and tobacco								
1110	Non alcoholic beverages,n.e.s.	--	--	0.0	0.0	--	--	--	0.5
1123	Beer made from malt	--	--	--	--	0.0	0.4	0.0	0.0
	Subtotal	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.5
02.	Crude materials, inedible, except fuels								
2111	Bovine & equine hides (other than calf),raw	3.1	0.3	1.2	0.3	0.8	0.5	0.3	0.1
2112	Calf skins,raw (fresh,salted,dried,pickled)		0.0	0.0	0.6	0.1	0.1	0.5	0.2
2114	Goat & kid skins,raw (fresh,salted,dried pickled)	6.7	2.3	2.4	2.0	0.4	0.2	0.6	0.5
2116	Sheep & lamb skins with wool on,raw	0.7	0.2	0.3	0.4	0.4	0.1	0.3	0.4
2117	Sheep & lamb skins without the wool,raw	--	0.0	--	0.3	0.0	0.0	--	--
2224	Sunflower seeds	--	--	--	--	0.0	--	--	--
2516	Chemical wood pulp,dissolving grade	--	--	--	--	--	--	0.5	--
2784	Asbestos	--	0.5	0.0	--	--	0.0	--	--
2814	Roasted iron pyrites	--	--	--	0.6	--	--	--	--
2876	Tin ores and concentrates	--	9.5	0.1	2.0	1.4	4.8	3.0	12.6
2879	Ores & concentrat.of non-ferrous metals	--	3.8	2.3	0.9	6.4	35.8	37.3	28.3
2881	Ash & residues,contain.metals/metallic compound	--	--	--	--	--	--	0.1	0.0
2922	Shellac,seed lac,stick lac,gum-resins,etc.	0.3	--	--	--	0.0	--	--	--
2924	Plants,seeds,fruit used in perfumer	--	1.8	1.3	0.5	0.0	--	0.0	0.0
2926	Bulbs,tubers & rhizomes of flowering or foliage	0.1	0.5	0.9	1.2	0.4	0.4	0.7	0.4
2927	Cut flowers and foliage	--	0.0	0.0	0.0	0.4	2.3	0.3	0.3
2929	Other materials of vegetable origin	0.0	0.6	0.3	1.6	0.6	--	0.1	0.0
	Subtotal	10.9	19.5	8.7	10.2	10.9	44.3	43.6	42.7
03.	Mineral fuels, lubricants etc.								
3221	Anthracite,whether/not pulverized	--	--	--	--	--	0.2	0.6	0.0
	Subtotal	0.0	0.0	0.0	0.0	0.0	0.2	0.6	0.0
05.	Chemical products								
5112	Cyclic hydrocarbons	--	--	--	--	--	--	0.5	--
5156	Heterocyclic compounds/acids	--	--	--	--	0.0	--	--	--
5221	Chemical elements	--	--	--	--	--	--	0.3	--
5225	Oth.inorg.bases & metallic oxides	--	--	--	--	--	0.0	0.1	0.1
5621	Mineral/chemical fertilizers	--	--	--	1.0	0.1	--	0.5	--
5629	Fertilizers,n.e.s.	--	--	--	--	0.4	0.0	--	--
5831	Polyethylene	--	0.1	--	--	0.0	0.0	0.0	--
	Subtotal	0.0	0.1	0.0	1.0	0.5	0.0	1.5	0.1
06.	Manufactured goods by material								
6116	Leather of other hides or skins	--	0.0	--	--	--	--	0.1	0.3
6413	Kraft paper and paperboard	--	--	--	--	--	0.0	0.3	--
6418	Paper & paperboard	--	--	--	--	--	--	0.3	--
6513	Cotton yarn	--	--	--	--	--	--	0.3	--
6534	Fabrics,woven,of synthetic fibres	--	--	--	--	0.4	0.0	1.0	0.7
8439	Other outer garments of textile fabrics	--	--	0.0	0.0	0.0	0.0	0.6	0.0
6612	Portland cement,ciment,slag cement	--	0.0	--	--	0.0	0.1	0.8	0.4
6672	Diamonds,unwork.cut/otherwise	--	0.1	--	--	0.2	--	1.0	--
6673	Oth.precious & semi-precious stones	--	0.0	--	0.0	--	0.0	0.2	0.4
6724	Puddled bars and pilings; ingots etc.	--	--	--	--	--	--	0.8	--
6746	Sheets & plates,rolled	--	--	--	0.1	--	--	0.3	--
6842	Aluminium and aluminium alloys	--	--	--	--	0.7	0.2	--	0.0
6871	Tin and tin alloys,unwrought	--	--	3.1	0.5	--	--	0.7	0.2
6891	Tungsten,molybdenum,tantalum & magnesium	--	--	--	--	0.0	1.0	--	--
6999	Semi-manufactures of tungsten	--	--	--	--	--	0.3	--	--
	Subtotal	0.0	0.1	3.1	0.6	1.4	1.7	6.5	1.9
08.	Miscellaneous manufactured articles								
8931	Art.for transportation/packing of goods	--	--	--	--	0.1	0.1	0.0	0.0
8947	Other sporting goods and fairground amusements	--	0.0	0.1	0.0	--	0.0	0.1	0.7
8960	Works of art & antiques	--	0.0	0.0	0.0	--	0.0	0.1	0.0
	Subtotal	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.7
TOTAL		99.2	98.1	99.0	88.3	76.5	94.5	94.3	96.7

