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Ghana: Cross-Border Trade Issues

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C

TABLE OF CONTENTS

E

EXECUTIVE SUMMARY
GHANA: CROSS-BORDER TRADE ISSUES

This study is part of the EAGER Trade Regimes and Growth research that explores barriers to cross-border trade. Its two objectives were: (1) to calculate a total flow of goods across Ghana's border by combining recorded data on cross-border trade with "expert" opinion on unrecorded trade flows; and (2) to obtain information on the relationships traders have established to facilitate cross-border trade activities by interviewing a selected group of traders. Five commodities (iron rods, tomatoes, maize, salt, aluminum cookware) and three border crossing points (Bawku area, Aflao, Elubo) were used.

Using a regression model the researchers were able to estimate total (recorded plus unrecorded) commodity flows. A practical result, to cite one example, shows that at the Aflao border crossing an estimated 28 % of the overland cross-border trade for these five commodities was unrecorded and, therefore, unrecognized by government policymakers.

Scatter plots on a log scale for each combination of product and mode of crossing (e.g.,maize and truck) allowed a comparison between trade flows in 1993 and 1996 for all five commodities. This method shows an increase in cross-border trade between 1993 and 1996, as exemplified by the increase in maize crossings by trucks and carts, and the increase in tomatoes crossing by headloaders.

For the second objective, a structured questionnaire was administered to a sample of formal and informal traders, designed to obtain information on traders' modes of operation. The findings have several policy implications. They indicate that:

1) Liberalized trade procedures for exports have had a positive impact on cross-border trade reporting. The new Ghana export form, for example, has streamlined trade declaration procedures and reduced the time required to complete the form from days to hours.

2) Financial liberalization has meant traders can obtain foreign currency from the foreign exchange bureaus and do not have to complete complicated banking forms.

3) The obstacle listed as most important by cross-border trade respondents was government inspections, followed by the numerous roadblocks of police and Customs officials. When the monetary costs associated with these inspections/roadblocks was calculated in terms of income lost, more than half of the respondents had lost 8 or more days in lost wages per month.

4) Female traders, more than male traders, rely on kinship and associations to complete trade transactions.

5) Recent improvements in infrastructure at the port of Tema and Katoka International airport have been completed to facilitate overseas import/export trade. There is an excellent all-weather northern road linking Tamale and Paga to Burkina Faso which was completed in 1997. Other roads linking border towns are less roadworthy, and often impassable in the rainy season. Telecommunications are more reliable between Ghana and overseas cities than between Ghanaian cities. Fax communications and cellular technology are similarly erratic between points within Ghana, and between Ghana and the rest of the sub-region. Regional infrastructure planning would improve trade linkages and encourage the streamlining of business procedures (e.g., the electronic transfer of monies from one account to another) and could be used to illustrate the economic benefits of regional cooperation.

SUMMARY OF POLICY IMPLICATIONS AND RECOMMENDATIONS

- Government of Ghana (GOG) policies and regulations that encourage cross-border trade have a positive impact on Ghana's economic growth, but more accurate cross-border trade data is needed to develop appropriate policies.

- Currently, recorded overland trade data underestimates total overland trade flows. This problem could be partially corrected by using the low-cost "expert estimation" methodology developed for this study.

- GOG liberalized trade and financing procedures have had a positive impact on cross-border trade reporting and should be enhanced.

- The GOG needs to evaluate the frequency of inspections and roadblocks which impede cross-border trade and dramatically increase the costs of this economic activity to cross-border traders.

- Police and military road blocks are a major obstacle to cross-border trade. Road block objectives and procedures should be reviewed by appropriate authorities with the goal of reducing their number to a minimum, or eliminating them entirely.

- Short and medium term financing continues to impede the ability of traders to develop any long-term marketing strategy and confines them to short-term buy and sell activities. Financial intermediation issues should be addressed by both public and private sector financial institutions.

- Female traders rely more than male traders on kinship and association ties to facilitate their operations; Associations that assist traders (especially those assisting female traders) should be strengthened.

- Increased border cooperation between Ghana and its neighbors should focus on streamlining procedures to avoid unnecessary unloading and re-packing at exit/entry points.

- Uniform application of existing ECOWAS treaty regulations/procedures would increase the efficiency and profitability of trans-border trade.

- Lack of adequate sea supervision encourages smuggling along Ghana's shoreline. Customs personnel need motorized boats to effectively curtail smuggling along the coast.

- Corruption is reduced by the current practice of publically auctioning illegal goods seized by Customs officials; this practice should be continued.

- Unused buildings at the Aflao border crossing should be refurbished and rented or sold to traders/expediters for cross-border trade activities.

- The Project Advisory Committee selected for the project played a useful role (e.g., selection of five commodities used in the study and the three border crossings) and should be involved in follow -up activities.

1. INTRODUCTION

Export growth is a necessary component in economic development. Structural development programs promulgated by the International Monetary Fund, the World Bank, the U.S. Agency for International Development and other international institutions/organizations often are based on export-led development strategies. Regional trade among developing countries promotes market and product diversification, expands market size, provides markets for domestic manufacturing, and often plays a crucial role in resolving food security issues. Thus cross-border trade flows, and government policies that encourage or hinder them, are important components of economic development and growth.

The current study is part of the EAGER Trade Regimes and Growth research that explores the barriers to cross-border trade. The Ghana cross-border trade study has two objectives:

1. To calculate a total flow of cross-border goods by combining recorded data with "expert" opinion on unrecorded trade flows flow of goods across the border; and;

2. To obtain information on the relationships traders have established to facilitate cross-border trade or to circumvent obstacles, by interviewing a select group of traders.

While data is becoming more readily available on recorded cross-border commodity flows (Direction of Trade Statistics Yearbook; World Bank 1989; Dongala 1993; Wenner and Mooney 1995), there is still a high volume of informal cross-border trade that is not recorded. The lack of information on cross-border trade flows has two important repercussions:

1. National accounts data on trade statistics do not accurately reflect the value or volume of regional trade; and

2. As a consequence, governments assign these markets a low priority and do not act to rationalize the movement of goods and services across national borders.

Through the provision of more realistic data on the volume and value of cross-border trade, governments may be encouraged to promote policies that rationalize and harmonize existing regional trade patterns. These actions are particularly critical for the domestic agriculture and manufacturing sectors of developing country economies.

There is little information available on the relationships traders have established to expedite the movement of goods across national borders (Clark 1994; McCorkle, Stathacos, and Maxwell 1995). These relationships link individuals, households, communities, and the public and private sectors. Governments can use information from these relationships to structure policies that expedite rather than impede cross-border trade.

The low value and volume of recorded (formal) intra-Africa trade is frequently explained by listing critical constraints such as: inadequate transportation systems, weak infrastructure, poor communication and information systems, and insufficient credit (West Africa Regional Trade Analysis "Obstacles to Regional Trade" 1995). And yet, as MacGaffey has stated, there is a sizeable flow of commodities (both formally and informally) across national borders:

> The massive extent of this unrecorded trans-border trade in all regions of the African continent is evidence of a market integration that people have brought about for themselves, outside official systems which have failed to carry out the necessary tariff reductions and other measures to promote such regional integration. (MacGaffey 1991 p. 21)

The scale of unrecorded (informal) trade is a measure of economic activity that is unreflected in official national data collection efforts. How do traders manage to conduct (both formally and informally) this cross-border flow of goods and services? Are there particular characteristics of entrepreneurship exhibited by cross-border traders? What are the main variables explaining trader economic behavior? How do socio-economic relationships among cross-border trade participants affect these variables?

Patterns of trans-border trade in cigarettes, livestock and onions reflect the absence of uniform regional trade policies. Cigarettes are smuggled across the border from Ghana into Togo, packaged as Togolese cigarettes, and re-sold in Ghana at a price less than one-half of the Ghana retail price for cigarettes. The trade is profitable because of the tax (60 percent) on cigarettes manufactured in Ghana. Livestock from Burkina Faso is smuggled into Ghana to avoid high import tariffs. Trade in onions is hampered by unreasonable import permit requirements. Varieties of purple onions from Niger are sold in Abidjan markets, but varieties of Ghanaian purple onions are not available, even though Ghana production areas are closer to the Abidjan market. This also may be partly attributable to the difficulties of trade between Francophone and Anglophone countries.

Trans-border trade between Ghana and Togo illustrates the importance of socio-economic relationships among trans-border traders. When the border between Togo and Ghana was drawn by colonial administrators, it split the Ewe tribe between the two countries. This artificial border has not prevented continued commerce and personal interactions among the Ewe. These interactions continue to be important in trans-border trade between the two countries. Formal cross-border trade between Ghana and Togo in 1996 was more than twice the value and volume of overland trade with any other neighboring country ($18.9 million compared to $8.8 million for Côte d'Ivoire which recorded the second highest dollar value in cross-border trade with Ghana).

The potential for increased intra-regional trade in agriculture and other commodities, and the stabilizing role that increased cross-border trade could play in local agricultural markets in terms of food security necessitates the need for West African governments to re-examine their regional trade policies and regulations. Macro economic policy is also relevant. Current product price

differentials for antibiotics between Ghana and its neighbors, for example, increase the demand for Ghanaian products. But increased inflationary pressures in Ghana could erode this price advantage.

2. LITERATURE REVIEW

Numerous international organizations/institutions (United Nations, Africa Development Bank, World Bank) have encouraged economic cooperation within regional markets to foster greater country-specific and regional economic development and growth (Chatterjee 1989). Increased regional integration efforts in West Africa stalled during the past two decades as political and economic problems in the region forced individual countries to adopt inward-looking policies and/or abandon regional integration efforts.

An index of export similarity can be used to compare trade structures between countries to ascertain whether there exists a basis for trade based on the composition of exports. West African countries showed index values indicating relative dissimilar patterns of trade which indicates a basis for trade exists between countries in the region (Badiane 1991). The integral role the agriculture sector occupies in the economies of West Africa nations makes products from this sector the most likely to be involved in regional exchange.

Cross-border trade methodologies used to monitor borders in Kenya, Uganda, and Tanzania have been examined and incorporated into the current study where appropriate (Ackello-Ogutu 1996). A 1996 study examined the unrecorded cross-border trade between Kenya and Uganda (Ackello-Ogutu and Echessah 1996). Data was collected through monitoring various border exit/entry points to obtain information on the volume and value of trade flows through those points. Additionally a baseline survey of traders was conducted to obtain information on trader characteristics, sources of information, and market functions. This research confirmed that Kenya has a comparative advantage in manufacturing and processing. Kenya exports to Uganda are processed agricultural products (e.g. wheat flour) and manufactured goods such as hardware, textiles, and beverages. Uganda exports to Kenya are largely unprocessed agricultural commodities such as maize, beans and fish.

Economic gains from informal trade between Kenya and Uganda included job creation, provision of agricultural and industrial goods that would otherwise be unavailable, and amelioration of food shortage conditions (Ackello-Ogutu and Echessah 1996). Traders cited the lack of working capital as the single largest barrier to expanding their business. Other constraints were high interest rates, institutional restrictions such as licenses, poor infrastructure, and increased corruption at the border. The authors conclude that trade liberalization through regional cooperation initiatives should enhance the large trade potential that exists between Kenya and Uganda. These initiatives would include a harmonization of domestic food policies, a relaxation of trade constraints, and a willingness of governments to commit to these initiatives.

The devaluation of the CFA in 1994 presented a window of opportunity for Ghana to increase its intra-regional trade (Salinger and Stryker 1994). The impact of the CFA devaluation, however, varied from commodity to commodity, and from market to market. For example, the substitution of regional imports for European imports occurred more in Côte d'Ivoire and Ghana and less in markets in the western part of the West Africa region (REDSO/WCA 1996). Niger in particular increased its exports of onions and other horticultural products to Ghana and Côte d'Ivoire. Countries such as The Gambia and Senegal, which are more distant from production zones in Niger, reported less substitution.

The current study builds on existing work on regional trade in West Africa which examined commodity flows (Stryker and Salinger 1992). Trans-border trade in Ghanian horticultural products has focused on the coastal markets of Accra and Abidjan (Vordzorgbe 1997; Harre 1996; Holtzman 1996). Vordzorgbe's research focused on onions and discussed the intricate marketing system and the key players of that system (Vordzorgbe 1997). He concludes that the two principal barriers limiting intra-regional trade of Ghanaian horticulture products are related to infrastructure (e.g., poor roads, lack of adequate truck transportation) and institutional (e.g., lack of pricing information, non-harmonization of trade laws and regulations) constraints. The Harre study noted the lack of purple onions from Ghana in Abidjan markets, but the presence of purple onions from Niger despite the increased transportation required (Harre 1996).

Relative to research on horticultural products, research on intra-regional trade in cereals and livestock is well documented (Holtzman 1996). Recent research analyzed cross-border trade conditions in Ghana, Senegal, and Côte d'Ivoire for livestock, kola nuts, and onions (Wenner and Mooney 1995; Holtzman 1996; McCorkle, Stathacos and Maxwell 1995). Wenner and Mooney list four main problem areas that have a negative impact on the Ghana-Burkina Faso livestock marketing system (Wenner and Mooney 1995). These four problem areas are: prohibitive import duties, bribery and corruption, non-commercialization of livestock producers, and exchange rate issues. The first and second problems encourage cross-border smuggling. In the Holtzman study the role of indigenous regional trading networks was specifically addressed; a prime example of vertical relationships among traders. The McCorkle, Stathacos and Maxwell report concluded that ethnicity plays a less dominant role in cross-border trade. In contrast, a shared religion continues to be important, and Islam in particular continues to serve an important role in facilitating cross-border trade; a good example of a horizontal relationship among traders.

In addition to the exit/entry points along the Ghanaian border, the Kumasi market in central Ghana is a major consumption and redistribution center for imported and exported commodities (King 1996). The role of women traders in the Kumasi market illustrates the continued dominant role women occupy in trade. Historically women have held important economic roles as traders in West Africa (Clark 1994). Women have moved from petty trade into large-scale commerce importing and exporting to and from regional markets.

Aggressive competition exists among members of the Economic Community of West African States (ECOWAS) for external markets for their raw materials and agricultural products, yet

intra-regional trade remains low. In Ghana in 1995-1996 formal (recorded) overland trade represented only 2 percent of total export value and 8 percent of total export volume (Ghana Ministry of Trade and Industry 1996). Due to the numerous licenses and fees and other restrictions on goods shipped across national borders, unrecorded trade or smuggling frequently occurs. Historically in Europe, the removal of the medieval roadblocks between principalities marked the beginning of an economic Renaissance. A similar flowering of trade could follow their elimination in Ghana specifically, and Africa generally.

ECOWAS countries that are generally considered stronger economies (e.g., Ivory Coast, Senegal, Ghana, Nigeria) trade more within the region than weaker economies. Trade most often occurs between countries who share common borders, and involves a high degree of re-exporting when nonagricultural goods are traded (Okolo 1988-1989).

Two types of economic costs are associated with trans-border trade (West Africa Regional Trade Analysis "Obstacles to Regional Trade" 1995). According to the West Africa Trade Analysis report, costs associated with the public sector can be interpreted as direct or implicit taxation of the producer and/or the trader. Government can influence these costs by rationalizing and/or eliminating illicit payments associated with regional trade (e.g., payments to Customs officials, police, and others). This type of taxation on traders also involves loss of time and spoilage of merchandise. In the current research effort traders were asked to calculate the loss of time and value of spoiled goods associated with this type of economic cost.

