

# **HOUSEHOLD LIVELIHOODS, MARKETING AND RESOURCE IMPACTS: A CASE STUDY OF BARK PRODUCTS IN EASTERN ZIMBABWE**

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# Markets for Three Bark Products in Zimbabwe: A Case Study of Markets for Bark of *Adansonia digitata*, *Berchemia discolor* and *Warburgia salutaris*

M. Veeman<sup>1</sup>, M. Cocks<sup>2</sup>, A. Muwonge<sup>3</sup>, S. Choge<sup>4</sup> and B. Campbell<sup>5</sup>

<sup>1</sup> Department of Rural Economy, University of Alberta, Canada, Edmonton, Canada

<sup>2</sup> Institute for Social and Economic Research, Development Studies Unit, University of Rhodes, South Africa

<sup>3</sup> Faculty of Development Studies, Mbarara University, Uganda

<sup>4</sup> Kenya Forestry Research Institute, Nairobi, Kenya

<sup>5</sup> Center for International Forestry Research, Bogor, Indonesia

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## Abstract

*Markets for craft and medicinal products derived from the bark of three tree species were assessed in rural and urban areas of Zimbabwe. Bark crafts from Adansonia digitata (baobab) are widely sold in these regions. The number of sellers has increased since the 1980s and has remained relatively stable since then. Competition for local purchasers is provided by domestic and imported substitutes. Most baobab craft items are relatively bulky and the export market for them is largely limited to affluent travellers from South Africa. This is a relatively localized market. Seasonality in baobab craft production and sales is pronounced in the rural area. Prices are transparent and arbitrage appears to occur. This is not the case in the markets for the bark of Warburgia salutaris, which is used as a traditional medicine. There are relatively few sellers, prices do not exhibit regionally consistent patterns and this species appears to have become locally extinct. Bark of Berchemia discolor is not highly commercialised in this region; no sales of this bark were observed in the course of the study.*

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## Introduction

Non-timber forest products are widely used by rural households throughout Africa and elsewhere and can be important components of the livelihoods of poor people (Campbell et al., 2000). For example, surveys in a typical area of rural Zimbabwe in the mid-1990's showed more than 35% of family income to be derived from a wide range of forest products; this was a particularly important income source for the poorest families (Cavendish, 2000). Amongst the products derived from woodlands, tree bark that is used for making rope, baskets and other items, as well as medicines derived from bark or roots, are important to many rural people (Katerere et al., 1993). This paper focuses on markets for craft products made from the bark of the baobab tree, *Adansonia digitata*, together with the associated use of the bark of *Berchemia discolor*, used to dye these and other craft products, and the bark of the pepper-bark tree, *Warburgia salutaris*. *Warburgia* bark has long been widely used as a traditional medicine for colds, coughs and other purposes in rural and urban areas in southern Africa, including Zimbabwe (Mukamuri and Kozanayi, (in prep).

The study of markets for these types of non-timber forest products is of interest for several reasons. Such markets are often observed to operate largely in the informal sector. Consequently, relatively little information on them is generally available. Information on the

scope and nature of these markets can be helpful to guide public policy. For example, market studies may be a useful check on other measures of the extent of extraction of woodland products, giving necessary information for the design of policies to guide sustainable management of woodland resources. In this region it has been observed that wood and bark craft sales appear to have increased over time, particularly since the 1950s, raising concerns by botanists and ecologists that increased harvesting may be placing pressure on the species used for these purposes (Braedt and Standa-Gunda, 2000; Mukamuri and Kozanayi, (in prep)). Studies of markets for non-timber forest products can complement ecological assessments of the extent to which these resources are harvested or extracted. Studies of the operation of informal markets may also suggest ways in which these markets may be improved to the benefit of market participants. Since markets for woodland products can be important sources of livelihood for poor rural people, for whom other income-generating activities are typically very limited, the possibility of improving the way in which such markets operate can be important to sustain rural livelihoods.

The bark of each of the three species of tree considered is largely harvested as an open access resource. However, one of the three species, *Adansonia digitata*, is often found in populated areas close to homesteads, as well as in woodland. As is the case for other tree products, open access harvesting does not apply within the homestead area. In grazing areas and other commonly-used land, harvesting is limited to members of the village or with the permission of village leaders (Mukamuri and Kozanayi, (in prep)). *Berchemia discolor* is most commonly found in woodland while *Warburgia salutaris* appears to have become locally extinct.

Extraction of the three barks that are the focus of this study is thought to have increased during the past decade for a number of reasons. Increase in tourism in Zimbabwe since 1980 may have contributed to growth in demand for curios and craft items, including those made from bark (Braedt and Standa-Gunda, 2000). In contrast, increased demand for bark-based and other natural medicines may have arisen from increased domestic use, rather than from tourists. Increased commercialisation of bark and other natural resources in southern Africa is also believed to have been stimulated by economic hardship that accompanied severe droughts in the late 1980's and early 1990's, as well as a lack of growth in the national economy. These events had adverse consequences for poor families, particularly in areas of low agricultural capacity, leading families with limited resources to seek other sources of income, such as from the harvesting, processing and sale of woodland products (Cavendish, 2000).

The various influences noted above are believed to have contributed to an increase in the use and sale by households of bark products and the growth of markets for these in both rural and urban areas. Increased commercialization of the barks of all three species is hypothesised to have direct economic, social and ecological impacts. The nature of these impacts is assessed in this and three companion papers (Luckert et al., (in prep); Romero et al., (in prep); Veeman et al., (in prep)).

## Background to the three species and their commercialisation

### ***Adansonia digitata***

The species *Adansonia digitata* is a relatively short and distinctive tree, of about 10 to 15 m in height, found throughout Africa, in low-lying hot dry woodland areas (Coates Palgrave, 1983). This tree is commonly found in low-lying valleys and riverine areas of Eastern Zimbabwe. Extensive stripping and commercialization of this bark tends to be concentrated in an area of Eastern Zimbabwe that is included within the study region. The removal or stripping of baobab bark, and the use of the inner fibrous portion of this to make twine and craft products is aided by the unique capacity for bark regeneration exhibited by *Adansonia digitata*. Villagers interviewed during the course of this study stated that bark could be re-harvested from the same location of the baobab trunk after two years (Romero et al., (in prep)).