Source: UN COMTRADE

Annex Table 11: Price Trends for Selected Commodities. 1975-2004
(In unit as indicated)

	1976-1989	1995-2004
Bananas, Central America and Ecuador, U.S. importer's price, FOB U.S. ports (£/lb.)	17	21
Aluminium high grade, LME, cash	1403	1512
Tin, LME, cash	11279	5790
Tin, Kuala Lumpur Tin Market, ex-smelter (Mal\$/kg)	26	19
Tin, Kuala Lumpur Tin Market, ex-smelter,	11030	5560
Tungsten ore, minimum content of Wo ₃ : 65%, CIF Europe (\$/mtu Wo ₃)	100	50
Gold, 99.5% fine, afternoon fixing London (\$/troy ounce)	354	331

Source: Annual averages of free- market prices (1960 - 2005), UNCTAD Commodity Price Bulletin.

Annex Table 12: Shares of Top 3 Products in Total Exports, 1970-2004
(SITC2 – 4 digit)

	1970	1980	1990	2000	2004
Burundi					
Coffee	0.83	0.81	0.78	0.79	0.63
Cotton	0.06	--	--	--	--
Hides & skins,-exc.fur skins- undre	0.04	--	0.05	--	--
Pearls and precious and semi-precious	0.04	--	--	0.15	--
Natural abrasives-incl.industrial d	--	0.03	--	--	--
Tobacco, unmanufactured	--	--	0.03	--	--
Tea and mate	--	--	--	0.11	0.13
Ores & concentrates of non-ferrous	--	--	--	0.03	--
Share in total exports	0.93	0.88	0.86	0.93	0.90
DRC					
Copper	0.62	0.54	0.53	--	--
Miscell.non-ferrous base metals	0.11	0.13	--	0.05	0.11
Coffee	0.06	0.15	0.11	--	--
Pearls and precious and semi-precious	--	0.16	0.75	0.48	--
Ores & concentrates of non-ferrous	--	--	--	0.10	0.27
Share in total exports	0.80	0.82	0.80	0.89	0.86
Rwanda					
Ores & concentrates of non-ferrous	0.59	0.10	--	0.23	0.41
Coffee	0.32	0.75	0.71	0.50	0.42
Tea and mate	0.04	0.07	0.12	0.15	0.09
Hides & skins,-exc. fur skins-ndre	--	--	0.05	--	--
Share in total exports	0.94	0.92	0.88	0.88	0.92
Kenya					
Coffee	0.32	0.39	0.21	0.11	--
Tea and mate	0.20	0.20	0.30	0.28	0.16
Crude vegetable materials,nes	0.03	0.06	0.07	0.12	0.17
Clothing except fur clothing	--	--	--	--	0.14
Share in total exports	0.56	0.64	0.58	0.50	0.46
Tanzania					
Coffee	0.17	0.31	0.22	0.13	--
Spices	0.16	0.13	--	--	--
Vegetable fibres,except cotton and	0.14	--	--	--	--
Cotton	--	0.13	0.18	--	--
Copper	--	--	0.06	--	--
Fish,fresh & simply preserved	--	--	--	0.24	0.16
Pearls and precious and semi-precious	--	--	0.10	--	--
Gas,natural and manufactured	--	--	--	--	0.09
Tobacco, unmanufactured	--	--	--	--	0.09
Share in total exports	0.47	0.57	0.45	0.47	0.34
Uganda					
Coffee	0.55	0.95	0.76	0.56	0.29
Cotton	0.22	0.02	0.05	--	--
Copper	0.10	--	--	--	--
Hides & skins,-exc.fur skins- undre	--	--	0.08	--	--
Fish,fresh & simply preserved	--	--	--	0.14	0.26
Tobacco, unmanufactured	--	--	--	0.09	0.13
Share in total exports	0.87	0.97	0.89	0.79	0.67