The second category of economic costs is associated with the relative low level of economic development in African regional markets. A low level of effective demand in African regional markets is coupled with inefficiency in the use of factors of production and weak infrastructure in areas such as telecommunications and transport systems.

The current study is a logical extension of work on non-traditional export flows from Ghana to overseas markets which was completed in 1996 (Morris et al. 1996). Though the authors acknowledge the existence of valuable trans-border trade between Ghana and its neighbors in gold, diamonds, arms, and drugs, it was not possible to include these activities due to their clandestine nature.

3. COUNTRY BACKGROUND

3.1 Geography

Ghana is located on the coast of West Africa about 750 km north of the equator on the Gulf of Guinea. The capital Accra is also located on the Gulf of Guinea which forms the southern border of the country. Ghana is bordered on the north by Burkina Faso, on the west by Côte d'Ivoire, and on the east by Togo. It has a total land area of 238,305 km^2. The country stretches for 627 km north-south and 536 km east-west.

Ghana is divided into four main geographic areas. The coastal savanna of Ghana consists of plains and several lagoons. The land is flat and the temperature and rainfall are conducive to growing non-traditional export agricultural crops such as pineapple, papaya, and various vegetables. While the coastal area only represents 6.5% of the land area, approximately 25% of the national population reside there. The second geographic area, the forest zone, has dense rain forests and lies between the coastal savanna and the northern savanna. A third geographic area is the Volta Basin with the Volta River and its tributaries and the 8480km^2 Volta Lake.[1] The fourth geographic area is the northern savanna and is composed of savannahs and grasslands which is less densely populated and includes extensive as well as intensive agriculture practices (e.g., cattle grazing and tomato production).

3.2 Demography

The population of Ghana is 18 million with 45% of the population under 15 years of age. With an annual growth rate of 3.2%, Ghana's population could reach over 19 million by the year 2000. The largest regions in terms of population are: Ashanti (2 million), Eastern (1.7 million), and Greater Accra (1.5 million). There are fifteen major tribes in Ghana. The principal ethnic languages are Twi, Fante, Ga, Dagbani, Ewe, and Nzema. English is the official language.

The physical landscape as well as traditional tribal practices of peoples along the national borders of Ghana have led to an active flow of goods and services (recorded and unrecorded) between Ghana and its neighbors. For example in Paga, a border town in the Upper East Region, cattle graze across the border between Burkina Faso and Ghana oblivious to the artificial boundaries drawn by colonial European geographers. The majority of Ghanaian border towns share a common language with the neighboring country's border towns, and often the same tribe resides on both sides of the international border. The Aowins in Elubo, a major trading center on the western border of Ghana, share the same language with the Aowin of Noe along the eastern border of Côte d'Ivoire. Members of the Ewe tribe living along the eastern border of Ghana also reside in Western Togo. Though Ghana is surrounded by Francophone countries, and French is not spoken by the average Ghanaian cross-border trader, the exchange of goods and services is transacted using various local languages. Thus the physical terrain and the common language and/or tribal groupings along the borders encourage the flow of goods and services between Ghana and its neighbors.

3.3 History

Modern Ghana took its name from the ancient kingdom of Ghana which was located 500 miles to the north of the present capital, Accra. Up until the eleventh century AD the early kingdom of Ghana was one of the great sudanic states which controlled the gold trade between the mining

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[1]The Volta Lake is one of the largest man-made lakes in the world. It was formed behind the Akosombo hydroelectric dam when this structure was built in 1964. The hydroelectric dam is the major source of power for the Accra area.

areas to the south and the Saharan trade routes to the north. The kingdom also facilitated regional trade in Saharan copper and salt. Beginning in the 1500s European colonialism shifted the trading patterns to the West African coastline as Portuguese, British and French forces established forts to consolidate trade in gold and slaves.

By 1874 Great Britain had formally established control over present day Ghana. During the decades Ghana was a British colony (1874-1957) the Asante and Fante tribes continued to maintain their economic and political autonomy. In 1948 the Gold Coast riots began a series of domestic movements which resulted in Ghana gaining its independence in 1957 (the first sub-Saharan nation to gain independence).

Ghana has had four republics and six military regimes since 1957. These regimes have subscribed to various forms of socialism and capitalism depending on the role of the private sector and the state in government policies and programs. A new constitution was approved by national referendum in April 1992. It established an executive system with a president and guaranteed democratic freedoms. After eleven years of military rule, presidential and legislative elections were held in November 1992. The leader of the military coup in 1981, Flight Lieutenant J.J. Rawlings, was elected President of Ghana. Facilitated by an opposition boycott of the election, members of his political party, the National Democratic Congress Party (NDC), were elected to a majority of the seats in Congress. In 1996 President Rawlings and the NDC were subsequently re-elected to another four year term.

3.4 Economic Performance and Structural Adjustment

Ghana experienced steep economic decline during the late 1970s and early 1980s. In order to reverse the downward spiral and position Ghana on a path to sustained economic growth, the country adopted an International Monetary Fund-World Bank supported stabilization program and implemented structural adjustment policies. Since April 1983 this policy package has been vigorously pursued. A detailed discussion of the extent of Ghana's economic decline and the phased Economic Recovery Programme that was adopted are well documented (World Bank 1984; Ewusi 1987; Alderman 1991; Anyemedu 1993).

The economic reforms were formulated to liberalize restrictive monetary and fiscal policies, halt exchange rate depreciation, and encourage trade liberalization. These efforts were coupled with reforms in agriculture and industry. A Financial Sector Adjustment Programme (FINSAP) was simultaneously pursued which was designed to liberalize the banking sector and provide more efficient delivery of financial services with the objective of making the banking sector more responsive to the policy reforms being pursued. Two new banks were established in 1996 (the International Commercial Bank and the Metropolitan and Allied Bank) bringing the total number of banks in the country to 17. The majority of these banks are foreign-owned. Government continues to absorb 65% of the domestic credit which has severely restricted credit to small- and medium-sized enterprises. Many small- and micro-sized businesses (including most cross-border traders) source credit from the informal financial sector which includes moneylenders, relatives,

and business associates.

The Ghanaian economy is composed of three basic sectors: agriculture, industry, and services. Ghana's GDP for 1996 was USD 4.72 billion of which agriculture represented 41%, industry 14%, and services 48% (Table 1). The overall economy grew by 5.0% in 1996. Agriculture and industry grew by a slightly lower percentage (4.0% and 4.2% respectively), and services slightly higher (6.3%). The tourist subsector has been recording phenomenal growth in the past five years, and occupied the fourth position as a major foreign exchange earner after minerals (mainly gold), cocoa, and non-traditional exports.

Table 1: Ghana GDP Sectors for 1996

SECTOR	% GDP FOR 1996*	1996 GROWTH RATE
AGRICULTURE	41%	4.0%
INDUSTRY	14%	4.2%
SERVICES	48%	6.3%

Source: Ghana Statistical Service 1997.
*Percentages total to more than 100% due to rounding.

3.5 Exchange Rate Policy

The foreign exchange market in Ghana has been liberalized. The foreign exchange rate is currently determined to a large extent by supply and demand conditions under a flexible exchange rate regime introduced in February 1987. The nominal exchange rate has depreciated from 367.80 cedis per US dollar in 1991 to 2,240 cedis by the end of 1997 (Table 2).[2]

[2]From 1997-1998 the cedi was very stable with an average rate in July 1998 of 2240 cedis to the US dollar. Similarly the cedi-CFA franc exchange rate has remained steady at 3.70 cedis per CFA franc.

Table 2: Cedi-US Dollar and Cedi-CFA Franc Exchange Rates

YEAR	Nominal Exchange Rate Cedi-US Dollar	Depreciation Rate* %	Nominal Exchange Rate Cedi-CFA Franc	Depreciation Rate* %
1991	367.80	21.72%	1.3	11.0%
1992	500.20	36.00%	1.58	20.61%
1993	750.90	50.12%	2.22	40.51%
1994	956.70	27.41%	1.78	19.82%
1995	1200.36	24.47%	2.36	32.58%
1996	155.43	29.49%	3.06	29.66%
1997	2240.00	44.10%	3.70	20.92%

Source: Bank of Ghana, 1997. Ghana Statistical Service, 1997.
*Depreciation rate calculated by authors.

The cedi-CFA franc exchange rate in the 1990s also illustrates the depreciation of the cedi with respect to the CFA franc. In 1991 the nominal exchange rate was 1.3 cedis per CFA franc which depreciated to 3.70 cedis in 1997.

3.6 Inflation

During the past 8 years the rate of inflation in Ghana has fluctuated between 18% (1991) and 71% (1995). From 1993-1996 the annual rate of inflation averaged 45%. At the end of 1997 the inflation rate had fallen to 25%. The rate of inflation is fueled by government spending and

election year wage increases for government workers.

3.7 International Trade

Ghana's major trading partners by value of exports are: Switzerland, the United Kingdom, the Netherlands and Germany. Together these four countries accounted for 71% of the total value of Ghana's exports in 1996 (USD 1.2 billion of USD 1.6 billion). Gold and cocoa beans were the two primary exports that accounted for the export ranking of these four countries.

Major exports from Ghana (based on US dollar value) are: gold, cocoa beans, unwrought aluminum, wood sawn or chipped, cocoa butter, and prepared/preserved fish. The majority of these exports are shipped to overseas markets. Major exports from overland exit points (based on US dollar value) are: maize, salt, plywood and veneer panels, prepared fish, and iron and steel bars and rods. Ghana's principal overland trading partners include Côte d'Ivoire, Togo, Benin, Nigeria, Niger, Burkina Faso, and Mali. As the focus of this report is cross-border trade of non-traditional exports, an overview of this trade subsector is presented.

Launched in 1993 the Ghana Trade and Investment Programme (GTIP) was an USD 80 million dollar project between the US Government and the Government of Ghana designed to streamline export/import procedures, upgrade freight terminals at the Tema port and Kotoka international airport, and encourage the export of non-traditional commodities. Streamlining of export procedures included foreign exchange liberalization, the introduction of a new export form, and upgrading the facilities and improving the transparency of export procedures at the Tema port and Kotoka international airport. These changes were specifically designed to expedite the shipment of non-traditional exports (NTEs) to overseas markets. As part of the trade liberalization environment fostered by the GTIP the "Export and Import Act of 1995" (Act 503) was passed. Act 503 replaced Act 418 and 13 other regulations/decrees/laws and was designed to expedite the exporting of non-traditional exports and the importation of goods for commercial purposes (Government of Ghana 1995).

The TIP programme targeted NTEs which are any exported commodities except cocoa, electricity, gold, and unprocessed timber. Most of the commodities involved in cross-border trade between Ghana and its neighbors are NTEs.

The non-traditional export sector has witnessed phenomenal growth in Ghana since 1992 (GEPC 1998). In 1992 the value of NTEs was only USD 64.9 million. Five years later, in 1997, their value had surged to USD 329.1 million. Major NTE commodities that contributed to this phenomenal increase included agricultural products (e.g., fresh pineapples, bananas, fish and seafood, cocoa waste, sheanuts, coffee) and processed and semi-processed goods (e.g., aluminum products, cocoa cake and butter, canned tuna, foam mattresses, wood products). The agriculture NTE sub-sector contributed 18% (USD 57.4 million) to the value of NTEs in 1997 (an increase of 14% from 1996-1997). The processed and semi-processed NTE sub-sector accounted for 81% (USD 266.9 million) of NTE value in 1997 (an increase of 20% between 1996-1997). Thus the

processed and semi-processed sub-sector continued to dominate NTEs reinforcing the continued emphasis of Ghanaian non-traditional exporters on marketing value-added products.

In 1997 Ghana's NTEs were sent to 66 countries including Japan, the United States, Australia, European Union countries etc. The majority of recorded NTE trade is with the European Union countries which absorbed 65% (USD 212.8 million) of Ghana's NTEs (Table 3). The United States, Australia, and Japan represented as a group the second largest market for Ghana's NTEs (14% of NTEs with a value of USD 46.1 million). The ECOWAS countries purchased 12% (USD 39.5 million) of Ghana's NTEs in 1996, with Togo and Côte d'Ivoire accounting for the largest share. The principal NTEs to the above countries were processed and semi-processed products (e.g., wood and wood products, cocoa cake, liquor and butter, and tuna loins and canned tuna).

Exports from overland exit points represented 3% of total exports from Ghana (USD 42 million of USD 1.6 billion). Maize and salt were the two most important overland exports for 1996 (USD 3.9 million of maize, and USD 3.2 million of salt). Unofficial estimates for 1997 indicate a reduction in the overland exporting of maize and salt. The decline in maize exports has been due to low seasonal maize harvests during the second maize season in 1996 and the first maize season in 1997. Iodized salt from Senegal has recently taken some of the salt market from Ghana salt traders who have traditionally exported non-iodized salt.

The majority of Ghana's imports were from European Union countries which accounted for 26% of all imports in 1996 (International Monetary Fund 1996).

3.8 Infrastructure

Ghana is served by two major seaports on the Gulf of Guinea - Takoradi and Tema (Figure 1). In the 1990s Tema has become one of the most efficient container seaports on the West coast of Africa. Kotoka International Airport, located on the outskirts of Accra, boasts flights to major European and African cities, as well as direct flights to the United States. Airlinks within the ECOWAS sub-region are well developed. Ghana Airways (the national carrier) has connections with most of the national capitals in the sub-region, and direct flights were recently introduced to Ouagadougou and Bamako. An airlink service within Ghana operated by the Ghana Air Force connects Accra with Tamale and Takoradi.

Table 3: Ghana's Non-Traditional Exports (NTE) and Main Export Markets - 1996

MAJOR NTE MARKET	% NTE MARKET	US $ VALUE OF NTEs	MAIN NTEs
European Union	65%	$ 212.8 million	natural rubber, wood products, horticultural products, cocoa butter, canned tuna
United States, Japan, Australia	14%	$ 46.1 million	cocoa liquor, rotary veneer, natural rubber, frozen fish
ECOWAS Countries	12%	$ 39.5 million	palm oil, plastic articles, steel billets

Source: Ghana Export Promotion Council, 1998.

Ghana is linked by road to Togo and Côte d'Ivoire, and by road and airlink to Burkina Faso. The road network from Takoradi on the coast to Elubo and thence to Abidjan is satisfactory. The road system linking Ghana to Togo is in a deplorable state both in the south and in the north. The Accra - Kumasi - Tamale - Paga road network has recently been repaved and is in very good condition. This road network provides an efficient transportation route between Ghana and its Sahelian neighbors.

There is no railway link between Ghana and its neighbors; the rail lines within Ghana only serve the southern half of the country.

Under the Ghana Trade and Investment Programme begun in 1993 the infrastructure improvements included the construction of a new air freight terminal and the rehabilitation of the export shed at the Tema port. Both of these facilities offered streamlined procedures for exporters and importers to facilitate the transfer of goods.