Baobab fibre processing typically involves discarding the outer non-fibrous layer of bark and pounding the remaining thick fibrous layer of bark, often during the process of bark removal, in order to convert this into thin fibrous strips. These are air-dried and may be dyed using natural dyes from *Berchemia* bark or seeds of various trees. Dyes made from shoe polish or soot are also used in some instances. Bundles of dried baobab fibre are in turn finger-woven into broad plaited strips. The side edges of these are sewn together to make small door mats or floor mats of various sizes. Alternatively, baobab fibre may be twisted into string or rope for farm or household use. The twisted fibre may also be needle-woven into bags, hats and small mats. Using a framework of other natural products such as grass or reeds, variants of these methods of construction may be used to make other products, including large and small baskets that can be used for a variety of purposes, such as for waste paper or laundry. These craft products are primarily made in the Birchenough Area of Eastern Zimbabwe, described below.

In the course of this study it became evident that there is a market for bundles of baobab fibre, both dyed and undyed, associated with the production and sale of craft products. In the study region, baobab fibre bundles are purchased by those weavers of craft products who do not have direct access to this bark or to those who tend to specialise more in making and selling their products than in harvesting fibre.

### ***Berchemia discolor***

*Berchemia discolor*, an occasionally shrubby but well-shaped tree of 10 to 20 m in height, is also found in low altitudes in open dry woodland or riverine fringe areas (Coates Palgrave, 1983). Bark of *Berchemia discolor* may be collected from stems, branches or even from roots, and this is boiled in water to produce dye. Fibre to be dyed is soaked in this solution, until the desired purple colour is achieved, and then hung to dry. In contrast to the bark of *Adansonia digitata* and *Warburgia salutaris*, in the study region the bark of *Berchemia discolor* is not as highly commercialised as in some other regions of Zimbabwe (Cunningham and Liebenberg, 1998).

## **Warburgia salutaris**

*Warburgia salutaris* grows in evergreen forest and wooded ravines, as in the mountainous moist areas of Eastern Zimbabwe (Coates Palgrave, 1983). The use of the bark of *Warburgia salutaris* is believed to have greatly increased during the period of more than a decade of unsettled conditions and war prior to Zimbabwe's independence in 1980, and in the subsequent period of Mozambique warfare, when guerrilla fighters had little access to other medicines. Consequently *Warburgia salutaris* is now believed to be extremely rare in Zimbabwe but this tree may still be found in the mountainous areas of Chimanimani and in adjoining areas of Mozambique. A companion study to this paper reports on the potential use of *Warburgia salutaris* as a cultivated species by rural people in the Mount Selinda area (Veeman et al., (in prep)).

## **The study area**

Market assessments and vendor interviews were conducted in major markets for baobab craft products and for *Warburgia* bark. Markets for these were identified in and adjacent to the capital city, Harare, the most populous urban region of Zimbabwe. Markets for baobab craft items and *Warburgia* bark were also identified and studied in Mutare, the closest city to the resource areas for both *Adansonia digitata* and *Warburgia salutaris*. Subsequently, the focus of the investigation shifted to the major regions in which *Adansonia digitata* bark is harvested. Information was sought on the sale of these products in other towns and market centres in the regions along the road between Harare and Mutare and from Mutare to Birchenough Bridge. The latter section of this major road attracts considerable traffic from travellers to Zimbabwe from South Africa, leading many individual vendors of baobab craft products to establish roadside stalls along this road. The region includes the predominant area of baobab bark harvesting in Zimbabwe, south of Hot Springs. Climatic and associated limitations of this area restrict the opportunities for agriculture and this was a factor leading to the earlier establishment by government of two irrigation programs in the region.

In the most northern community in the study area, Jinga village and communal area just north of Hot Springs, there is less evidence of bark stripping, no roadside craft stalls, and much less evident involvement in harvesting and manufacture of baobab craft items than in the other villages that were the focus of this study. These include the cluster of villages south of Nyanyadzi along the Mutare Road until Birchenough Bridge and on the intersecting road to Tanganda, which are the sites of much baobab bark harvesting. In this part of the study region, some villagers currently make considerable use of fibre from *Adansonia digitata* for the production and sale of baobab crafts. This region is the major source of commercialised baobab bark as well as being a major local market region for baobab products and the associated use of *Berchemia* dye. This resource region is referred to as the Birchenough Area in the rest of the paper. The sale of *Warburgia* in traditional markets in this region was also investigated.

## **Methods**

The bulk of the fieldwork was conducted in May 1999 during a multidisciplinary workshop, involving anthropologists, botanists, ecologists, economists, and sociologists. Following the identification of major urban markets for the specified crafts and for *Warburgia*, key

informants were located in each of the markets, based on initial interviews and discussions. These were either the headman or chair of the particular market committee, where such committees existed, or a trader identified as a leader by his/her fellows in the identified markets. In most instances these individuals participated in subsequent interviews on market organization and acted as contact persons for arrangements to visit the identified urban markets in order to interview vendors.

Six market assessment teams, each of which consisted of four researchers/enumerators, visited each identified urban market. Four of the teams visited craft markets, while two teams visited the traditional urban markets for *Warburgia*. Interviews were conducted in eleven of the twelve markets visited in Harare. Two members of each team conducted interviews on market organization with key informants. The other two team members conducted interviews with sellers. Interviews were conducted using questionnaires developed for the purpose of identifying the nature of the organisational arrangements, market behaviour and other characteristics of sellers that applied in each of the pre-identified urban markets. Questionnaires were pretested in initial interviews with market contact people.

The semi-structured interviews with key informants about the organisation of markets focused on general market organisation and institutional arrangements in order to identify such features of market organisation as market-level committees, rules and regulations, conflict resolution, and the entry conditions for new sellers. Observations on each market were also noted and recorded in this "market organisation questionnaire survey".