Source: UN Comtrade.

Annex Figure 5: Trends in Hides, Skins and Leather Exports
(In unit as indicated)

Figure 5.a : Trends in Hides, Skins and Leather Exports, 1976-2004 ('000 US\$)

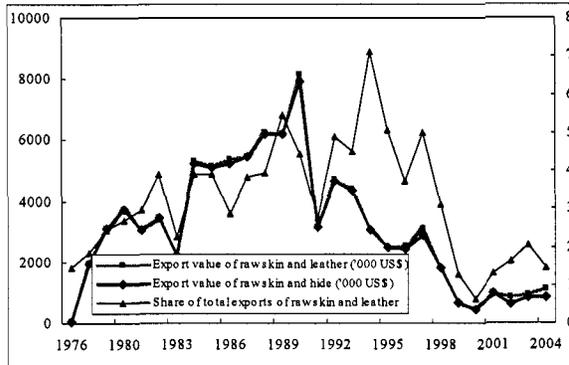
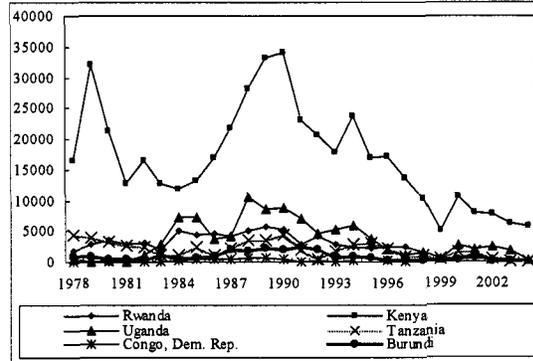


Figure 5.b : Regional Exporters of Hides and Skin to Italy, 1978-2004 ('000 US\$)



Source: UN COMTRADE

Annex Table 13: Substantial Growth in Rwanda's Hides and Skins Export Products
(In unit as indicated)

	1999-2001 (US\$ 000)	2002-2004 (US\$ 000)	Period Change (Percent)
Bovine & equine hides	375.0	102.0	-72.9
Calf skins, raw	54.0	196.0	260.6
Goat & kid skins, raw	105.0	291.0	176.7
Sheep & lamb skins with wool on, raw	134.0	176.0	31.9
Leather of other bovine cattle and	0.0	15.0	
Sheep and lamb skin leather	8.0	41.0	419.0
Leather of other hides or skins	0.0	125.0	
Total (hides, skin and leather)	694.0	946.0	36.3