There are no uniform storage facilities at the various entry/exit border points. While Elubo and Aflao appear to have reasonable floor space for storage of goods waiting to cross the border, Paga does not. Telecommunication facilities at the various border posts are adequate, but intermittent access to electricity caused by hydroelectric problems at the Akosombo Dam has

affected production as well as trade throughout the entire country (particularly between 1996-1998). The introduction of mobile telephones has improved communication between Accra and regional trade centers such as Kumasi, but the popularity of these telephones has exceeded their capacity to provide efficient service on a continuous basis.

The use of footpaths as communication/trade routes are present all along the borders Ghana shares with its neighbors. Local traders using these footpaths do not formally declare the goods they are bringing across the border to Customs agents. Customs officials have estimated that less than 20% of the cross-border trade between Ghana and its neighbors is recorded at formal border crossing points.

4. METHODOLOGY

4.1 Overview

The Ghana cross-border trade study had two objectives:

1. To combine recorded data on cross-border trade flows with "expert" opinion on unrecorded trade flows to calculate a total flow of goods across the border;[3] and

2. To obtain information on the relationships traders have established to facilitate trade or circumvent obstacles by interviewing a select group of traders.

The first objective used 1996 ***recorded*** data collected by Customs Excise and Preventive Service (Customs) personnel and tabulated by the data analysis unit in the Ministry of Trade and Industry (MOTI). This ***recorded*** data was then combined with information provided by "experts" on the trans-border flow of goods. These "experts" included local MOTI personnel, Customs agents, and other persons identified as having "expert" information on cross-border trade flows. By combining the two types of data and using a regression model analysis, the researchers were able to estimate total (recorded plus unrecorded) commodity flows.

The second objective used a structured questionnaire administered to a convenient sample of formal and informal traders. The questionnaire was designed to obtain information on the activities of traders related to the cross-border exchange of goods, and the relationships they had established to facilitate this exchange.

Interviewed traders were both formal (completing export documentation forms at Customs points), and informal (exporting undocumented goods). "Experts" and traders were interviewed

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[3]Work on the statistical models utilized in the estimation of data on formal and informal trade flows was provided by Dr. Panickos A. Palettas and Dr. Robert M. Leighty, Department of Statistics, Ohio State University.

at three geographic border crossing areas: north (Bawku area which includes Paga and Kulungugu border crossings), east (Aflao), and west (Elubo). From the map (Figure 1) it is evident that each of these geographic border crossing areas enables goods to enter and leave Ghana from Togo, Ivory Coast, Burkina Faso and regions tangential to these countries.

4.2 Data Availability

There are 26 monitored Customs exit/entry points in Ghana. Of these 26 exit/entry points data has been collected from 14 of them on a monthly basis. The following data has been collected: commodity and code, US dollar value, kilogram weight, number of exports, and average value (USD per kilogram). This data was published in an annual publication in 1996 through the Customs Export Data Information System.[4]

Currently there is no exhaustive listing of cross-border traders in Ghana. People with knowledge of those who participate in cross-border trade include Customs agents, clearing agents, MOTI and Ministry of Food and Agriculture (MOFA) personnel, and the traders themselves. There is no data available on informal (unreported) trade volume or participants.

4.3 Trade Data

To obtain an estimate of total overland trade it was necessary to utilize formal trade data collected at exit/entry points and estimate various pieces of missing data. For 1996 there was a relatively clean data set available for formal overland trade by commodity, point of export, value and volume of export. Formal overland trade data captured the flow of goods whose value and volume had been declared to Customs officers on an official export form at government-maintained exit/entry points along the Ghanaian border.

In estimating total trade volume at a given exit/entry point there were several pieces of data that were characterized as missing:

a. the formal recorded volume of trade for individual trips by different modes of transport (truck, headloader etc.);

b. the amount of recorded volume of a product plus the unrecorded volume of a product transported in each individual trip through a formal exit/entry border crossing; and

c. the volume of a product that crosses unrecorded through informal exit/entry border crossing points.

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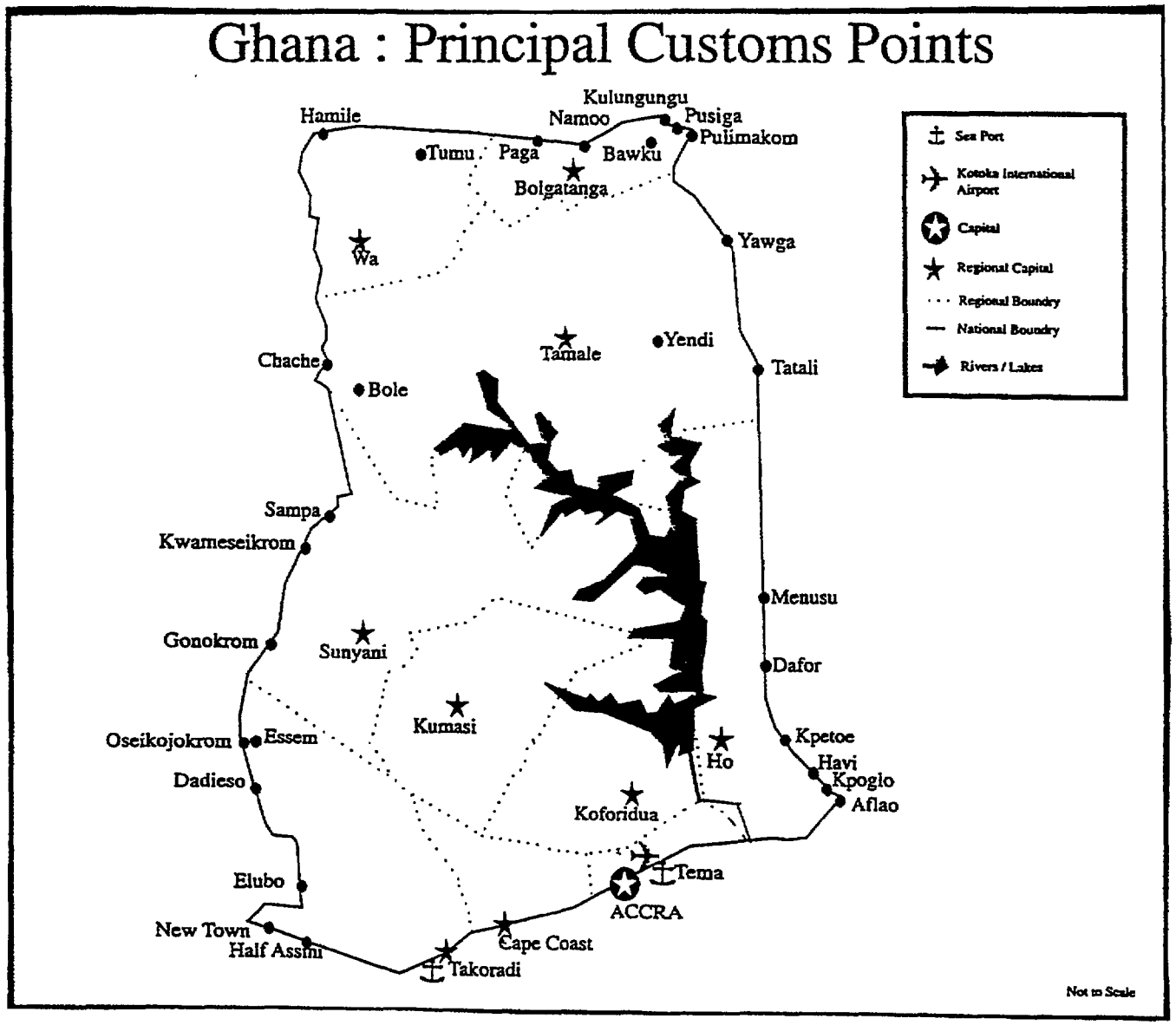
[4]The continued availability of hard data currently collected on formal cross-border trade is uncertain.

The methodology used to estimate the above missing data was a data augmentation methodology where missing data was imputed using a missing data model developed from elicited expert opinions. Discussions of missing data issues associated with statistical analysis have been previously presented by several authors (Rubin 1987; Gelman et al. 1995 and Rubin 1987).

Figure 1: Map of Ghana Formal Border Exit/Entry Points



4.4 "Expert" Trade Data

The data augmentation methodology used in this study utilized people who had been identified as "experts" in overland trade in the three geographic border crossing areas where data collection was occurring. Experts identified included MOTI and Customs field personnel, local business people who had knowledge of trade flows (e.g., market traders), transporters, clearing agents, and MOFA field agents. This method of data compilation is known as prior elicitation (see Appendix I).

The "experts" were asked to identify potential questionnaire respondents based on product traded. These respondents were then requested to estimate informal trade by using a series of scenarios based on existing trade patterns. Each "expert" was asked to provide different estimates based on weight (e.g., 50 kilos, 200 kilos etc.) for a list of products during peak and non-peak trading periods for three types of participants: headloaders, truck drivers, and expediters (individuals who facilitate trade by preparing the export forms, arranging for cross-border transportation etc.). For each type of participant at least 5 values were provided that represented the "expert's" best guess of total trade being exported overland for that commodity during a specific month and year. "Experts" were interviewed at each of the selected exit/entry points. The type of "expert" interviewed and the product for which they were asked to make their estimates are listed in Table 4 for each of the three border crossings.

Table 4: List of Commodities and "Experts" Interviewed at Aflao, Elubo, and Bawku*

Border Crossing	Commodity	Type of Expert Interviewed**
AFLAO	Aluminum Products	Clearing Agent
	Tomatoes	MOTI
	Salt	Clearing Agent
	Iron Rods	CEPS
	Maize	MOFA
Elubo	Maize	MOFA
	Salt	Clearing Agent CEPS MOTI
	Iron Rods	Clearing Agent CEPS
	Aluminum Products	CEPS
Bawku*	Tomatoes	MOFA
	Salt	CEPS MOFA
	Maize	MOFA
	Aluminum Products	CEPS
	Iron Rods	CEPS

Field Survey Data, 1997-1998.
*Bawku includes the northern exit/entry points of Paga, Kulungungu, and Pulimakom.
**There were 26 "experts" interviewed in total.

4.5a Methodology for Estimating the Distribution of Recorded Trade Volume of Ghanaian Export Products Crossing at Official Customs Cross-Border Exit/Entry Points

Let **Yijk represent the total amount traded** on the kth trip of the jth individual for the ith combination of product and mode. That is, Yijk may be viewed as a measurement of both formal (recorded) and informal (unrecorded) trade. Likewise, let **Xijk represent the amount recorded**

for the kth trip of the jth individual for the ith combination of product and mode. This data can then be used to characterize the conditional distribution of Yijk given Xijk:

f(Yijk | Xijk)

Finally, let Zijk represent the number of individuals carrying Yijk and reporting Xijk. Then Zijk provides the information necessary to characterize the marginal distribution of the scenarios, or the recorded amounts Xijk:

f(Xijk)

The product of these two distributions gives an estimate of the joint distribution from which the marginal distribution of the total volume traded f(Yijk) can be derived.

The details on how the conditional distribution f(Yijk | Xijk) was estimated is explained in 4.5b below. Graphical summaries suggest a linear relationship between Yijk and Xijk. This relationship also holds on the log scale. The equation for the linear relationship, however, depends on the combination of product and mode. Graphical summaries suggest that the conditional variance [var(Yijk | Xijk)] increases proportionally with the mean [E(Xijk)]. An appropriate analysis would be a random coefficient regression model that allowed the variance to increase with the mean. For computational convenience, a software package was used that fits a random coefficient Poisson regression model. A more detailed description of the model is provided in Appendix II and is based on earlier work by statisticians Breslow, Clayton, and Littell and others (Breslow and Clayton 1993; Littell et al. 1996).

The predicted values were graphically compared for each product mode combination included in the analysis using side-by-side box plots. The amount of unreported volume was also compared. Inferences about the mean volume traded per trip by product, mode of trade (e.g., truck), and year can be made using the sample representing the marginal distribution of Yijk. A sample totaling 8,657 different trade volumes representing the experts' opinions on the amount of trade per trip was generated. For each mode and product combination, estimates and confidence intervals were produced for the mean volume by year, and for the difference in mean volume of trade across years. (The confidence intervals for means assume normality for the error distribution.)

4.5b Methodology for Estimating the Distribution of Recorded and Unrecorded Trade Volume of Ghanaian Export Products Crossing at Official Customs Cross-Border Exit/Entry Points

The elicited expert opinion was used to construct a model for the conditional distribution of the total trade volume Y (recorded and unrecorded) given the recorded trade volume X. Specifically, let Yijk represent the total amount traded on the kth trip of the jth individual for the ith combination of product and mode. That is, Yijk may be viewed as a measurement of both recorded and unrecorded trade. The Yijk may also be viewed as missing data that can be

estimated using the conditional distribution of Yijk given Xijk:

f(Yijk ! Xijk)

Elicited expert opinion data was used to form a regression model to serve as a missing data model to estimate Yijk. The details on how the conditional distribution f(Yijk ! Xijk) was estimated are provided in the appendix. The product of these two distributions f(Xijk) and f(Yijk ! Xijk) gives an estimate of the joint distribution f(Sijk,Yijk) from which the marginal distribution of the total volume traded f(Yijk) can be derived.

The above model did not account for unofficial trips where a trader would avoid a formal exit/entry point completely. Therefore the proportion of crossings unrecorded with a Customs officer was also elicited from opinions of two groups of experts. Let Yil represent the total trade recorded and unrecorded by Customs officers for the ith combination of product and mode of crossing at the lth exit/entry point. The total amount of trade recorded and unrecorded at formal crossing points and at informal crossing points that avoided Customs officers was estimated to be:

Zil = Yil/(1-pil)

where pil is the proportion of crossings that avoid Customs officers for the ith combination of product and mode at the lth exit/entry point. The final estimate of total trade for the ith combination of product and mode at the lth port was estimated to be the average of the two individual estimates obtained from the two data sets or imputed from data augmentation.

4.6 Product Selection

The products selected for the study were: maize, salt, tomatoes, aluminum kitchen and table utensils, and iron rods. These products were selected because of their importance to food security (maize), their value-added processing occurring in Ghana (iron rods, aluminum products), their comparative advantage based on available Ghanaian resources (salt), and/or because women occupied critical roles in the trading of the commodity (tomatoes, aluminum products).

4.7 Sampling Technique and Questionnaire Administration

There was no list available for researchers of formal and informal traders. Therefore "experts" at each of the three border crossings were asked to provide a list of potential questionnaire respondents which would comprise a convenient sample of informal and formal traders. The questionnaire was administered to 124 traders and was designed to obtain information on the activities of traders related to the cross-border exchange of goods, and the socio-economic relationships they had established to facilitate this exchange.

Major sections of the questionnaire include:

. *information on goods traded (volume and value)*

. *process by which goods cross the border*

. *business and social linkages of traders*

. *constraints to cross-border trade.*

4.8 Fieldwork

The fieldwork consisted of two phases: a reconnaissance phase, and a data gathering phase. The reconnaissance phase involved site visits by the researchers to select the three specific border crossing points, to interview area persons knowledgeable of area trans-border trade flows, and to begin to identify "experts". During these initial site visits formal data collection efforts were also observed. Customs and MOTI officials were briefed on the objectives of the study and their cooperation was secured. The reconnaissance phase was completed in September 1997.