In each market, a questionnaire-based interview with a seller of bark products was also conducted. For this purpose, where feasible, market stalls were numbered and a seller was randomly selected. Random selection of sellers was not, however, possible in some markets where only one or two stalls sold bark products. The "seller questionnaire survey" collected information on the general characteristics of the seller (age, gender, education), quantities of product sold per month, prices, and sources of products.

Market assessment teams also visited each identified market for the purpose of undertaking one or more purchases of selected bark products. Where possible, each market purchase team located two randomly-selected sellers of the identified bark products. Each pair of researchers purchased a representative item of the bark product, after bargaining. One member of each purchase team unobtrusively observed the process and the market. The composition of the market purchase teams was tailored to be reasonably representative of typical buyers in particular markets. Thus *Warburgia* bark, purchased in traditional markets, was bought only by male Shona-speaking Zimbabweans. However, the identified craft markets were visited by teams of Zimbabwean and foreign researchers. Each craft market assessment team included a Shona speaker. Every fourth purchase of a baobab craft item was made by a Zimbabwean researcher. The foreign researchers made the other purchases. The purchased baobab craft items included mats (medium or small), bags and hats. For *Warburgia*, buyers purchased both powder (where this was available) and bark. Immediately upon leaving the market, a simple purchase record form (the "purchase survey form") was completed, recording the buyer, location, date, time, opening price and contracted price for the purchased item, whether the item was collected/harvested or purchased by the vendor and the regional source of the purchased item. To reduce possible bias in purchase prices, the purchases and interviews were conducted at varying times during the day. Purchasers attempted to simulate behaviour of typical buyers and did not identify this as a research project.

In the Birchenough Area, the market stalls that were in operation were identified and a random sample of these was drawn. A similar process of making purchases, recording details of purchased bark items and interviewing sellers was followed. However, it was not feasible to conduct independent purchases and seller interviews at vendor's stalls in the baobab resource area since at any one time there were only a few sellers in particular locations, due to the dispersed nature of this market. Thus, following the conclusion of each actual purchase from vendors in the Birchenough Area, each team of two researchers/interviewers introduced themselves to the seller and subsequently conducted the seller questionnaire interview. This was also necessarily the process that applied in each instance for purchases of *Warburgia* bark.

Each purchased item was tagged and data on size and weight were subsequently recorded, in addition to the price per item. For each purchased craft item, the product purchase record included a rating for the extent of use of *Berchemia* dye and a quality rating. The craft quality ratings were based on scores from two assessors, a local craftsman and a foreign visitor, who categorised each item into an overall quality category, using a scale from 1 (designated as very poor) to 5 (designated as very good), based on the two individuals' assessments of four quality attributes. The four designated quality attributes were design, texture, weaving and general appearance. The sum of the two individual ratings was used to categorise the quality of each purchased craft products as High (based on sum of scores from 8 to 10), Medium (sum of scores from 5 to 7.9) and Poor (sum of scores from 2 to 4.9). For the purchased *Warburgia* bark, both air-dried and oven dried (at 80°C for 72 hours) weights were obtained. The data collected through the various interviews and observations were checked, coded, entered into spreadsheets and formed the basis for the analyses reported here.

Discussions were held with key informants and village headmen in the Birchenough Area where group meetings of villagers were also conducted to elicit information in a participatory manner. Results of this process that pertain directly to marketing of bark products are reported here. In the course of conducting the purchase and seller surveys, several middlemen traders of baobab craft products were encountered and these people agreed to be interviewed, as was the case for baobab bark harvesters who were observed during the course of market and ecological data collection. In anticipation of this study a number of background investigations had been conducted in the Birchenough Area since 1996 concerning bark harvesting, uses and vending. Some of this information is drawn on in the current paper. Another component of the research conducted in May 1999 involved the development and application of a questionnaire of households in three villages in the study region (Luckert et al., (in prep). Ecological assessments conducted in the study region were also made in May 1999 (Romero et al., (in prep). Some results from these studies are drawn on in assessing conduct and performance in the markets for the specified bark products. At the time of the study US\$1 was worth approximately Z\$38.

## **Results: Market structure and conduct**

### **The markets**

Baobab bark items are relatively bulky, low-value craft items that are not extensively stocked in formal souvenir or craft market outlets that cater to overseas visitors. We did find baobab crafts in a few formal sector craft stores located on the road route between Harare and the

Birchenough Area. Most sales are in informal roadside craft markets. Sales may be made from open air stalls (which have minimal structures) or, less frequently, in structured stalls, in which some form of building or structure provides shelter or shade and storage for vendors and their products, typically allowing a larger number and range of items to be offered for sale.

In urban areas, informal craft markets are usually located on major road routes, typically along the roadside or adjacent to shopping centres or service stations (Table 1). The informal craft markets varied in the number of vendors and the stock and nature of items for sale. Some were large, with 30 or more sellers of a variety of craft items made from wood, stone or fabric. In these markets, only one or two vendors typically offered baobab items. In other cases the markets visited had only five or less stalls, including one or two sellers of baobab items, and a variety of other products, such as wood, metal and palm furniture and other household goods. In most instances the informal craft vendors were also craft producers, although they may also have purchased items for sale from family members or from traders. In some instances the owner of the craft stall hired others to act as vendors. These vendors generally received a wage and retained, as a commission, any sum exceeding the minimum price specified by the stall-owner.