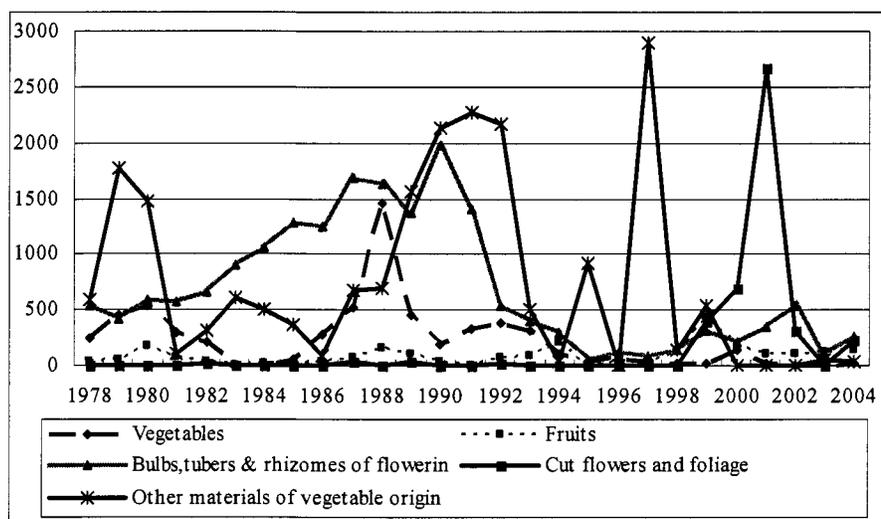
Source: UN Comtrade

Annex Table 14: Increased Trends in Exports from Rwanda to Major World Markets (US\$ 000)

	Hides and Skin		Leather	
	1999-2001	2002-2004	1999-2001	2002-2004
Italy	398	239	8	40
Spain	194	59	0	85
Kenya	14	95	--	--
Pakistan	66	88	--	--
Greece	64	143	--	--
Turkey	0	225	--	--
Hong Kong, China	142	79	--	--
Total of all markets	681	764	13	181

Source: UN COMTRADE.

Annex Figure 6: Trends in Horticulture Exports Exports, 1976-2004 ('000 US\$)



Source: UN COMTRADE.

Annex Table 15: Substantial Upward Trend and Growth in Rwanda's Horticulture Exports, 1995-2004 ('000 US Dollar)

	1995-98	1999-01	2002-04	2004
Vegetables	34.6	55.5	4.5	9.0
Fruits	46.9	232.5	121.0	132.3
Fresh or dried fruits	46.8	232.3	119.1	126.9
<i>of which: Banana</i>	28.7	118.6	93.4	94.8
Prepared fruits (juice, jelly etc.)	0.1	0.2	1.8	5.5
Bulbs, tubers and rhizomes	104.3	282.8	305.9	266.9
Cut flower and foliage	0.4	1252.2	177.0	221.0
Other materials of vegetable origin	990.0	180.2	23.8	28.0

Source: UN COMTRADE statistics

Annex Figure 7: Demand for Horticultural Products in the EU and US Markets Is Growing

Figure 7.a: European Market Demand for Horticulture Products, 1978-2004 ('000 US Dollars)

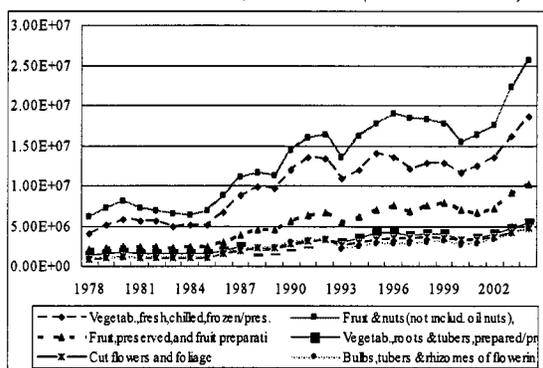
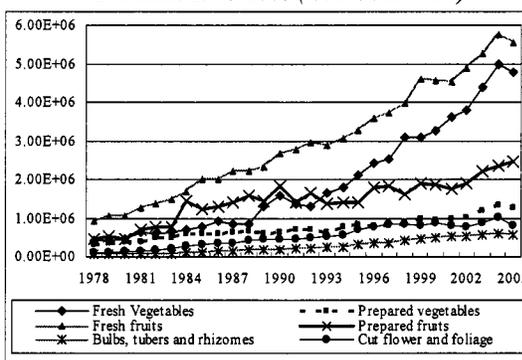