The second phase was data gathering. This phase commenced in February 1998 and was completed in April 1998. During this phase "experts" in Elubo, Aflao, and the Bawku area were identified and interviewed. Subsequent to these interviews the questionnaires were administered to "experts" and to formal and informal traders identified by the "experts." The total questionnaires administered were 124. The number of "experts" and traders who completed the questionnaire at each border crossing are detailed in Table 5.

Table 5: Number of Questionnaires Administered to Traders and "Experts" at Each Border Crossing Site

Border Crossing	Number of "Experts"	Number of Traders
Aflao	5	43
Elubo	6	41
Bawku*	9	40

Source: Field Survey Data, 1997-1998.
*Bawku includes the northern exit/entry points of Paga, Kulungungu and Pulimakom.

4.9 Selection of Advisory Committee for this Specific Research

A project advisory committee has been formed for this specific research project. The committee consists of representatives from the Ministry of Trade, the Ministry of Food and Agriculture, Customs Excise and Preventive Service, USAID, and two cross-border traders. The project

advisory committee was involved in the design of the questionnaire, the selection of interview sites, and the selection of products included in the analysis. A section of the questionnaire addresses policy changes in the regulatory environment for exports and their impact on overland trade since 1993. Several of these policy changes were implemented by the policymakers who are members of this current advisory committee.

5. FINDINGS

The two objectives of the research were:

1. to combine recorded data on cross-border trade flows with "expert" opinion on unrecorded trade flows to calculate a total flow of goods across the border; and

2. to interview selected traders to obtain information on the relationships they have established to facilitate their trade and/or to circumvent obstacles to their cross-border trade activities.

Data obtained from selected traders on the relationships they had established to facilitate their trade, and their behavior in circumventing specific obstacles to that trade are reported in the following section.

5.1 Respondent Characteristics

The information obtained on selected traders was accomplished by utilizing a convenient sample which was administered in 1998. There were 77 female and 47 male traders interviewed whose responses were useable in the analysis. Approximately 33% of the 124 respondents were interviewed at each of the three interview sites (Table 6). Slightly more than one-half (52%) of the interviewed traders indicated they were literate. Of those who were literate, the majority of them (52%) had completed schooling through the elementary level.

Table 6: Gender and Literacy Characteristics of Respondents

Interview Site	# Males Interviewed	# Females Interviewed	# Respondents Literate	# Respondents Illiterate
Aflao	15	28	22	21
Elubo	17	24	30	11
Bawku*	15	25	13	27
TOTAL	47	77	65	59

Source: Field Survey Data, 1998.
*Bawku includes the northern exit/entry points of Paga, Kulungungu and Pulimakom.

5.2 Length/Frequency of Involvement in Cross-Border Trade Activities

The majority of interviewed traders (75%) had been involved in cross-border trading activities for 10 years or less. More than one-half of the traders (60%) indicated their frequency of cross-border trade activities was two or more times per month (33% of respondents (41) traded twice per month).

5.3 Average Weight and Value of Commodity Traded

When questioned about the most profitable commodity they traded, respondents indicated the average weight of this commodity was less than 200 kilograms. Frequent responses given for the average value of the most profitable commodity traded were either less than USD 250 (40% or 45 respondents) or more than USD 500 (45% or 51 respondents).

5.4 Social and Business Linkages of Traders

Surveyed traders were asked to indicate how various social (kinship, religious, tribal) and business (financing, business associates, associations) linkages affected their trading activities. Social linkages are discussed first.

Of the 91 traders who responded to the question "How does kinship affect your trading activities?" 74% of the men and 77% of the women answered that kinship facilitated their trading activities (see Table 7). Kinship facilitation included the extension of short-term credit, storage, and travel assistance. Religious affiliation was more important to men (59% of male respondents) than women (39% of female respondents). The researchers hypothesize that for men who are Moslems, credit and other business transactions are facilitated through this religious affiliation. Tribal affiliation is similar in importance for female (45%) and male respondents (43%). For men tribal linkages are the least important of the three social linkages. No explanation was offered to clarify the type of trade facilitation activities that tribal linkages encouraged.

Business linkages include financing arrangements, business associates and business groups. Fewer men and women responded to the business linkage questions than responded to the social linkage questions (Table 8). A higher percentage of women indicated they were assisted in their trading activities by financial arrangements and by membership in business groups than did men. A slightly higher percentage of men than women indicated business associates were a more important linkage for trade facilitation.

Table 7: Number and Percentage of Traders Who Indicated Social Linkages* Facilitated Their Trade Activities

Linkages	Total # of Trader Respondents	# of Women Responding	# and % of Women Indicating Linkage Positive	# and % of Men Indicating Linkage Positive
Kinship	91 Traders	60	46 (77%)	23 (74%)
Religious	91 Traders	57	22 (39%)	20 (59%)
Tribal	81 Traders	53	24 (45%)	12 (43%)

Source: Field Survey Data, 1998.
* Social linkages are kinship, religious, and tribal affiliations.

Table 8: Number and Percentage of Traders Who Indicated Business Linkages* Facilitated Their Trade Activities

Linkages	Total # of Trader Respondents	# of Women Responding	# and % of Women Indicating Linkage Positive	# and % of Men Indicating Linkage Positive
Business Associates	72 Traders	47	37 (79%)	20 (80%)
Financing	91 Traders	31	24 (77%)	14 (64%)
Business Groups	91 Traders	24	13 (54%)	7 (37%)

Source: Field Survey Data, 1998.
* Business linkages are financing activities, business associates, and affiliations with business groups or associations.

5.5 Method of Border Crossing

Respondents were asked to indicate their frequency of border crossings for trade purposes. The two types of border crossings they used were exit/entry points where Customs officers were present and Customs forms were completed (formal crossing points), and exit/entry points where there were no Customs officers and no Customs forms were completed (informal crossing points).

Of the 124 traders who responded to the questionnaire, the research indicates that a majority of

the respondents (91 traders or 73%) use only formal border crossing points. When comparisons are made by border site, at least 90% of the interviewed traders at Aflao (93%) and Elubo (90%) indicated they used the formal border crossing points. At Bawku only 55% of the interviewed traders stated they crossed at the formal crossing points. The relatively low incidence of formal border crossings at Bawku is explained by the terrain along the northern border of Ghana which is more open and less closely monitored than the area surrounding the other two crossing points. The northern border area is also characterized by a more dispersed settlement pattern.

The remaining respondents either used informal crossing points (26 traders or 20%) or a combination of the two types of crossing points (7 traders or 5%)).

5.6 Explanation of Why Trader Uses Informal Border Crossing

A variety of reasons were provided to explain why traders use informal crossing points. Of those people who cross informally 12 traders (46%) said they did not want to pay export duties. A smaller percentage (22%) said the formal crossing points were too distant from where they lived and they preferred the crossing points which were located closer to them which were coincidentally informal crossing points. Other reasons traders provided for why they chose informal border crossing points included: you do not have to pay bribes or tips that were sometimes demanded by Customs officials (15%), and you were able to cross quicker and more efficiently if you did not have to complete Customs paperwork (4%).

Major Products Traded, Mode of Transport, and Type of Border Crossing
Respondents were asked to provide information on the three major products they traded across the border according to the revenue they generated for the trader. Additionally they were asked how these products crossed the border, and the means of transport utilized to carry these products across the border (e.g., donkey cart, headload, truck etc.). Of the 124 traders who were interviewed, 120 traders answered this set of questions. All of the traders at Aflao (43 traders) and Elubo (41 traders) answered these questions, but at Bawku 36 of 40 traders answered the questions. (i.e., 4 traders at Bawku did not respond to all questions).

5.7 Three Major Product Groupings Respondents Traded Cross-Border

A total of 52 different products were listed among the 120 traders. Some respondents trade in only one product, while others trade in two products, and still others trade in three or more products. For analysis, products were aggregated into three major categories according to revenue-generating information provided for each border crossing site. Respondents who traded those products were then asked to rank their most important products involved in cross-border trade according to the revenue they generated. Thus product A would generate the most revenue, product B the second most revenue, and product C the third most revenue. The number of products by revenue ranking (A,B,C) is provided for each border crossing site (Table 9).

Table 9: Distribution of Selected Product Groupings and Revenue Ranking of Selected Product Groupings by Border Site

Revenue Ranking	A	B	C
Border Site	Product Grouping	Product Grouping	Product Grouping
Aflao	fish t-shirts cola shoes	aluminum products	tomatoes
Elubo	cosmetics kente biscuits toffee	shoes	yam
Bawku*	textiles maize drinks tomatoes	millet	beans
Total	textiles tomatoes cosmetics fish	shoes	cowpeas groundnuts

Source: Field Survey Data, 1998.
*Bawku includes the northern exit/entry points of Paga, Kulungungu, and Pulimakom.

At Aflao respondent traders indicated fish was the most important revenue-generating product they traded across the border. The next products traded in order of revenue produced were: t-shirts, cola, and shoes. In Elubo cosmetics were the most important revenue-generating product traded followed by kente, biscuits, and toffee. For Bawku textiles were the most important product followed by tomatoes, maize, and drinks. For type B products (second most important revenue-generating product) and type C products (third most important revenue-generating product) there were also an assortment of items which varied by border crossing.

5.8 Mode of Transport and Type of Border Crossing

The truck is the predominant form of transport used by traders to transport their type A products across the border (Table 10). If a trader is involved in trading several different types of commodities across the border, they might use various means of transportation (e.g., truck, pushcart, headloader). Pushcarts are prominent at the Aflao border crossing between Ghana and Togo. Donkey carts are used only in Northern Ghana along the Ghana-Togo and Ghana-Burkina

Faso borders. Boats are used at the Elubo border crossing between Ghana and Côte d'Ivoire, and between Togo and Ghana in the Aflao area. The use of boats at the latter border area crossings has resulted in an increase in smuggling in the last ten years, especially by smugglers in high speed motor boats which can evade the slower, older Customs boats.

Table 10: Method of Transportation Utilized by Cross-Border Traders for Product A*

Method of Transportation	Number** and Percent of Respondents Utilizing Transport Method
Hire Private Truck	70 (60%)
Headloaders	16 (14%)
Government Transport (bus)	11 (9%)
Pushcarts	9 (8%)
Donkey Carts	8 (7%)
Other Methods (bicycle, boat etc.)	3 (3%)

Source: Field Survey Data, 1998.
*Product A generates the most revenue for the trader.
**Total number of respondents is 117.

Disaggregating the method of transport and the formal/informal method of border crossing by type of product category (A, B, C) highlights regional geographic differences in Ghana.

Aflao. At Aflao, approximately 90% of the type A products cross the border formally, and 10% informally. Type B and C products follow a similar pattern. The major mode of transport for type A products is the pushcart (42%) followed by the truck (37%) and headloading (20%) (Table 11). For all goods (A, B and C) that the respondent trades across the border the pushcart is the most utilized (42%) transport mode. Besides the pushcart, headloading (29%) and cargo truck (19%) are also used for all three products.

Elubo. The Elubo crossing is the least "open" of the three border interview sites. This situation generally compels over 90% of the traders of all three types of products (A,B, C) to use the formal crossing. Some informal crossings by small canoes across the river bordering Ghana and Côte d'Ivoire were observed by interviewers, though no one interviewed spoke of this type of crossing. For product A crossings over two-thirds of the traders use truck transport(84%). For the remaining products, half of them cross as passenger goods in state transport buses (seating 60 passengers). The other half cross in private cargo/passenger trucks.

Bawku. In the north the Bawku border site presents a varied pattern. Of the type A products, 36 products (61%) cross formally and 23 products (39%) cross informally. Mode of transport used

in border crossings for type A products reflects the increased incidence of informally crossing: 50% headloading and 39% truck. (Headloaders are usually not required to complete formal crossing forms.) Type B products (20 products total) follow a similar pattern of crossing (55% formally cross the border). Both formal and informal crossings of type B products use similar modes of transport which include headload (35%), donkey cart (15%), or truck (5%). The majority of type C products (10 products total) cross formally (70%) by either headload (79%) or truck (30%).

All Three Border Crossings. Combining the three border sites a pattern of truck transport and crossing formally emerges among traders, especially among respondents for type A products. Approximately 85% of type A products cross the border formally, and 15% cross informally. The dominant mode of transportation of type A products at formal crossing points is the truck (53%) with Elubo traders indicating the highest incidence of truck use (84%) (Table 11). Headloading (27%) and pushcart (19%) represent the second and third most frequent transport modes for Product A formal crossings. For informal crossings trucks and bicycles are the main form of goods transport.

Table 11: Method of Transportation Utilized by Traders for Product A* by Formal Border Crossing

BORDER SITE	# and % Using Truck	# and % Using Cart*	# and % Using Headload	Total*** Respondents for Site
Aflao	15 (37%)	17 (42%)	8 (20%)	41
Elubo	32 (84%)	2 (5%)	4 (11%)	38
Bawku**	15 (39%)	3 (8%)	19 (50%)	38
TOTAL	62 (53%)	22 (19%)	31 (26%)	117

Source: Field Survey Data, 1998.
*Product A generates the most revenue for the trader.
**At the Bawku border site "cart" would include both pushcart and donkey cart. Bawku includes the northern exit/entry points of Paga, Kulungungu, and Pulimakom.
***Total respondents do not equal row totals for Aflao and Bawku because one trader at each site utilized a different means of transportation than the categories presented in Table 11.

The pattern for type B products (57 in total) is to cross formally (84%) by truck (51%). Headloading and pushcart forms of transportation are second and third respectively. Type C products follow a pattern similar to type B products. Bawku was the only one of the three border crossings that recorded the use of donkeys for transport of goods. Aflao was the only crossing reporting the use of pushcarts, and Elubo was the only crossing reporting bicycles.

5.9 How Respondent Handles Cross-Border Issues

Respondents were asked to explain how they handle specific operational issues associated with cross-border trade. Nine specific problem areas were listed in the questionnaire, and traders could indicate others if they chose.

5.9a Completion of Paperwork. Of the 124 traders interviewed about completion of Customs paperwork, 50 traders (40%) complete the paperwork themselves, 46 (37%) rely on others (e.g., clearing agents) to complete their paperwork, and 28 (23%) disregard this requirement completely. Of those traders who use only formal crossing points, 47% complete the paperwork themselves and 44% rely on others. There were no discernible differences in responses by men and women.

Of those traders who depended on others to complete their Customs forms, clearing agents were the most likely alternative to complete the forms (61% of nontraders). In addition to clearing agents, informal operators (27%) and various other people (11%) completed the required forms. The majority of traders indicated they were present (69%) while their paperwork was completed by others. And over 80% stated their Customs paperwork was completed efficiently (83%) and accurately (88%).

5.9b Handling Government Fees/Taxes. The majority of traders (61%) pay fees and taxes themselves, and less than 10% make these payments through clearing agents. Bribery and noncompliance with fee/tax payments was cited by a few traders: 2% indicated they bribe officials to avoid paying government fees and taxes, 9% evade these payments through crossing at informal points, and 7% do not pay fees.