In the Birchenough Area, there were large numbers of open-air craft stalls that sold only baobab craft items. Often these displayed for sale only one or two items, like floor mats. Many of these were roadside stalls situated near vendors' homesteads where the products were displayed on simple pole structures. These particular craft stalls were typically owned and operated by family members, including members of the extended family. Structured informal market stalls that resemble stores were also found in the Birchenough Area in roadside locations. Some of these were mud walled, while others were constructed from bricks, with tin or asbestos roofing. Typically these were owned by individuals and operated by family members. In some instances craft items sold in structured stalls were supplied by family members or directly purchased from other weavers. In other instances, retailers of baobab craft items at structured stalls purchased these from baobab craft traders who specialised as wholesaling middlemen. A number of informal-sector craft stalls in this region were situated in clusters but operated independently. There was one organized structured market in the baobab resource area, located at the Nyanyadzi Business Centre, where informal sector vendors operate stalls in a large roofed structure that had been built by the local council for the purpose of vending. Originally this was proposed to be used for vending vegetables from a nearby irrigation project; however, due to less reliable water availability than had been envisaged, this facility had not been used for its original purpose but has been used for craft vending.

Information on middlemen traders was elicited in the course of interviewing sellers and traders. These individuals did not act as agents for weavers or retailers and thus did not receive commissions for their services, but undertook instead the risks and costs of buying from weavers and storing, transporting and selling these items. Some such traders sold to stall owners in Harare or Birchenough, thus acting as baobab craft wholesalers. Others sold directly to final purchasers, as in Harare (or in one case at Masvingo). These individuals typically lived near the baobab resource area.



**Table 1:** An overview of the sampled markets in Harare, between Harare and Birchenough, and in the Birchenough Area. Unless otherwise indicated the markets include baobab craft items.

<b>Location</b>	<b>Type of market</b>	<b>General characteristics of market(s)</b>
<b>Sampled urban markets: Harare</b>		
Avondale	Informal craft	Affluent area
Bond	Informal craft & vegetables	Affluent area
Eastlea	Informal mixed	Major traffic route
Greencroft	Informal mixed	Major traffic route
Groombridge	Informal mixed	Affluent area; shopping centre
Highlands	Informal craft	Major traffic route
Lomagundi Road	Informal craft	Major traffic route
Second Street	Informal craft	Affluent area; shopping centre
Westgate	Informal mixed	Major traffic route; shopping centre
Mbare (Warburgia)	Informal mixed	Very large traditional market
Machipisa (Warburgia)	Informal mixed	Traditional market
Highfield (Warburgia)	Informal mixed	Low income area; traditional market
<b>Markets Between Harare and Birchenough Area</b>		
Malwatte	Formal craft shop & restaurant at Marondera	In each case, these market outlets are located on a major highway between Mutare and Harare in a commercial farming area
Halfway House	Tourist shop & restaurant at Headlands	
Rusape Bus station	Informal mixed, Rusape	Low income area
Sakubva (Warburgia)	Informal mixed, Mutare	Traditional market
Blue Star Service Station	Informal craft, Mutare	Both are located on a tourist route through the medium sized city of Mutare
Jairos Jiri	Formal craft, Mutare	
<b>Birchenough Area</b>		
Birchenough Area	Informal craft Warburgia is sold in the traditional market at Birchenough Bridge	Many small roadside craft stalls are scattered along a major route; some larger vendors; one organized market at Nyanyadzi

They attempted to prearrange purchases of specific craft items from villagers and might have to hold purchased goods for several weeks before accumulating sufficient supplies to market these. These traders used local buses, lorries, or train to transport their accompanied goods between producers and market centres.

Mark-ups from 25% to 50% of the purchase price were reported by one trader who purchased large mats from family members in the Birchenough Area and resold these directly to tourists in Harare. However, resale mark-ups of 100% over the price at which crafts were purchased from weavers were more typically reported for these middlemen. These mark-ups did not appear overly high in view of the relatively small numbers of items traded by the individuals and the risks and costs of their vending activities, including the costs of transporting and accompanying their goods to market, their costs to rent or gain access to a stall and their subsistence costs until the goods were sold.

In contrast to the markets for baobab and other craft products, fewer market outlets were found for *Warburgia* bark. This was sold in three traditional informal markets in or adjacent to Harare. *Warburgia* sales in the traditional market in the city of Mutare and at Birchenough Bridge were also assessed (Table 1). There was no evidence of trade in *Berchemia* bark.

### Characteristics of sellers

There was a pattern of marked gender distinction of the craft sellers in the informal urban markets of Harare, where most sellers of baobab crafts were male. This pattern differed somewhat from that seen in the rural areas, where there were more female sellers of baobab items (Table 2). No pattern of gender differentiation was obvious in formal sector outlets. In the informal craft markets in Harare, almost all of the sellers of baobab crafts were males; these items were frequently sold in stalls that also carried handmade furniture that was often made on the spot and sold by males. Women stall-holders in these urban markets sold other craft items, including dyed fabric and crocheted crafts, but typically not baobab products. For most urban sellers, craft production was a full-time occupation that was typically taken up when a previous job was lost or when a previous job provided insufficient remuneration. Most vendors had been engaged in this occupation for a number of years.

Baobab vendors in urban areas had a fairly high level of education - 83% of urban sellers reported that they completed "0" level or higher education (Table 2). Some of these features differed markedly for rural sellers. Of the interviewed baobab craft sellers in the Birchenough Area, only nine percent had completed "0" level education. Many vendors reported that this had been their major occupation since leaving school. In the Birchenough Area there were numbers of structured stalls that carried a considerable number and range of baobab craft items; these businesses were predominantly managed by males for whom this was a full-time occupation. In contrast, roadside stalls that had minor structures were often managed by women. Most small-scale roadside vendors made the products that they offered for sale. The interviews conducted in the Birchenough Area with village informants suggested that the selling of craft products was generally viewed by villagers to be a role for women; even so, 75% of randomly identified vendors, selected from stalls that were open for business during the market survey, were males (Table 2).

Bark extraction and associated fibre processing was observed to be hard work, involving intensive activity (Romero et al., (in prep)). Village informants indicated that bark was extracted mainly by men and sometimes by women. Men, women and children were reported to be engaged in weaving. Interviews with bark harvesters and observation suggested that it typically required several hours of continuous intensive labour by a young strong male to extract baobab fibre.