Figure 7.b: US Market Demand for Horticulture Products 1978-2005 ('000 US Dollars)



Source: UN COMTRADE.

Annex Table 16: Kenya Dominates Regional Exports to EU Horticulture Market, 1995 and 2004 (in unit as indicated)

	1995		2004	
	Value ('000 US \$)	Percentage of European market	Value ('000 US \$)	Percentage of European market
Fresh Vegetables	79314	0.56	209839	1.13
<i>of which: Kenya</i>	70582	0.50	190085	1.02
Fresh Fruits	22866	0.13	35658	0.14
<i>of which: Kenya</i>	20729	0.12	33429	0.13
Bulbs, Tubers and Rhizomes	5795	0.20	54354	1.16
<i>of which: Kenya</i>	5240	0.18	37388	0.80
Cut Flowers and Foliage	111017	3.26	336968	7.21
<i>of which: Kenya</i>	103963	3.06	296789	6.35

Source: UN COMTRADE.

REFERENCES

- Aersten, George, Augustin Mutijima, Sylvain Mbarugeye*, March 2006. Rwanda Agricultural Policy Note, Background study #1: Prospects for achieving sustainable agricultural growth in Rwanda, Ministry of Finance and Economic Planning, Republic of Rwanda.
- Africa Mining Intelligence*. 2004, As quoted in Thomas R. Yager “The Mineral Industry of Rwanda” in U.S. Geological Surveys Minerals Yearbook – 2004, pp33.1.
- Akitoby, Bernardin & Matthias Cinyabuguma*. 2004. Sources of Growth in the Democratic Republic of the Congo: A Co-integration Approach. International Monetary Fund, WP/04/114.
- ATDT Banana Project – Rwanda*” www.isar.cgiar.org/atdt/Banana/banana.htm.
- Aureille, Yves G. & Serge Rwamasirabo*. Spring 2006. Patterns of Competitiveness and Comparative Advantage in Rwanda Agriculture.
- Byakweli*. 2004 (incomplete).
- Chandra, Vandana, I. Osorio, M. Desai, and Y. Li*. 2006, Export diversification Rwanda too many export discoveries, too little scaling-up (Background paper for the Rwanda Country Economic Memorandum).
- Chandra, V. (ed.)*. 2006, Technology, Adaptation and Exports – how some developing countries got it right, The World Bank.
- Coulibaly, Kalamogo and Tembo R.B. Maburuki*. 2006, Cross-border trade in Rwanda (Background paper for the Rwanda Country Economic Memorandum).
- Dabalén, Andrew, Stefano Paternostro and Gaelle Pierre*. December 2004, The Returns to Participation in the Non-Farm Sector in Rural Rwanda, World Bank Policy Research Working Paper 3462.
- Diao, Xinshen and Yu Bingxin*, May 2006. Agricultural Growth and Poverty Reduction Options in Rwanda – Background Study #4 for Rwanda Agricultural Policy Note, International Food Policy Research Institute.
- Diao, Xinshen and Yu Bingxin*. August 2005, Growth and Poverty Reduction Options in Rwanda: An Economy wide, Multi-Market Model Analysis for 2004-2015, Second Draft, Development Strategy and Governance Division, International Food Policy Research Institute.
- Diamond, Jack and Poka Khemani*, 2005. ‘Introducing Financial Management Information Systems in Developing Countries’. IMF Working Paper. International Monetary Fund, October.
- Diop, Ndiame, Paul Brenton and Yakup Asarkaya*. 2005, Trade Costs, Export Development and Poverty in Rwanda World Bank Policy Working Paper 3784. The World Bank.