5.9c Handling Road Blocks. Of those traders who responded to questions about road blocks, most traders (33 respondents or 40%) informally pay bribes at road blocks which are personally negotiated with the Customs or Police personnel manning those road blocks. Other methods of handling roadblocks included allowing the officers to inspect their goods (14 respondents or 17%), or having the goods certified which reduced examination at roadblocks (15 respondents or 18%).

5.9d Money Conversion. Approximately half of the respondents (51%) obtain foreign currency for their trading activities from a foreign exchange bureau. Slightly less than half (46%) use the black market to obtain foreign currency. Less than 5% exchange their currency in the cross-border country where they trade. Most traders indicated that currency conversion is no longer an issue since the financial liberalization policy was put into effect by the Government of Ghana in the early 1990s.

5.9e Handling Storage Requirements. Many traders either own (29%) or have easy access (29%) to storage facilities at the border. Those who have access to storage facilities generally pay only a small fee or no fee for the storage area. About 14% of the respondents rent storage

facilities from clearing agents or others.

5.9f Handling Finance Requirements. The majority of traders either finance their trading activities through their own savings (76%), or they receive financing from relatives (9%). Less than 10% receive financing from the formal banking system (8%) or from credit unions (5%). A few traders (1%) obtain their goods on credit from merchants, and repay after the goods have been sold.

5.9g Handling Demand. Most respondents (69%) sell their goods on a cash-and-carry basis to either other traders or consumers. Most traders insist on immediate payment to reduce the risk of customers failing to pay on time. In spite of risks and other difficulties associated with credit sales, about 17% of traders do sell their goods on credit. Another 6% of traders sell their goods to commodity market queens who distribute the goods to individual vendors in her market area.

5.9h Handling Supply. Traders generally do not produce the goods they trade. A third of the traders (33%) procure their goods from several sources including direct from factories (13%) or from middlemen (11%). About one-quarter of the respondents (26%) buy their goods on cash, and only 7% obtain their goods on credit.

5.9i Handling Language and Cultural Differences. Language and other cultural differences do not appear to be an issue in cross-border trade. Most traders are able to conduct business in either their native dialect, in English, or in French. Interpreters are often available at border crossing points.

5.9j Major Obstacles Experienced by Cross-Border Traders. Respondent traders were asked to list the most important obstacle to cross-border trade they experienced (Table 12). The obstacle most frequently cited by those who responded was government inspections (30 respondents or 29%). Numerous roadblocks by police and CEPS officials was the second most frequently cited obstacle, and extortion by Francophone Customs officers was third. Other obstacles listed as important (though no more than 7 respondents indicated these as problem areas) included bribes to CEPS officials, border Customs procedures, and duty rates.

Table 12: Most Important Obstacle to Cross-Border Trade

Most Important Obstacle	Number of Respondents*	Percent of Respondents
Government Inspections	30	24 %
Numerous CEPS/Police Roadblocks	22	18 %
Extortion by Doune**	19	15 %

Source: Field Survey Data, 1998.
*A total of 105 respondents answered this question.

** Doune is the Francophone counterpart of the Ghanaian Customs officers in charge of collecting export/import duties.

Respondents were then asked to approximate the cost of the obstacle to them, both in terms of monetary costs and time lost. More respondents (70 traders) were able to calculate the time lost due to the obstacle than the monetary cost (56 traders). A summary of these responses is presented in Table 13.

Approximately 67% of the respondents (41) reported USD 25 or less in monetary costs associated with the obstacle they listed as the most important impediment to cross-border trade. Over half of the respondents (36 or 51%) indicated they lost from 1 to 5 hours as a result of the obstacle. This information can be used as a proxy for the measurement of costs associated with frequent inspections (whether official or unofficial) endured by cross-border traders.

Though no specific data on annual or monthly cross-border trader income is available, it is possible to estimate the cost to traders by using GDP per capita as a proxy income measure. The GDP per capita for Ghana between 1990-1996 was USD 390. Based on a USD 390 annual income, monthly income was estimated at USD 32.50, daily income USD 1.35 (assuming some work activity 6 days per week), and hourly income USD .25. Given the relatively low wage rate in Ghana ($1.00 per day for unskilled labor was not uncommon in 1996), the data on costs in Table 13 emphasizes the heavy economic burden on cross-border traders of numerous inspections and extortion by government officials. Of those traders who responded, more than half of them (57%) lost 8 or more days in lost wages when their monetary cost is defined in terms of income. When their loss of time is equated in monetary terms, their USD equivalent amount is low because of the relatively low wage rate in Ghana. The majority of traders (86 of 124 respondents or 69 %) made more than one round trip cross-border trade crossing per month. Of this group of 86 traders, 34 traders made more then 3 round trip cross-border excursions per month. Cost data supplied by traders was provided on a per trip basis. The researchers converted the trip data to monthly estimates.[5]

Some of the above costs can be justified on health and/or plant/animal protection grounds (e.g., government procedures associated with the agricultural inspection of food for diseases). Other costs associated with obstacles such as numerous roadblocks by CEPS and police disrupt commercial activity and appear to be administered without any particular pattern or objective. (Researchers experienced more than 10 roadblocks between the Aflao border and Accra, a distance of less than 140 kilometers.)

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[5]As mentioned earlier in this study, the removal of medieval roadblocks in Europe is credited with marking the beginning of an economic Renaissance on that continent. The Government of Ghana could contribute to a resurgence of regional trade by removing unnecessary inspections and roadblocks which impede trans-border trade flows.

Table 13: Monetary and Time Costs Paid by Traders Resulting from Most Important Obstacle to Cross-Border Traders

Monetary Cost of Obstacle	Lost Daily Wages in Local Currency*	Number of Respondents**	Percent of Respondents
< USD 10	<1 up to 7.5 days in lost wages	23	41 %
USD 10 to USD 25	8 to 18.5 days in lost wages	18	32 %
> USD 25	19 days + in lost wages	15	27 %
Time Cost of Obstacle			
< 1 hour	< USD .25	17	24 %
1-5 hours	USD .25 to USD 1.25	36	51 %
> 5 hours	> USD 1.25	17	24 %

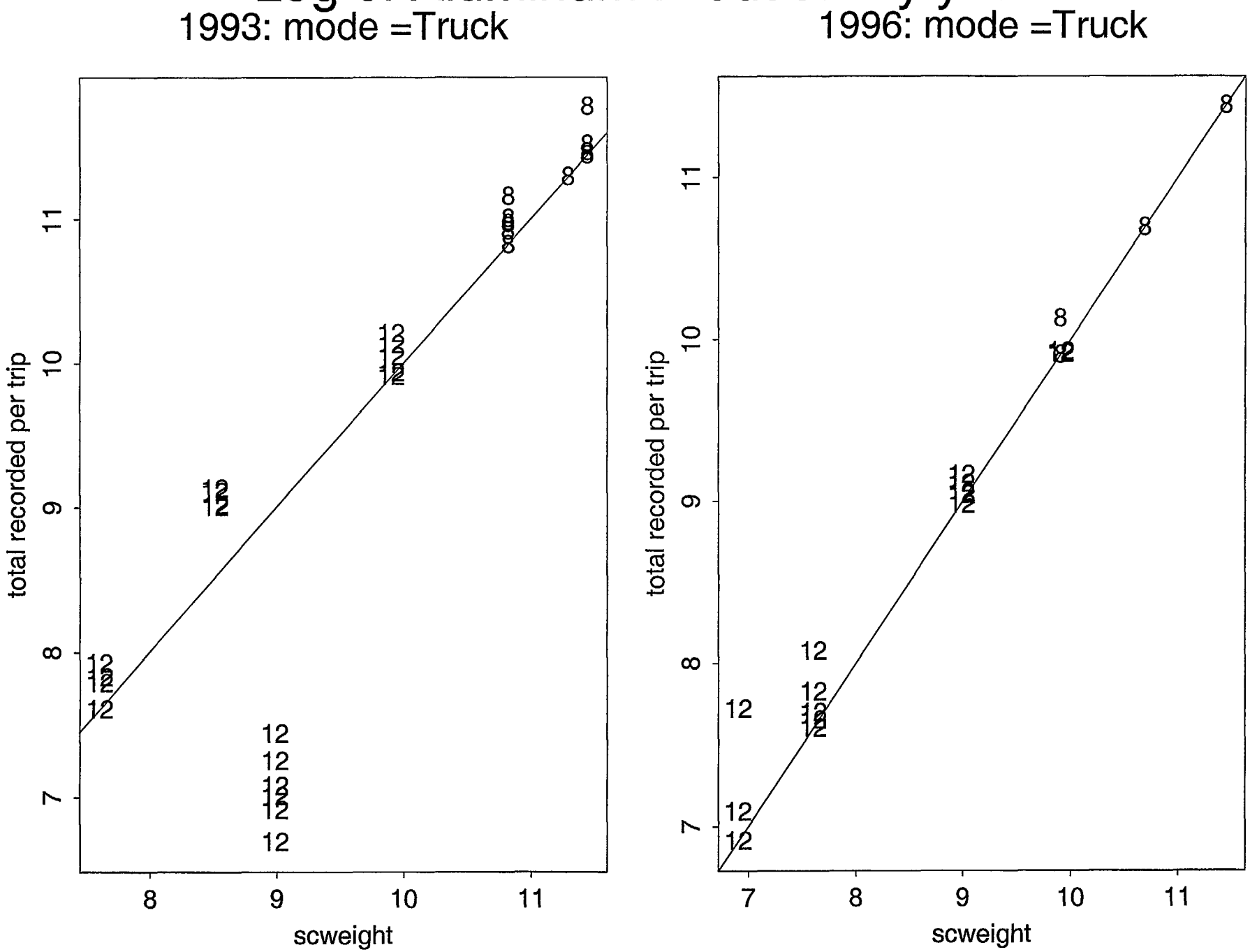
Source: Field Survey Data, 1998.
*GDP per capita for Ghana between 1990-1996 was used as a proxy annual income measure for Ghanaian traders. Based on this proxy annual income measure of USD 390, monthly income was estimated to be USD 32.50, daily income was USD 1.35 (assuming some work activity 6 days per week), and hourly income was USD .25.
**A total of 56 respondents answered the monetary cost question, and a total of 70 respondents answered the time loss question.

5.10 Graphical Exploratory Data Analysis[6]

Scatter plots on the log scale of the mean total per trip Y versus the scenarios recorded amount X are provided on pages 36-46. The plots are for each combination of product (e.g., maize) and mode of crossing (e.g., truck) where there was sufficient data to make a comparison between the two years 1993 and 1996. For truck drivers, there was sufficient data to perform an analysis on four products (aluminum products or "alum pds" maize, salt, iron rods or "iron"). For

[6]Data presented in this section is from the statistical work done by Dr. Panickos A. Palettas and Dr. Robert M. Leighty Department of Statistics Ohio State University.

Log of Aluminum Products by year

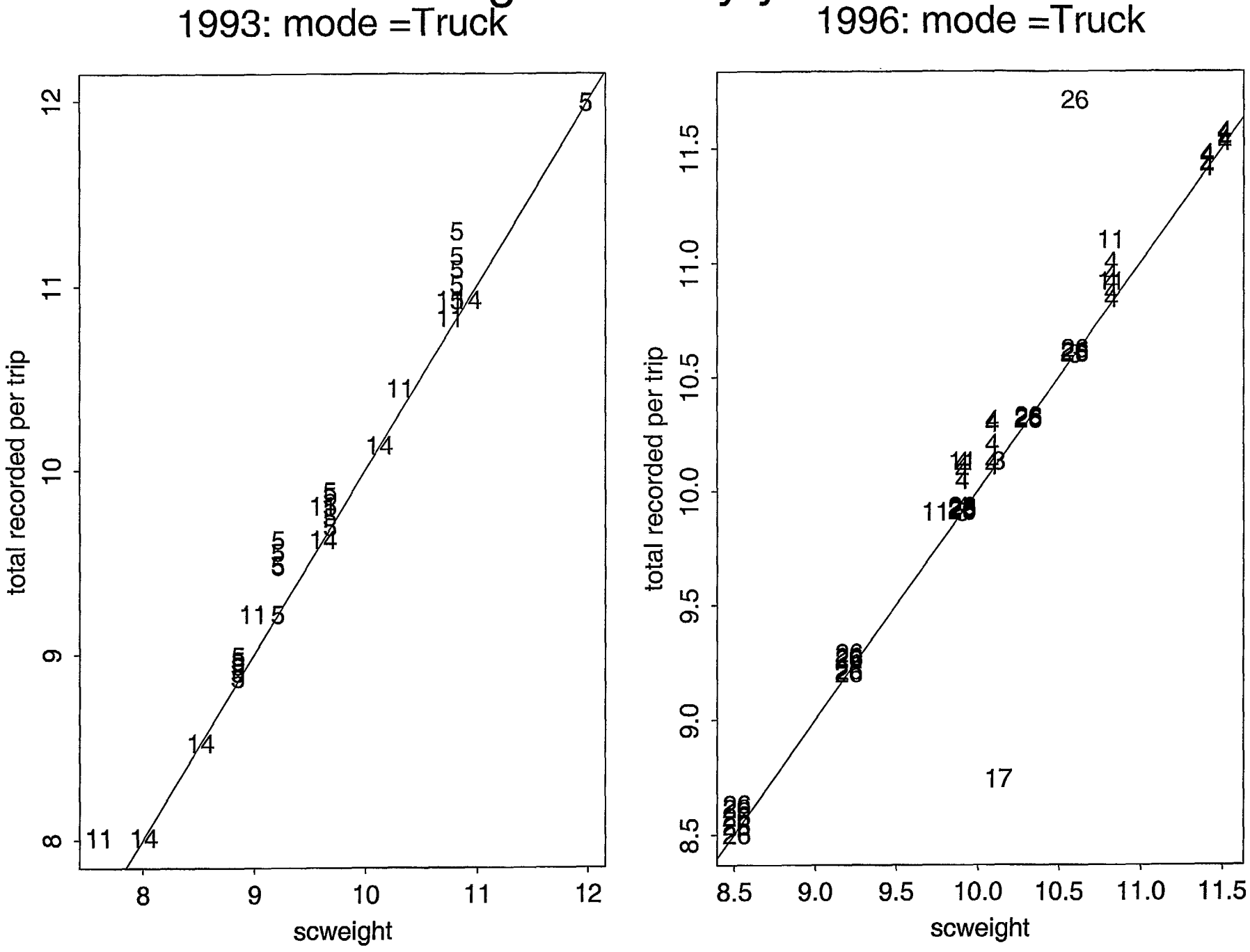


headloaders only tomatoes were analyzed and for pushcarts only maize was analyzed. Points are labeled by a code for each "expert" number. In some cases a relatively small number of experts contributed information.