Gender roles for the sellers of *Warburgia* were found to be less distinct than for sellers of baobab crafts. This product was sold in traditional informal markets. Because this bark can have ritual uses, it had been expected that male sellers would predominate and that many sellers would themselves be traditional healers. However, although in some markets the sellers were exclusively male (specifically, in Mbare), in two other traditional markets sellers were exclusively female (Machipisa and Sakubva). In Sakubva market, in Mutare, both older and young women were selling *Warburgia* bark.

**Table 2:** Seller survey: General characteristics of baobab craft sellers (proportion of respondents - %)

	Urban markets	Birchenough Area
<b>Gender of sellers</b>	Percentage of sellers	
Males	100	75
<b>Education level of sellers</b>	Percentage of sellers reporting	
“0 level” or above <sup>1</sup>	83	9
Less than “0 level”	17	91
<b>Type of product sold</b>	Percentage of sellers/markets reporting particular products	
Bags	82	58
Large mats <sup>2</sup>	100	83
Small mats <sup>3</sup>	100	75
Hats	50	58
<b>Type of buyers reported</b>	Percentage of sellers reporting	
Tourists	100	100
Local males	33	58
Local females	15	58
Bulk buyers	67	58
<b>Peak (and low) sale periods by cited months<sup>4</sup></b>	Percentage of sellers reporting	
January	17 (55)	8 (67)
February	8 (55)	8 (67)
March	17 (64)	17 (42)
April	50 (9)	33 (17)
May	50 (9)	25 (25)
June	50 (9)	50 (17)
July	25 (36)	75 (0)
August	25 (27)	26 (17)
September	25 (27)	8 (33)
October	75 (0)	8 (42)
November	75 (0)	18 (17)
December	75 (0)	33 (8)

<sup>1</sup> “0 level” normally represents nine years of schooling.

<sup>2</sup> Diameter larger than 1.5 m.

<sup>3</sup> Diameter smaller than 1.5 m.

<sup>4</sup> Proportions of respondents declaring particular periods as low sales months are in parentheses.

The sellers of *Warburgia* bark generally described themselves as practitioners, i.e. as healers and some sellers were fee-paying members of the Zimbabwean National Traditional Healers Association.

### Indications of changes over time in baobab craft activities

In preparation for this study, some historical count data on the number of active baobab craft stalls had been collected from time to time in the Birchenough Area. These data were collected and recorded over the 23.5 km distance of the highway just south of Nyanyadzi to Birchenough Bridge on 12 occasions between April 1996 and May 1999. On each of these occasions the total number of operating and non-operating stalls was counted. The stall count

data did not indicate that there has been a discernible trend of either increase or decrease in the number of stalls during this period. Although the data do not include any observations for December (viewed to be the peak holiday period for travellers) they do show very considerable within-year variation in the numbers of operating baobab craft stalls. This variation is consistent with the pattern of seasonality in baobab craft sales that is discussed below. Evidently many small roadside stalls operate in time periods when buyers are available and when the stall-owner has time that can be spared from farming and other household responsibilities and activities.

Information is also available from a June 1997 census of vendors who operated craft stalls along the 21 km stretch of the road from Nyanyadzi to near Birchenough Bridge in the Chimanimani District. A follow-up of the 1997 census was conducted during May 1999. The June 1997 census noted 45 vendors who sold through 41 stalls (including 12 stalls that operated at the Nyanyadzi Business Centre). The owners or operators of these stalls were contacted again in May 1999 when it was found that some 19 of the original operators were still engaged in baobab craft vending. Several operators had moved to other regions or other activities; three of them were deceased or incapacitated. Eight of the 1997 stalls had been abandoned and several others had been taken over by relatives, while numbers of new stall-holders had started businesses. The conclusion that there has not been an increasing trend in the number of Birchenough Area vendors in recent years is also consistent with the count of vendors in 1995 that was reported by Kwaramba (1995).

Indications from Mukamuri and Kozanayi ((in prep) that baobab craft production and sale has been a long-standing form of employment for numbers of vendors was confirmed by information collected in the seller survey conducted for this study. Our survey of sellers also indicated that numbers of *Warburgia* bark sellers have been engaged in this occupation for many years. As summarized in Table 3, some forty-five percent of all sampled vendors of bark products have been working at this occupation for ten or more years. These data also support the proposition by Braedt and Gunda-Standa (2000) and others that the vending of craft items in the 1990's may have increased appreciably from the 1980's.

### **Seasonality in baobab craft activities**

There was evidence of considerable seasonality in the market for baobab items (Table 2). The May 1999 follow-up of the 1997 census of stall-holders reinforced the conclusion, from the 1996-99 stall counts, of the part-time nature of craft activity for many small-scale vendors. In May 1999, eight of the vendors who had been craft-sellers in 1997 maintained active but non-operational stalls at the time of the follow-up. At that point of time these vendors were not presently weaving or selling baobab items but were temporarily engaged in other seasonal activities.

**Table 3:** Length of time sellers have been in business

<b>Date when vendors began selling</b>	<b>Percentage of sellers</b>
1990-99	64.5
1980-89	22.6
1970-79	3.2
1960-69	9.7
Number of respondents	31

However, they anticipated resuming baobab activities within weeks, upon completion of their other activities. For a number of weaver-vendors, craft production and sales was a complementary activity to the use of their time and labour in other activities, mainly crop and vegetable production. Weaving and craft sales were pursued when time and labour were not required for these necessary and very seasonal-specific activities of food production. Bark extraction involves heavy labour that requires skill as well as effort. Weaving also requires skills. The need for these skills to be learned by harvesters and weavers has been suggested as a reason why extensive baobab harvesting and use has been found in some regions and not others in the study area (Mukamuri and Kozanayi, (in prep).

The seasonality of production reflects influences in both supply and demand. On the demand side, interviews with sellers in urban areas indicated that small mats, used as door mats, were sold mainly in the rainy season and only infrequently sold in the drier seasons of the year. An increase in the demand for larger floor mats was related to demand from tourists, particularly from those travelling by car from South Africa in holiday periods. Holiday periods also tended to contribute to seasonality in supply of these items in the Birchenough Area as children were reported to be available then to help in weaving and vending. Another influence on the supply of craft items in the Birchenough Area was that villagers had little time to harvest bark or to weave and sell their baobab craft products in the cropping season, that is, in the rainy season. The group discussions with villagers indicated that spoilage by rain of craft item displayed in uncovered stalls was also a detriment to craft sales in the rainy season. The result of these influences is seen in the seasonal pattern of sales reported by vendors in urban and rural areas (Table 2).