- Economist Intelligent Unit.* 2006, Country Report, Rwanda, 2006.
- Elbadawi, Ibrahim.* 2002. "Real Exchange Rate Policy and Non-traditional Exports in Developing Countries," in G.K. Helleiner (ed.), *Non-Traditional Export Promotion in Africa: Experiences and Issues*, Palgrave: New York.
- Elbadawi, Ibrahim, L. Kaltani and R. Soto.* 2006, "Real Exchange Rate Misalignment in SSA: How Serious, How Dangerous," Unpublished World Bank Memo (forthcoming).
- Electrogaz.* 2004: Annual Report.
- Ezemenari, Kene and Kalamogo Coulibaly.* 2006A, Total factor productivity growth and economic reforms: Evidence from Rwanda (Background paper for the Rwanda Country Economic Memorandum), World Bank.
- Ezemenari, Kene and Kalamogo Coulibaly.* 2006B, Sources of growth in Rwanda: Four different complementary approaches (Background paper for the Rwanda Country Economic Memorandum), World Bank.
- Ezemenari, Kene and Ephraim Kebede.* 2006, Rwanda's growth Path and Binding Constraints (Background paper for the Rwanda Country Economic Memorandum).
- Ezemenari, Kene, Kebede Ephraim and Rutayisire Musoni.* 2006, Sources of Inflation in Rwanda, (Background paper for the Rwanda Country Economic Memorandum) Unpublished, World Bank.
- Ezemenari, Kene, Kebede Ephraim.* 2006, The Impact of Aid on Fiscal Policy in Rwanda Implications for Growth and Poverty Reduction. (Background paper for the Rwanda Country Economic Memorandum.
- Ezemenari, Kene and Rui Wu.* January 2005, Earnings Differences Between Men and Women in Rwanda, Africa Region Working Paper Series Number 81, 32053, The World Bank.
- FAO.* 2006, "Consultation on Hides and Skins", Arusha, Tanzania, February 1, 2006.
- FAOSTAT 2005*
- FIAS.* 2006a. Government of Rwanda – Sources of Informal Economic Activity. International Finance Company. November.
- FIAS.* 2006. Sector Study of the Effective Tax Burden, Rwanda. Foreign Investment Advisory Service. A joint service of the International Finance Corporation and the World Bank. January.
- Goessens and Rwamasirabo* 2006. (incomplete). Agriculture Policy Note Background Paper.
- Ghura, Dhaneshwar and Benoit Mercereau.* 2004. Political Instability and Growth: The Central African Republic, International Monetary Fund, WP/04/80
- Government of Rwanda.* 2006a. The National Accounts for Rwanda—Sources and Methods for GDP Estimates (base year 2001), National Institute of Statistics. December.