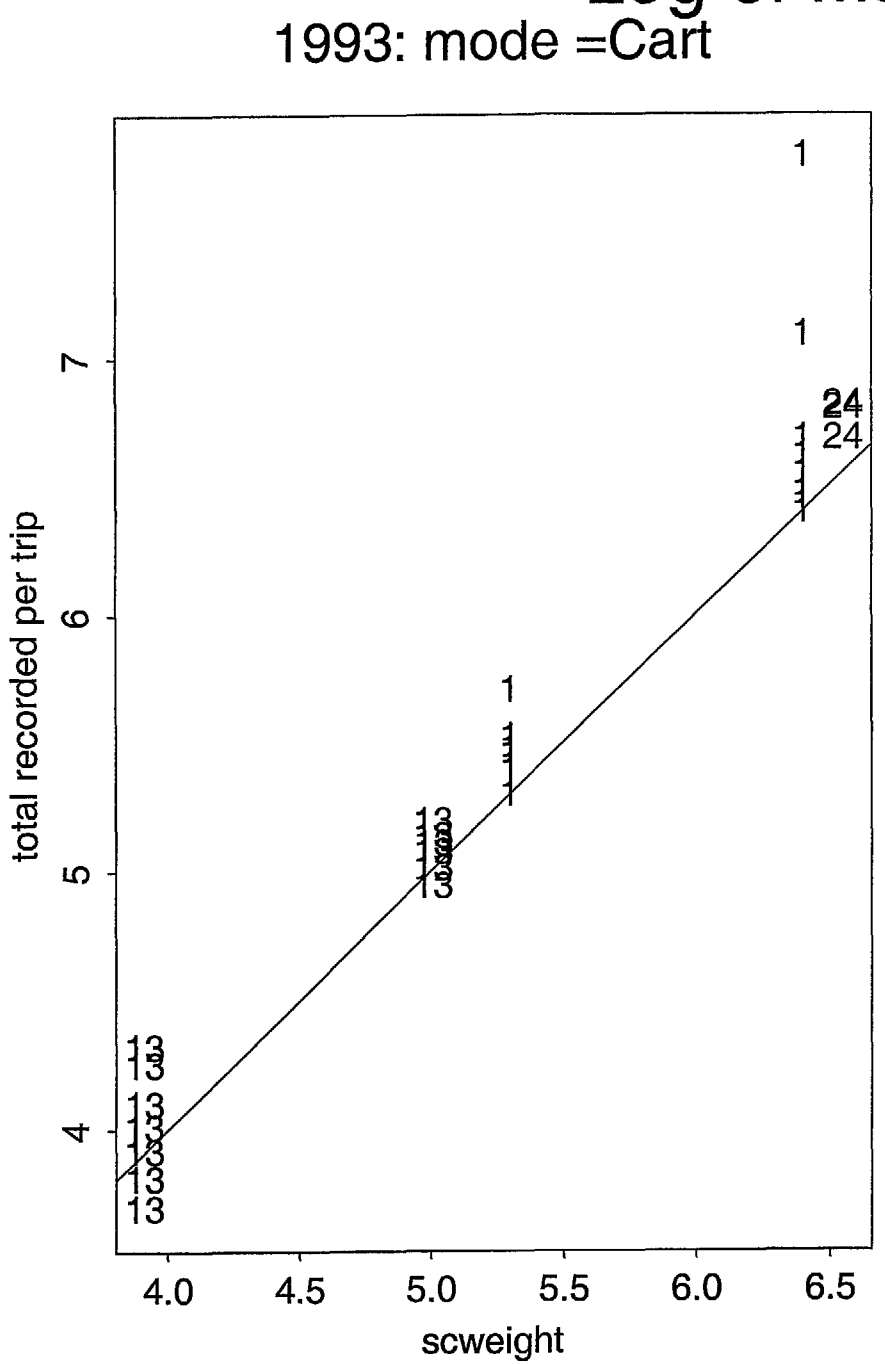
Points above the line Y=X are trade examples where more volume of product is traded than recorded. When the mass of points are more concentrated on the right hand side of the graph, this indicates a shift towards more trade. It is evident that there has been an increase in trade in 1996 from 1993 in the case of maize crossing the border in trucks and carts, and tomatoes crossing with headloaders. Increases and decreases in agricultural trade reflect growing conditions and pricing policies on either side of the border. Trade flows can change weekly, even daily, depending on changes in these conditions/policies. A decrease in salt exports from Ghana was due to payment problems between Burkinabe and Ivorian importers and Ghanaian exporters, and the increased demand for iodized salt from Senegal.

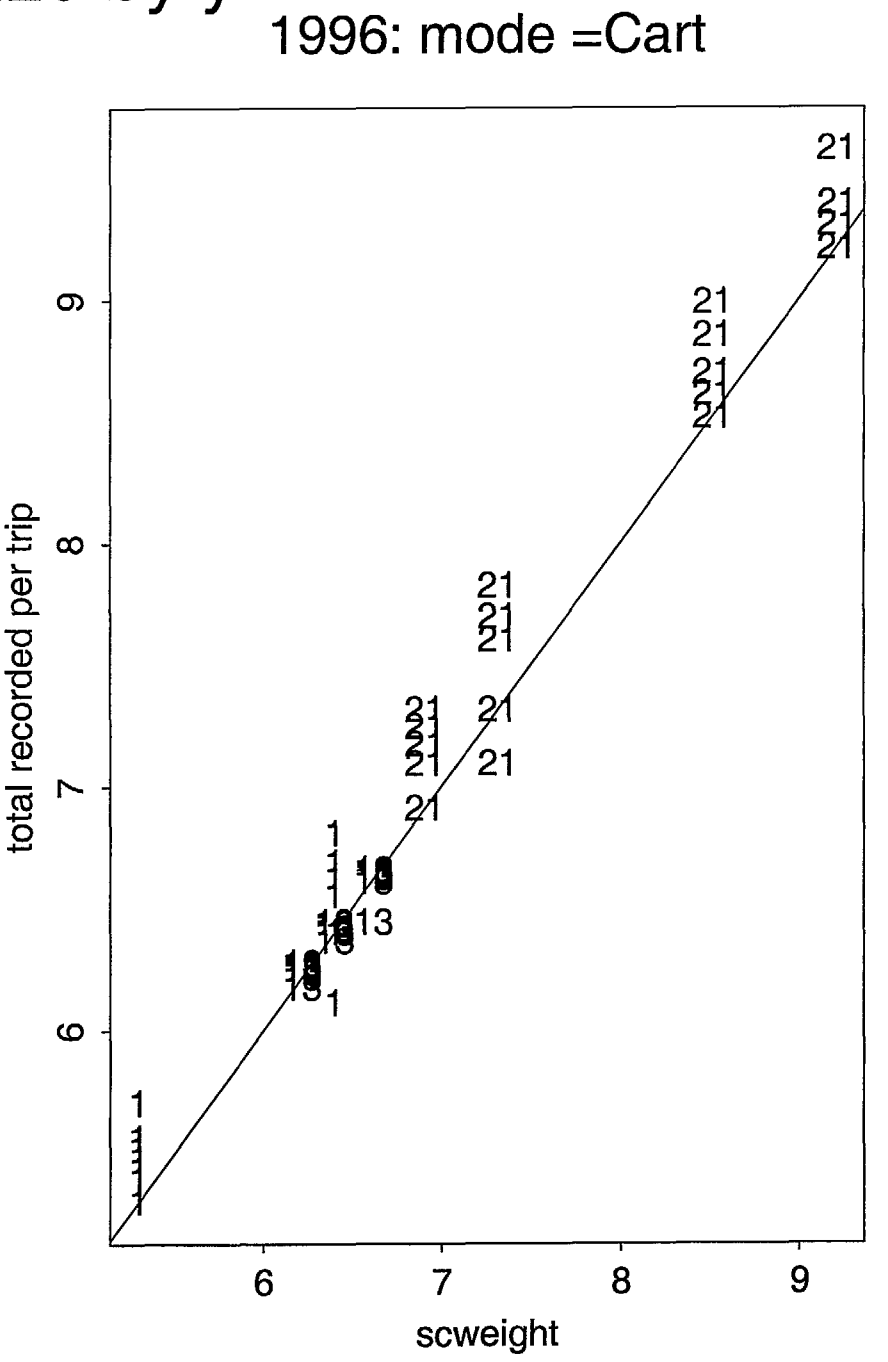
The graphs support a linear relationship on the log scale assumed in a regression model. Additionally, the graphs support a separate linear relationship for each product/mode combination which is reflected as random coefficients in the mixed-effects regression model (see Appendix III).