As might be expected from the different factors that underlie seasonality in craft activities, there were some differences in the patterns of seasonality in rural and urban markets for baobab craft items. Seasonal movement into and away from baobab craft activities evidently was the factor that underlay the observed considerable variability in craft vending activity by many rural villagers. Seasonal differences in demand and supply and some differences in the preferences and composition of buyers also appeared to lead to a difference in the composition of goods sold in urban and rural areas. More bags and hats were sold in the Birchenough Area, where some buyers for these items were reported to be local people. More door mats were sold in the city and these seemed likely to be used locally rather than being purchased by tourists. Based on sellers' reports of their average monthly sales and the estimated total number of sellers, it appeared that the Birchenough Area was the major retail sale location for baobab craft items (Table 4).

## Types of market organization and rules in the informal markets

We found some differences between markets with respect to the nature of rules governing market conduct, especially in the informal urban markets that were surveyed in Harare. According to our informants, in informal urban markets the entry of new sellers was governed by the city council, which licensed all informal market vendors. Stall owners were allocated specified access to designated market areas by the city council to whom a monthly license fee was paid. However, license fees for individuals could vary considerably, as from between Z\$15 (reported at the Second Street market) to Z\$200 (reported at Westgate). This wide variation appeared to result from some license-holders "sub-letting" portions of their stall to others.

**Table 4:** Average monthly sales reported by sampled sellers of baobab craft items and annual estimate volume of bark sold, by location

	Urban markets	Birchenough Area
Numbers of items sold by sampled sellers		
Bags	15	27
Hats	5	15
Large mats	15	11
Small mats	37	15
Total items	70	68
Number of sellers in sample	12	12
Estimated total number of sellers <sup>1</sup>	18	51
Corresponding estimate of annual regional sales volume, in numbers of baobab fibre bundles <sup>2</sup>	107,659	221,324

<sup>1</sup> The estimate for the Birchenough Area is based on the number of roadside stalls in the Birchenough Area from Hot Springs to Birchenough Bridge and from that road to Tanganda at the time the sample was identified.

<sup>2</sup> Calculated from average retail weights of items purchased (as reported in Table 5), converted to bundles of fibre at the average weight of 14 purchased samples of fibre (0.239 kg/bundle – Romero et al., (in prep). If a lower bundle weight is used, implicit in Luckert *et al.*, (in prep), then the annual estimate of sales can be doubled.

In general, market representatives viewed license fees to be too high and a number of sellers stated a preference to have more freedom to sell in areas that could attract more buyers, rather than being assigned to designated market outlets.

The survey of key informants in each informal Harare market indicated that market-level organisation varies; in some such markets there seemed to be little interest or emphasis on market-level organisation by sellers. In others, which we termed organised informal markets, sellers had elected a committee to mediate grievances among themselves and this committee was the focus of various forms of co-operative arrangements among sellers. The most organised arrangements that we found were at the Second Street market where a committee of 12 members was elected. This committee dealt with cases of conflict, had the power to

suspend sellers and mediated between the council and the sellers. Informal market sellers at this location also had two representatives on a general market committee for the adjacent formal sector shopping centre.

In some of the organised informal markets, various types of co-operative arrangements existed. These ranged from informal pooling of products sold with reimbursement of proceeds to individual owners, to arrangements for joint production and/or purchase for consequent resale of some baobab craft items. In one of the informal urban markets, sellers operated a co-operative savings program based on payment of a monthly membership fee into a joint savings account; members could withdraw savings for such purposes as paying school fees. In this market a monthly contribution of Z\$10 was also paid by each member into a building fund intended eventually to allow sellers to construct a shelter for storage of their goods. Often the sellers in more organized markets also cooperated to fund a security guard to protect their wares overnight. Each seller was responsible for contributing towards this cost. The contributions for night guard service in different markets ranged from Z\$44 to Z\$60 per month per seller. Sellers in organised informal markets usually stated that they observed some agreed level of minimum prices. In some markets the committee had established rules on the ways in which sellers were supposed to interact with potential customers, such as not harassing or impeding customers in making decisions about whom to buy from. In some markets there were agreements among sellers to keep the market clean and tidy. In general, a greater degree of organisation tended to be observed in the larger informal markets, i.e. where there were relatively large numbers of sellers, and in the longer-established informal markets. License fees also apply to stall-holders in the traditional urban markets. Mbare sellers of *Warburgia* reported monthly stall rental fees of Z\$50.

The rules governing market entry and the nature of sellers' organisation that applied in the Birchenough Area markets differed somewhat from the urban markets. In some of the villages, owners of roadside stalls were supposed to pay a one-time registration fee to the village headman. The amount of this varied between villages and in some villages no registration fee was paid (for example this was reported to be the case in Masasi and Wama). In the villages where a registration fee was paid, stall owners did not begrudge this fee but stated that they received certain benefits, such as support from the community should there be instances of theft. In those areas where registration fees were paid there did not appear to be restrictions on stall owners in terms of the number or location of their stores. Very little formal organisation seemed to exist in the rural markets and individual local families generally operated most stalls. There were few indications of exceptions to this relatively simple form of owner-operations for stalls selling baobab products in the Birchenough Area, except for the organised craft market at Nyanyadzi. Specifically, it was reported in the 1999 follow-up to the census of 1997 stall-holders in a section of the Birchenough Area that one stall was owned by an individual who lived out of the region and rented this to the operator. In the seller survey, one operator of a structured stall indicated that his family owned and operated a second stall in another regional centre.