- Government of Rwanda*. 2006b. Rwanda Demographic and Health Survey. National Institute of Statistics, July.
- Government of Rwanda*. 2005. Rwanda's Coffee Industry—Current Situations and Proposal for Action, Report of the Coffee Task Force, December.
- Government of Rwanda*. 2001. Rwanda Household Living Condition Survey (EICV).
- Government of Rwanda*. 2002. Population Census.
- Hausman, Rodrick and Roberto Rigobon*. 2002. An alternative interpretation of the 'Resources Curse': Theory and policy implications, NBER Working Paper 9424
- Hausman, Ricardo, Dani, Rodrik, and Andres Velasco*, 2005, "Growth Diagnostics," John F. Kennedy School of Government, Harvard University.
- Imani Development Group*. 2006. Support to Rwanda's Accession to the East African Community: Volume 1, Economic Impact Report. May.
- Imbs and Wacziarg*. 2003 (Incomplete).
- International Monetary Fund (IMF)*. 2006. <http://www.friendscentre.net/home.html>. International Financial Statistics database.
- IMF*, 2005. "The Macroeconomics of Managing Increased Aid Inflows: Experiences of Low-Income Countries and Policy Implications" Available at <http://www.imf.org/external/np/pp/eng/2005/080805a.pdf>. IMF, Staff reports, various years International Telecommunication Union.
- Joseph, K.J.* 2002. 'Growth of ICT and ICT for Development, Realities of the Myths of the Indian Experience'. Discussion Paper No. 2002/78. World Institute for Development Economics Research (WIDER). United Nations University. August.
- J. E. Austin Associates, Inc.* 2006, Rwanda: Export Competitiveness Desk Study (Background paper for the Rwanda Country Economic Memorandum).
- Kanimba, Francois*, Deepening the financial market in Rwanda. Power point presentation, September 2004.
- Kassahun, Rahel*. 2006, Development of Tourism in Rwanda: Unleashing the Sector's Potential to Drive Export Growth (Background paper for the Rwanda Country Economic Memorandum).
- Kawai, Masahiro and Shinji Takagi*, 2001. "Proposed strategy for a regional exchange rate arrangement in post-crisis East Asia," manuscript, World Bank.
- Kelly and Murekezi*. 2000 (Incomplete.)
- Klinger, B. and D. Ledermen*. 2006. Diversification in the Search for Innovation and Export Booms. Draft Working Paper, World Bank.
- Lall, S.* 2001, "Technology, Competitiveness and Skills," Cheltenham, Edward Elgar.

- Loveridge, S.* 1989. (incomplete).
- Lall, S.* 2001. **“Technology, Competitiveness and Skills,” Cheltenham, Edward Edgar.**
- Lasbille, Gerard and Jee-Pan Tan.* 2004, The returns to Education in Rwanda, *Journal of African Economies*, Vol.14, 92-116.
- Linjouom, Mireille.* 2006. The impact of the higher oil prices on Rwanda economic (Background paper for the Rwanda Country Economic Memorandum).
- Madon S. and G. Kiran.* 2002. Information Technology for Citizen-Government Interface: A study of FRIENDS project in Kerala. World Bank Global Knowledge Sharing Program (GKSP).
- Ministry of Finance and Economic Planning,* National Accounts, Direction of Statistics, Republic of Rwanda.
- Ministry of Finance and Economic Planning,* Government Operations 1995-2005, Republic of Rwanda.
- Ministry of Agriculture and Forestry.* February 2006, Statistics series, Republic of Rwanda.
- Ministry of Agriculture and Forestry.* 2004, Statistics series, Republic of Rwanda.
- Ministry of Agriculture, and Forestry and BM.* May 2004. Utilisation et Accessibilité des Engrais Inorganiques au Rwanda.
- Ministère des Finances et de la Planification Economique.* Novembre 2005. Impact de la crise de l'énergie sur la croissance économique au Rwanda, République du Rwanda
- National Bank of Rwanda (BNR),* Republic of Rwanda OCIR Café. 2005, Republic of Rwanda.
- Nugawela, P, V. Bicali, and V. Ndagijimana.* 2004 “Review and Assessment of Micro- and Small-Scale Enterprises in Rwanda, Background paper for the Country Economic Memorandum
- Nkama, Arsene Honore Gideon.* April 2005, Sources of Growth and competitiveness in Rwanda, (Background paper for the Rwanda Country Economic Memorandum), World Bank.
- Obidegwu, Chukwuma.* 2003, “Rwanda: The Search for Post-Conflict Socio-Economic Change, 1995-2001.” Africa Region Working Papers Series, Number 59, World Bank.
- OCIR Tea.* 2005, Republic of Rwanda.
- OECD.* 2003a. ‘ICT and Economic Growth: Evidence from OECD Countries, Industries and Firms’. Organization for Economic Co-operation and Development.
- OECD Development Centre (?).* Providing Low-Cost Information Technology Access to Rural Communities in Developing Countries: What Works? What Pays? OECD Development Centre Working Paper No. 229.
- On The FRONTIER,* Rwanda National ICT Usage Survey, August 2003.