Log of Iron by year

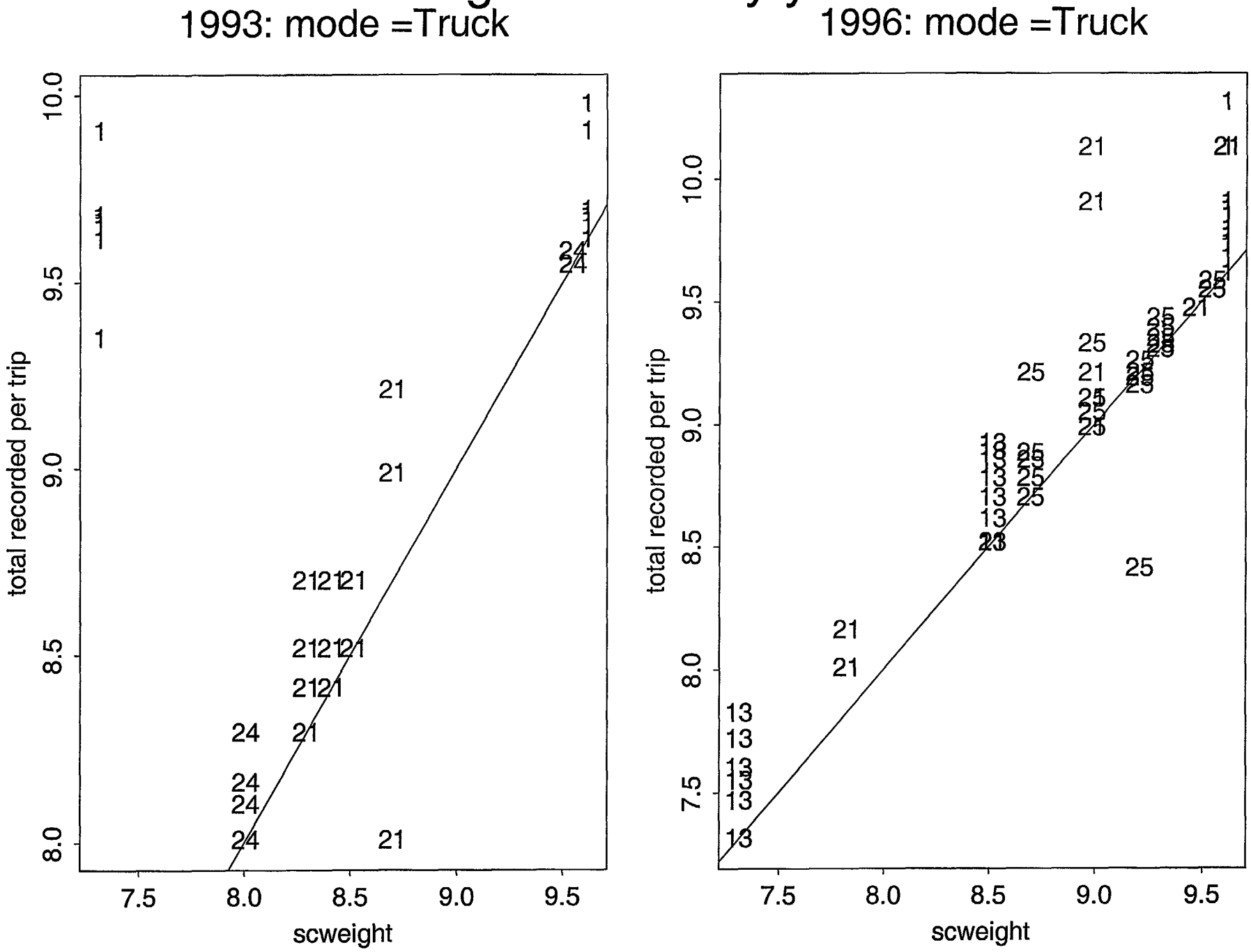


Log of Maize by year

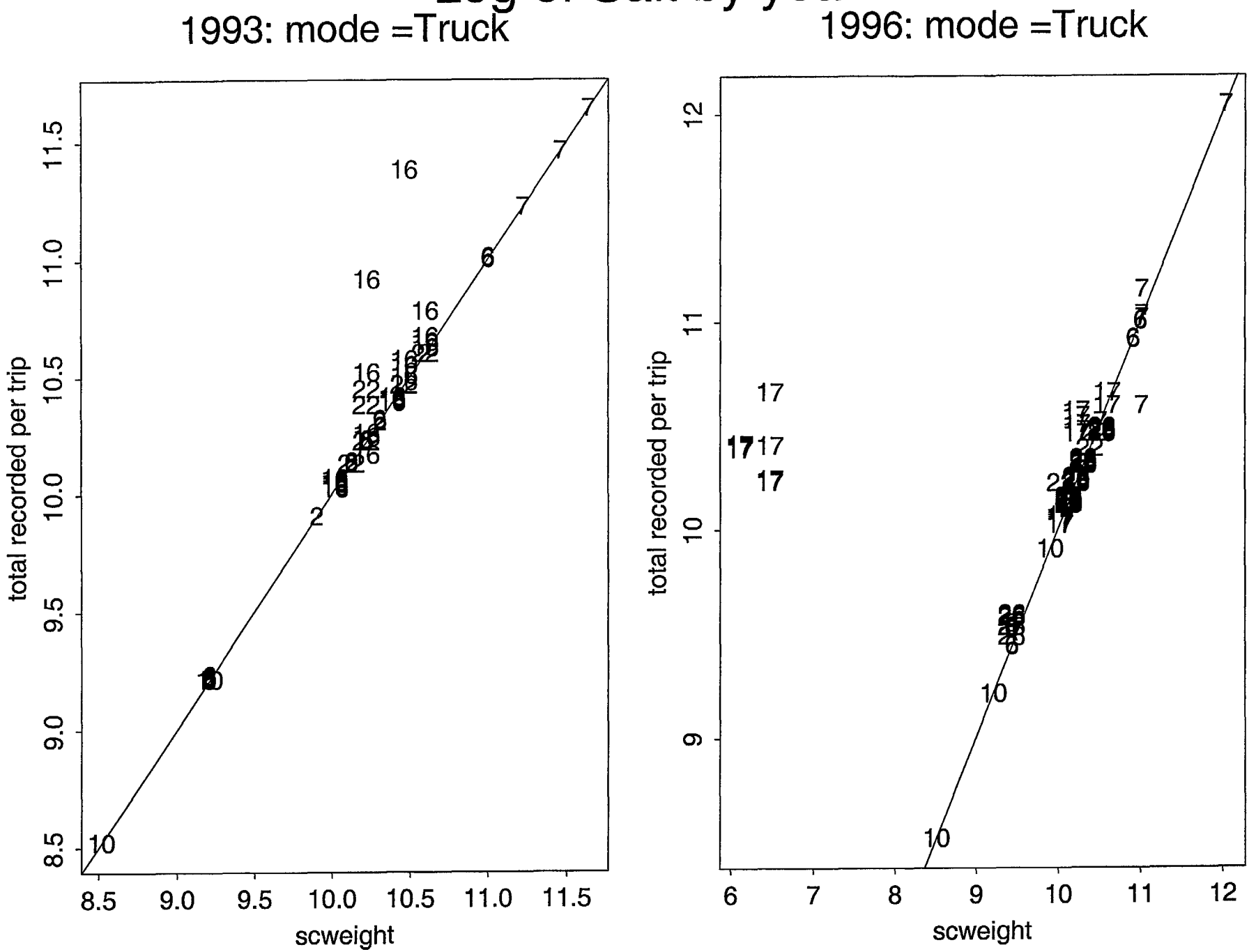




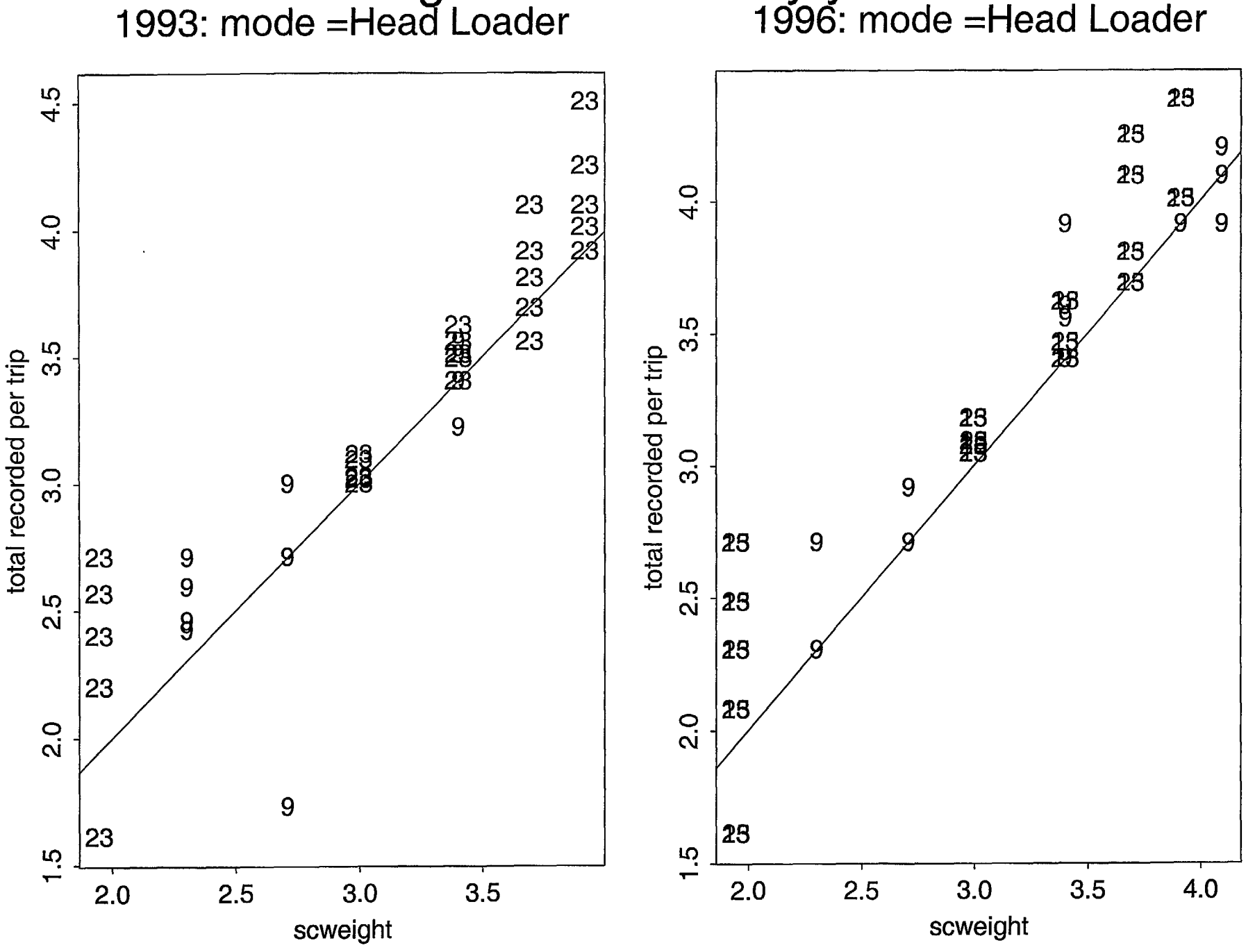
Log of Maize by year



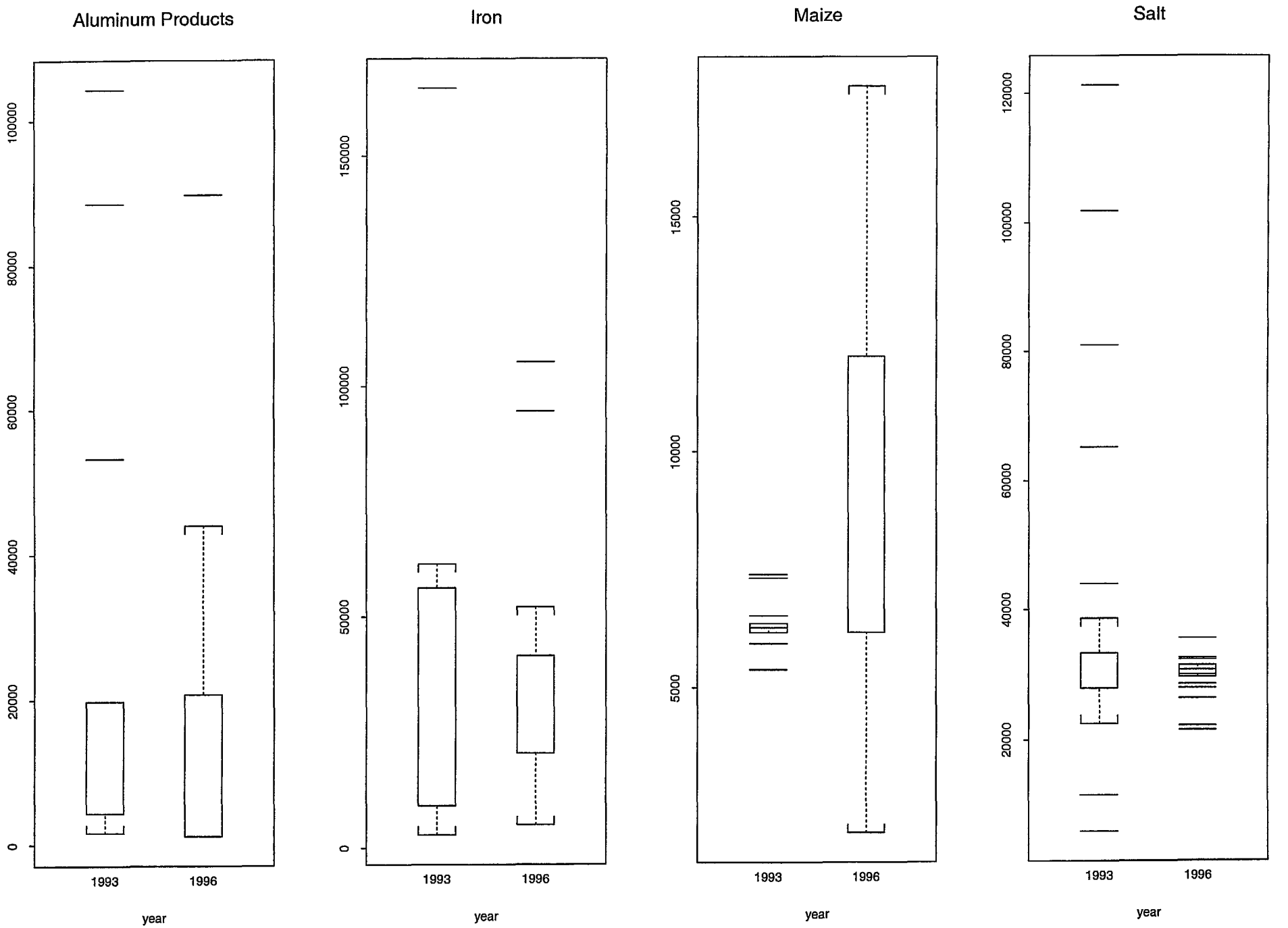
Log of Salt by year



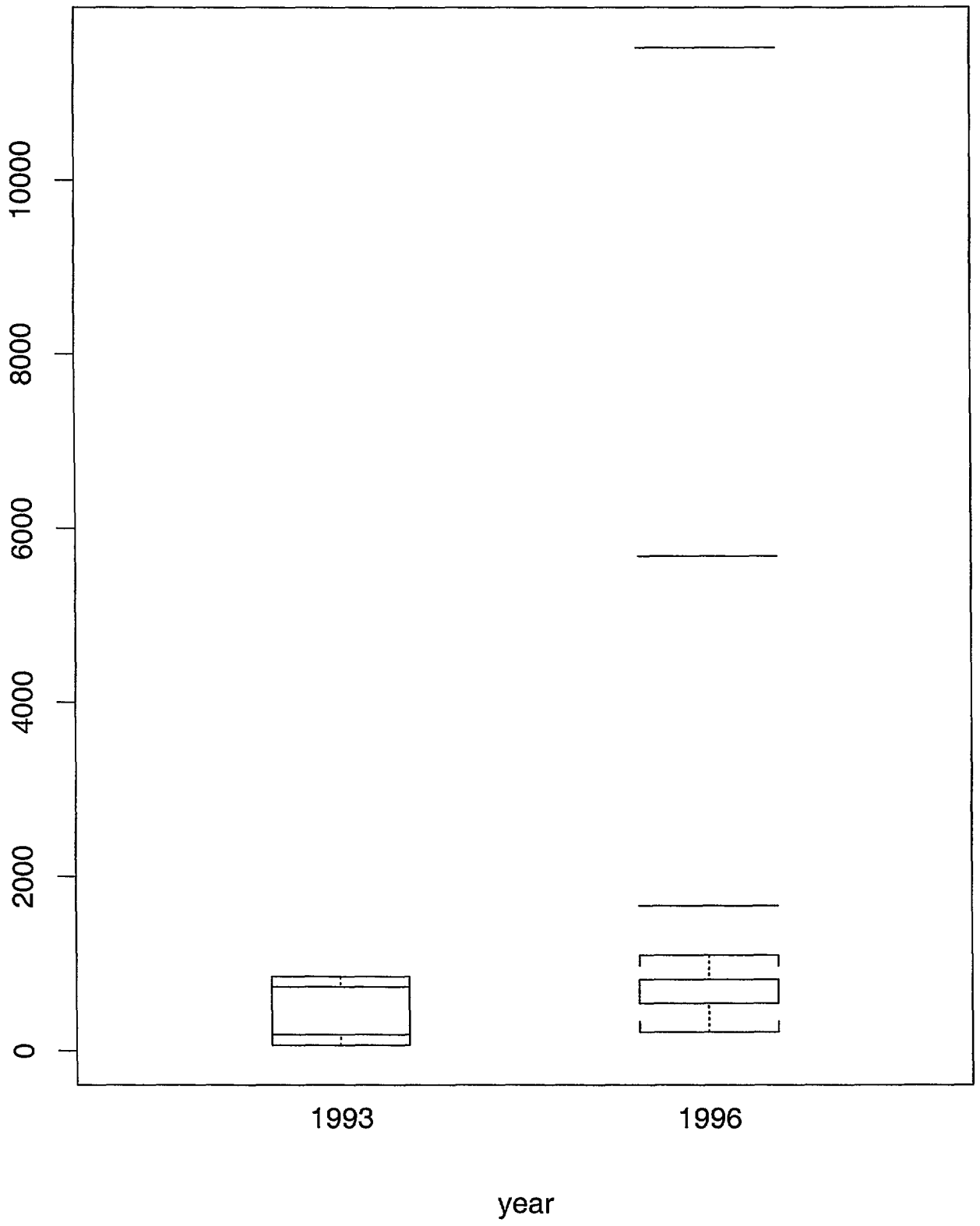
Log of Tomatoes by year



Experts' Distributions of trade for Trucks in 1993 and 1996

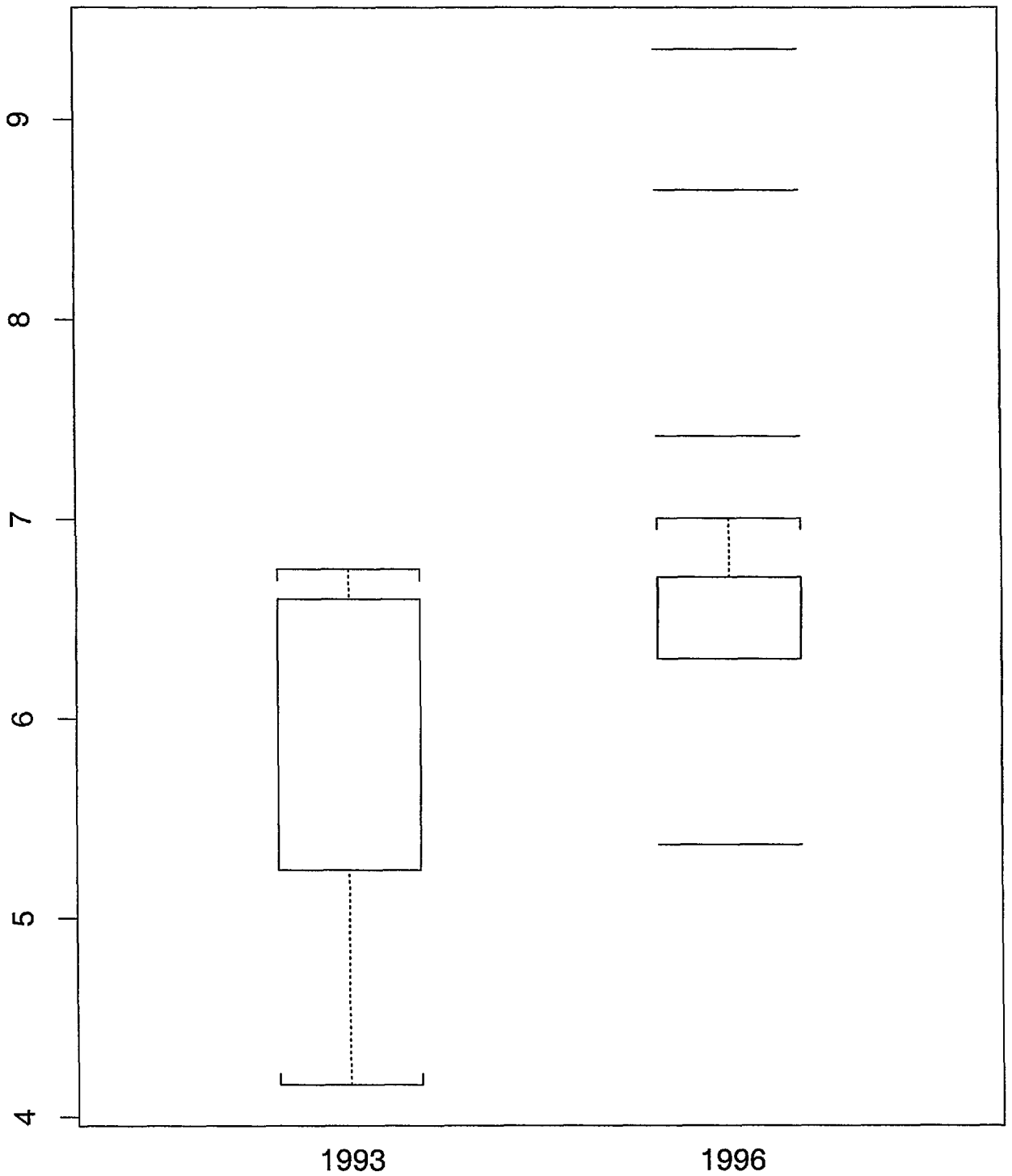


Experts' Distributions of trade for Carts in 1993 and 1996



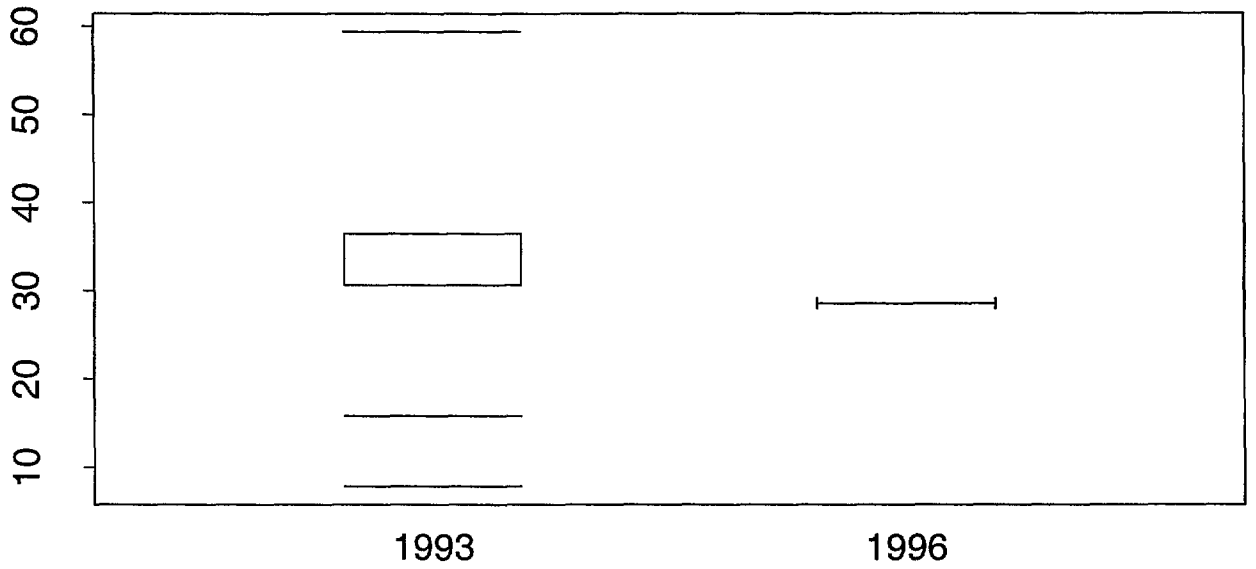
Experts' Distributions of trade for Carts in 1993 and 1996

Maize

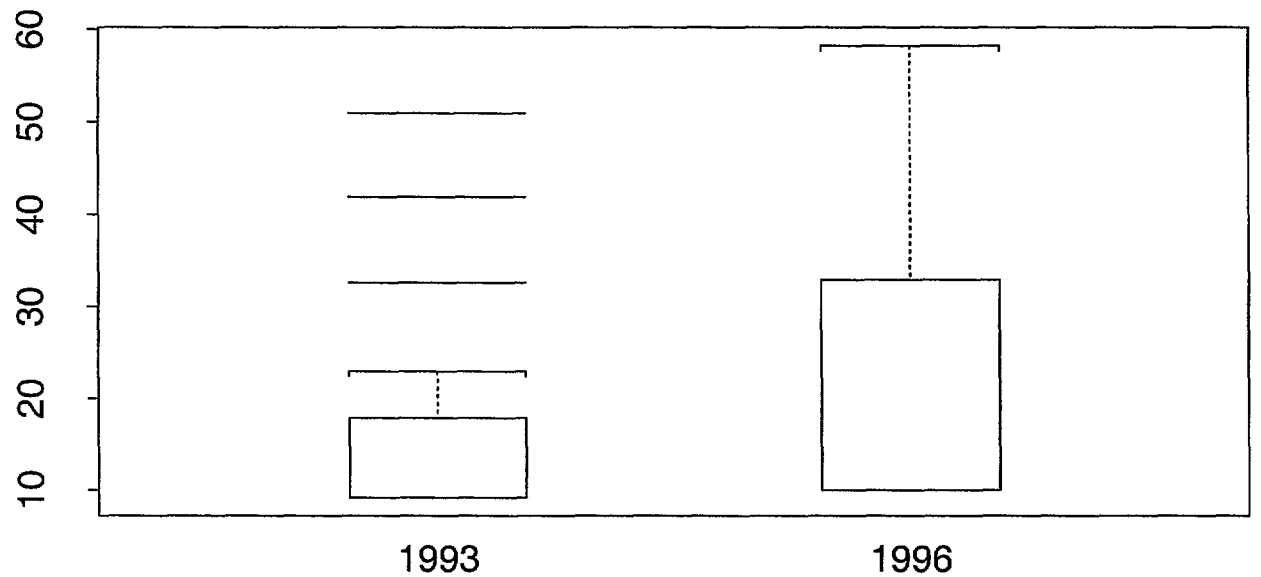


Experts' Distributions of trade for Head Loaders in 1993 and 1996

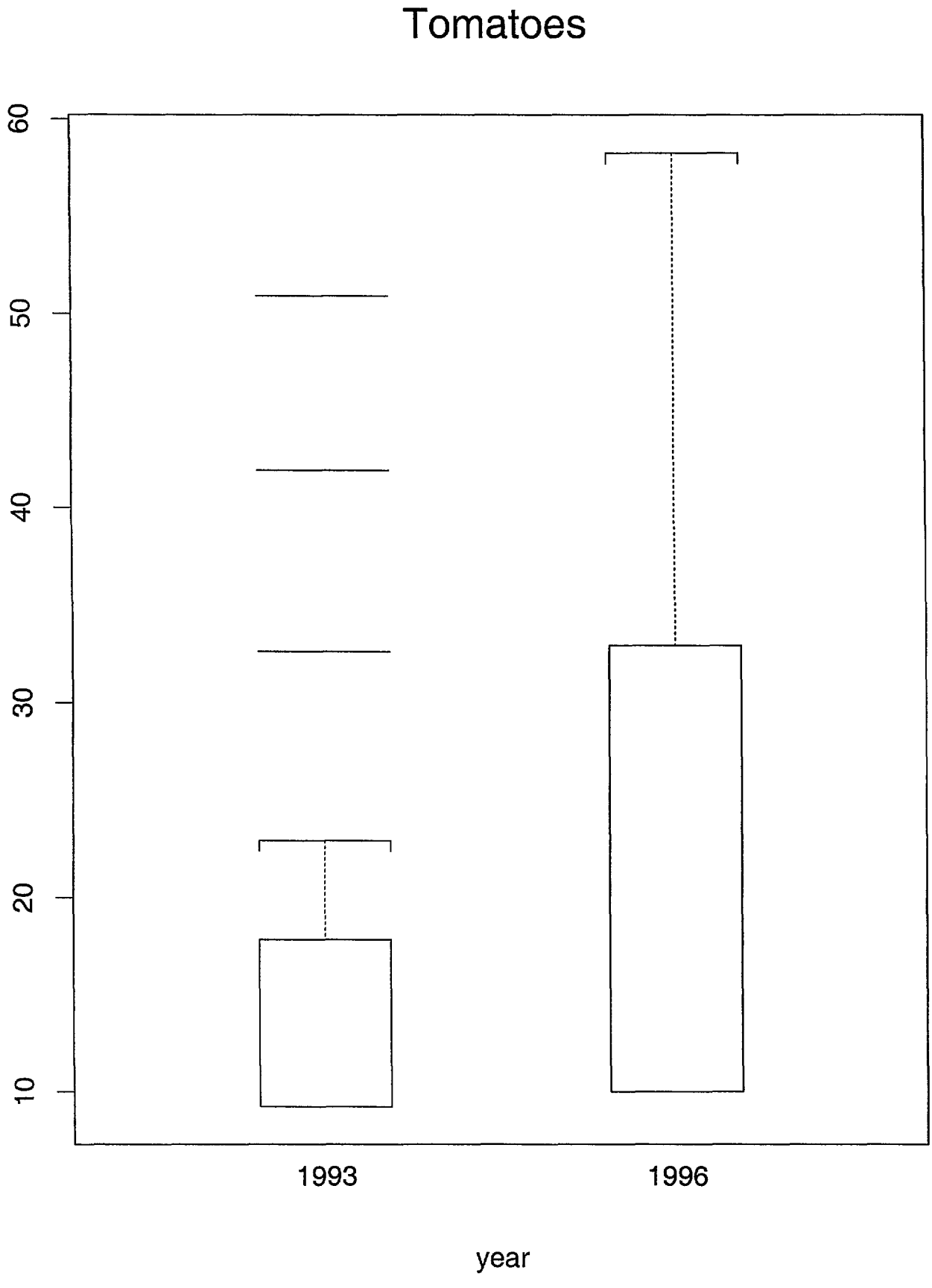
Maize



Tomatoes



Experts' Distributions of trade for Head Loaders in 1993 and 1996



5.11 Data Estimating Total Overland Trade Flows For Selected Ghana Exports[7]

Data was available for estimating the conditional distribution of total trade volume for the product mode combinations listed in Table 14.

Table 14: Product Mode Combinations for Distribution of Total Trade Volume

Mode of Crossing	Product
Truck	Aluminum Products
Truck	Iron Rods
Truck	Maize
Truck	Salt
Truck	Tomatoes
Pushcart	Maize
Headloader	Tomatoes

For product combinations that were not listed above, three separate marginal distributions, one for each of the three modes, were used as estimates of the conditional distributions.

Based on estimated data provided by experts, Table 15 provides information on recorded trade volume and estimated trade volume by product, and border crossing point. (A sample of monthly trade data for each of the five products is provided in Appendix III.) The physical characteristics of the product and the mode of transportation used
to carry it across the border frequently determine whether formal Customs documents are completed. Iron rods and salt are usually transported in large quantities by truck. According to the experts most trucks (but not all trucks) were stopped by Customs officers and inspected, and the value and volume of their loads recorded. Thus there is little difference between recorded and unrecorded trade values for iron rods (less than 5%). Salt had slightly higher differences (6% to 7%) between recorded and unrecorded trade values (and also higher standard deviations) because salt is also transported in smaller quantities which can be headloaded or carried in cars etc. which often is unreported at border crossings.

Maize estimates were only recorded for the Aflao border crossing. The differences in maize recorded and unrecorded trade data (16%) can also be explained by the transporting of maize in various smaller quantities using headload or pushcart. Generally recorded maize data was from truckloads of maize passing through border crossing points.

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[7]Data presented in this section is from the statistical work done by Dr. Panickos A. Palettas and Dr. Robert M. Leighty, Department of Statistics, Ohio State University.

Table 15: 1996 Total Overland Trade by Product and Exit/Entry Point (reported in kilos)

Border Crossing	Product	Recorded Trade*	Total Trade **	Percent Unrecorded
Aflao	Alum Pds	336,297	358,168	6 %
Aflao	Iron Rods	87,000	89,897	3 %
Aflao	Maize	16,008,922	19,157,117	16 %
Aflao	Salt	6,934,174	7,402,604	6 %
Aflao	Tomato	1,510,258	7,746,643	81 %
Bawku***	Alum Pds	288	370	22 %
Bawku	Iron Rods	366,000	377,089	3 %
Bawku	Salt	43,918,450	46,740,503	6 %
Bawku	Tomato	1,038,335	3,269,559	68 %
Elubo	Alum Pds	853	1,085	21 %
Elubo	Iron Rods	185,000	191,607	3 %
Elubo	Salt	1,490,000	1,609,951	7 %

Source: Trade estimations based on field work 1998-1999 and statistical estimations by Palettas and Leighty.
*Recorded Trade represents monthly recorded total trade volume through the border.