One organised structured market for craft items operated in the Birchenough Area market, at the Nyanyadzi village centre. Here the group of stall owners and operators co-operated to elect a committee consisting of a chairman, secretary and treasurer. License fees did not apply, but individual stall-holders paid a monthly rent of Z\$50 to the local council and an annual fee for the whole site (Z\$390) and for water rates was also reported.

## Prices and price margins for the bark products

The purchase of the various bark items, described previously, provided data on prices for these products. We had postulated that there might be an association between the quality ratings that were derived for the various baobab craft items that were purchased and the prices paid for these items. However, we found no such discernible relationship. The price data did enable the calculation of measures of marketing margins to shed some light on the levels of costs and revenues associated with sale of these products. The purchase prices per item, averaged over all purchases of particular bark items, are given in Table 5. Average purchase prices are also calculated and presented in product weight terms in this table to facilitate price comparisons between products. The percentage by which sellers' initial or opening price, prior to bargaining, exceeded the final purchase price is also given in this table to give a rough measure of "bargaining capacity" of the vendor for the various items.

**Table 5:** Summary of bark product purchase prices

Prices and Margins: Actual Purchase Prices for Selected Bark Products, Averaged Over All Market Purchases, by Product Type						
Units	Small Mats <sup>1</sup>	Large Mats <sup>2</sup>	Bags	Hats	Warburgia Bark	Warburgia Powder
Final Price/Product, Z\$	63	345	49	27	20	22
Average Weight, kg	0.84	5.4	0.38	0.28	0.0174	0.0120
Price, Z\$/kg	83	70	169	114	1150	1833
"Bargaining Capacity" i.e. % by Which Opening Price Exceeds Final Price	26	46	30	17	26	47
Average Material Cost/Item <sup>3</sup> Z\$	10.03	51.66	4.86	3.57	n.a.	n.a.
Average Material Cost Margin/Item <sup>3</sup> Z\$	52.70	293.34	44.14	23.43	n.a.	n.a.
Average Material Cost Margin, Expressed as % of Purchase Price <sup>4</sup>	84	85	90	87	n.a.	n.a.
Number of Items Purchased	20	8	8	4	14	3

<sup>1</sup>Diameter less than 1.5 m.

<sup>2</sup>Diameter greater than 1.5 m.

<sup>3</sup>The average material costs reported above were estimated by costing each item, in terms of the recorded average weights of the purchased samples, at the fibre selling prices reported by households in the study region (Luckert et al., (in prep)). In this procedure an allowance was made for the inclusion, in the weaving of these products, of a proportion of dyed fibre that was generally reflective of the dye use in the purchased product samples. For this purpose actual average purchase sample weights were converted into equivalent fibre bundles, assuming an average air dried weight of 0.239 kg/bundle as measured for 14 purchased fibre bundles (Romero et al., (in prep)). Average dyed fibre contents of 15%, 20%, 10% and 10% for small mats, large mats, bags and hats, respectively, are assumed in this costing.

<sup>4</sup>Based only on material costs, calculated as above.



Table 5 provides a measure of the average total gross marketing margin for each baobab item, relative to the estimated material cost of purchased fibre. We term this particular gross marketing margin measure the "material cost margin". This margin necessarily reflects all other costs (except the purchase cost of baobab fibre), including the returns to the weaver and the vendor(s) of these items. The purchase price of the fibre can be viewed as an economic opportunity cost measure; it includes any resource rent associated with the bark as well as the returns to labour that are involved in bark removal, fibre processing and sale.

The prices of undyed fibre that were reported by 119 respondents to the associated household survey indicated an average price of Z\$ 2.86/undyed bundle (Luckert et al., (in prep). Reported prices for dyed fibre averaged Z\$ 4.80/bundle, reflecting the added costs and returns to labour associated with dying, including the collection and processing of bark and seed used for dying, together with the resource rent associated with the resource materials used for dye. Estimated average gross marketing margins (i.e. the material cost margins) for the craft items were, on average, 84% of the retail price for small mats and 85% for large mats. The material costs of baobab fibre accounted for an even higher proportion of the selling prices of bags and hats, despite the relatively labour intensive process, based on the use of a heavy-duty needle, to weave these items. The estimated material cost marketing margins for bags and hats were 90% and 87% respectively. Consequently it was not surprising that we found the bargaining capacity for hats and bags to be lower than for mats. We infer more capacity for vendors to negotiate on high value items that are typically sold to more affluent tourists (large mats), and lower capacity for bargaining on items of lower value that may also be sold to local people, particularly hats. The tendency for a higher level of bargaining capacity to apply to higher value items, for which the marketing margin was higher per item, was also evident for *Warburgia* powder, relative to bark (Table 5).

Table 6 provides spatially-based comparisons of a selected relatively standard baobab craft item in two types of market outlets. The average prices for small mats purchased in the informal market are given for three areas: the Birchenough Area, which is the resource base region for most baobab products; markets in the medium-sized population centres of Rusape and Mutare; and the sampled markets in the large population centre of Harare. A second marketing margin measure is employed in this table; we term this the "product market margin". The product market margin for small mat sales in each region is calculated as the average selling price in that region, less the average selling price for the sampled purchases of this product in the Birchenough Area, which is the source of most of the products or inputs for these craft items. For outlets at a similar distance from the Birchenough Area, the sampled formal market outlets exhibited selling prices and imputed product market margins that are slightly higher than those in the informal market outlets. It was evident from the seller interview conducted at one of these formal market outlets that significant competition had been offered to the formal sector by the informal sector for baobab items in recent years. This store planned not to restock baobab items because of this competition. The pattern of selling prices and the product market margins are generally consistent with the distances that separate these markets.

The geographic variation of market prices for baobab items is illustrated further in Table 7, which shows the selling prices for small mats in the various market centres, relative to the distances, by road, on the route from the resource area to the major population centre, Harare. The resulting price gradient is directly related to distances from the Birchenough Area, the source of most of these items. The existence of a geographic pattern of selling prices and

product market margins that tends to be consistently associated with distances between the various markets has several economic implications.