- Peters, Marjolein and Huib Poot.* November 2005, The role of employment in Rwanda's Poverty reduction strategy. Labour market, employment considerations, employment policy, ECORYS-NEI, Labour & Social Policy (Background paper for the Rwanda Country Economic Memorandum).
- Recensement des activités lucratives de la ville de Kigali, 2002 (incomplete).*
- Rutayisire, J. Musoni.* Monetary Policy and demand for money in Rwanda: application of co-integration techniques and the error-correction model (1980-2000), May 2004.
- S. Eken, Abdourahmane Sarr, Jacques Bouhga-Hagbe and Jerome Vandebussche,* 2005. International Monetary Fund, Morocco Selected Issues, Country Report No. 05/419.
- Scetauroute.* 2002. Report on Roads. Prepared for the European Union. Paris.
- Sekkat, Khalid and Aristomene Varoudakis.* 1998. Exchange-rate management and manufactured exports in Sub-Saharan Africa, Working Paper No. 134, OECD Development Centre.
- U.S. Census Bureau,* Global Population Profile. 2002.
- USAID.* 2006, USAID/Rwanda Integrated Strategic Plan 2004-2009, Volume 1, January.
- Tahari, Amor; Dhaneshwar Ghura; Bernardin Akitoby and Emmanuel Brou Aka.* 2004 Sources of Growth in Sub-Saharan Africa. International Monetary Fund WP/04/176.
- Temesgen, Tilahun, Kene Ezemenari, Louis Munyakazi and Emmanuel Gatera* "The Rwandan Industrial and Mining Survey (RIMS), 2005: Survey Report and Major Findings" The World Bank and National Institute of Statistics of Rwanda (NISR); October 2006.
- TerraCom Communications:* <http://www.terracom.rw/> .
- The New Times,* "Axis of ICT Success" May 6, 2006.
- The Rwandan Industrial and Mining Survey (RIMS),* 2005.
- World Bank,* 2002. *World Bank Development Indicators (WDI) 2002,* World Bank, Washington DC.
- World Bank,* 2003. *Nigeria, Policy Options for Growth and Stability,* By Douglas Addison, Report N0.26215-NGA, Washington DC: The World Bank.
- World Bank,* 2004. *Micro and Rural Finance in Ghana: Evolving Industry and Approaches to Regulation. Findings Newsletter* number 234, January.
- World Bank.* 2005a. *Rwanda Diagnostic Trade Integration Study,* November.
- World Bank.* 2005b, *World Economic Indicators,* World Bank: Washington, DC.
- World Bank.* 2005c. *Private Solutions for Infrastructure in Rwanda,* A country Framework Report, the Public-Private Infrastructure Advisory Facility and the World Bank Group.
- World Bank.* 2005. *Study on Labor Market Policy in Rwanda* Final report (Background paper for the Rwanda Country Economic Memorandum), November.

World Bank. 2006a. Rwanda Agricultural Policy Note, Rwanda Agricultural Markets Overview Background Study #2 March 31.

World Bank. 2006b. World Bank Development Indicators (WDI) database, World Bank, Washington DC.

World Bank, 2007. Promoting Pro-Poor Agricultural Growth in Rwanda: Challenges and Opportunities. Report No. 39881-RW. June. Sustainable Development (AFTS3), Country Department 2 (C2), Africa Region.

World Bank, Several Years. Doing Business Report, <http://www.doingbusiness.org>.

WTO: Trade Policy Review Rwanda. Report by the Secretariat WT/TPR/S/129 13 April 2004.

Yongling, Zhong.2004. 'Information Services in Rural China - Field Surveys and Findings'. Information Centre, Ministry of Agriculture, People's Republic of China. RAP Publication 2004/03. Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific. Bangkok.

The African Growth and Opportunity Act: Achieving Success through the African Global Competitive Initiative", June 2006, www.agoa.gov.

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