**Table 6: Spatial Price Comparison: Purchase Prices for Small<sup>1</sup> Baobab Mats in Different Market Locations and Types of Market Outlets**

Market Location	Informal Market Sector:			Formal Market Sector:
	Harare	Rusape & Mutare	Birchenough Area	Headlands & Mutare
Price: Z\$/item	99	30	24	38
Imputed Product Marketing Margin Z\$/item <sup>2</sup>	75	6	--	14
Price, Z\$/kg, \$Z	126	52	29	65
Imputed Product Market Margin Z\$/Kg	97	23	--	36
% Product Market Margin / item	76	20	--	37
% Product Market Margin/Kg	77	44	--	55
"Bargaining Capacity" i.e. % by Which Opening Price Exceeds Final Price	32	17	26	0
Number of Purchases	10	4	5	1

<sup>1</sup> Diameter less than 1.5 m.

<sup>2</sup> Imputed from average product price at the resource location, i.e. in the Birchenough Area.

**Table 7: Spatial Price Gradient from Resource Area (Birchenough) to Harare, for Small<sup>1</sup> Baobab Mats**

Location	Harare	Headlands <sup>2</sup>	Rusape	Mutare	Birchenough
Retail Price /Item, Z\$	99	50	30	33	24
Number of Purchases	10	1	2	3	5
Distance in Km from Birchenough Bridge	388	257	218	125	0

<sup>1</sup> Diameter less than 1.5 m.

<sup>2</sup> Based on one observed but non-purchased item from fixed-price shop.

This pattern of prices suggests that market information on selling prices is generally available to sellers of baobab craft items in different regions, that price differences are reflective of differences in handling and transportation costs between these markets, and that arbitrage (the process of trading in response to regional price differences where these exceed transfer costs) may tend to occur between regions for this product. These types of price patterns are generally found in competitive market structures, where market entry and exit is relatively easy and there are many traders.

The observation of a geographically consistent pattern of prices does not, however, hold for the prices of *Warburgia* bark, shown in Table 8. This inconsistency could be inferred to reflect a lack of price information and/or a lack of competition in the supply and sale of this particular bark product, as from relatively small numbers of traders.

### Discussion and conclusions: Market performance

Economic theory encompasses a number of stylized models of markets that can be used to classify different patterns of market structure, conduct and performance. In this context the markets for baobab craft items can be described as monopolistically competitive. This market model is one in which there are many traders/producers and entry and exit is relatively easy; consequently this model has features akin to the competitive model. However, in contrast to the perfectly competitive market model in which the goods or services that are produced/traded are identical, in the monopolistically competitive model, the goods/services that are offered for sale are differentiated, either physically or in other distinctive attributes, such as in the regional availability of the goods or services or the quality or nature of the goods or services that may be provided by different sellers. In terms of narrow criteria of economic performance, in monopolistically competitive markets, consumers have the advantage of being faced with a choice of a variety of differentiated products, albeit at levels of costs and prices that may be slightly higher than would occur for standardized products in competitive markets. This arises from the feature of differentiated demand that leads to a downward sloping demand curve for individual sellers. Consequently for the seller, an equilibrium is sought in which price exceeds marginal cost and production occurs at output levels that are less than the minimum of average total cost (Shepherd, 1985).

**Table 8:** Spatial Price Comparisons for *Warburgia* Bark

Market Location: Area	Harare	Rusape & Mutare	Birchenough Area
Price/Bark Piece, Z\$	11	18	52
Price/kg of Bark, Z\$	959	1404	1381
"Bargaining Capacity" i.e. Final Price as % of Opening Price	33	38	0
Number of Purchases	9	4	3

A related economic criterion of market performance is provided by the concept of pricing efficiency. The geographic pattern of prices discussed earlier in this paper leads to the conclusions that the prices for baobab items are transparent; that arbitrage may occur and that price differences between markets in different regions are generally reflective of the costs of

marketing. These conclusions could not be made for *Warburgia* bark, for which price information was not readily available, reflecting the very-small scale and dispersed nature of this market. In terms of broader criteria of economic performance, the study reported here indicates that baobab bark use is an important contributor to employment opportunities and income for a number of urban and rural harvesters, weavers and vendors of baobab bark crafts. The importance of baobab activities as a source of income for numbers of villagers is confirmed by the survey of households in the baobab resource area (Luckert et al., (in prep)). While baobab craft vending was a part-time activity for many small-scale roadside vendors, the results from the May 1999 survey of households indicated that this was the major source of cash income for many households in the Birchenough Area (Luckert et al., (in prep)). The participatory group discussions with local villagers indicated this to be the third ranked source of income overall (behind crop and livestock production). In these discussions, participating villagers indicated that *Berchemia* extraction and use or sale was a relatively low-ranked source of family income.

There are strong indications that there has been a pattern of an increasing number of vendors, and an increased number of craft items sold, during the past three decades. However, it is not clear that the number of vendors has increased since 1996. Rather, there is evidence of considerable variability in the number of small-scale vendors. Overall, the limited time-series information on the markets for baobab products suggests that, during the past four years, commercialization has continued at a relatively stable level, rather than following a continually increasing trend. This may reflect some limitations in the demand for baobab craft items. Specifically, the nature of the baobab craft market is such that this is a relatively localized market. Competition for local purchasers is provided by domestic and imported substitutes. For example, door mats woven from plastic fibre evidently provided a price ceiling on the asking prices for baobab door mats. Both baobab door mats and the substitute product of plastic fibre door mats were sold at an informal market stall in Mutare. Prices for plastic fibre mats exceeded those for baobab fibre mats, reflecting higher input costs; the vendor also noted that higher prices for the plastic substitute would be paid by purchasers, since plastic door mats are more durable and can be more easily cleaned. Other types of carpets are a local substitute for large baobab mats. These product categories are customarily purchased by a very small proportion of Zimbabweans, due to constraints of low income. Since most baobab craft items are relatively bulky, they are seldom bought by tourists, except for those whose entire travel is by automobile. Consequently the export market for baobab craft items is largely limited to affluent travellers from South Africa.

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