**Total Trade represents monthly trade of recorded and estimated unrecorded trade through the border adjusted for the estimated amount of trade that avoided the formal crossing point.
***Bawku area crossing includes border crossings at Kulungugu, Pulimakom, and Paga.

The majority of the volume of aluminum products was recorded at Aflao (only 6% was estimated to be unrecorded) because one firm in Accra accounts for most of the aluminum products exported from that border area. Also expediters frequently "bundle" smaller aluminum products shipments into one consignment that is registered with Customs officers as one export shipment. Some aluminum cookware is headloaded or pushcarted across overland border crossing points at Elubo and the Bawku area which accounts for differences in recorded and unrecorded trade (21% and 22% respectively) at these two border crossing points.

The majority of recorded data for tomatoes was from trucks carrying tomatoes which crossed at the formal border crossing point. At both Aflao and Bawku area crossings the most frequent mode of transporting tomatoes across the border is headloading. Tomatoes usually did not cross the border at formal crossing points because of the frequent use of headloading which made it relatively easier to use traditional footpaths or livestock trails. Commodities that are headloaded are generally not recorded by Customs officers as part of official trade data. Thus there are large

differences between recorded and unrecorded trade at both the Aflao and Bawku exit/entry points (81% at Aflao and 68% at the Bawku area).

The majority of tomatoes are grown in northern Ghana. With no tomato processing plant currently in operation, and the high perishability of the crop, tomatoes are harvested and headloaded across the northern and northeastern borders of Ghana using a maze of footpaths. Because of improved highways linking northern Ghana with Accra, tomatoes are also brought south to the capital and sold there or cross the border informally to be sold in Lome, Togo (less than 140 kilometers from Accra).

When the estimated and recorded volume of all five products were aggregated for each of the three border crossings (Table 16), the Aflao area crossing recorded the highest percentage of unrecorded trade (28%), with the Bawku area second (10%), and Elubo third (7%). The southeastern corner of Ghana where the Aflao crossing was located was a very fluid border. Since tomatoes were frequently headloaded along these paths across international borders, and tomatoes were one of the five product groups selected for inclusion in the study, the high percentage of unrecorded trade at the Aflao crossing was not surprising. Similarly, tomatoes were also headloaded through the Bawku area crossings, and there were numerous alternative paths into both Togo and Burkina Faso in that area as well. Elubo, the eastern border crossing point between Ghana and Côte d'Ivoire, is located on the Tano River.

Table 16: 1996 Total Overland Trade by Exit/Entry Point

Border Crossing	Recorded Trade (kilos)*	Total Trade (kilos)**	Percent Unrecorded
Aflao	24,876,651	34,754,430	28 %
Bawku***	45,323,073	50,387,520	10 %
Elubo	1,675,853	1,802,643	7 %

Source: Trade estimations based on field work 1998-1999 and statistical estimations by Palettas and Leighty.
*Recorded Trade represents monthly recorded total trade volume through the border.
**Total Trade represents monthly trade of recorded and estimated unrecorded trade through the border adjusted for the estimated amount of trade that avoided the formal crossing point.
***Bawku area crossing includes border crossings at Kulungugu, Pulimakom, and Paga.

The Tano River provides a geographical barrier which makes it more difficult to circumvent the formal crossing point at Elubo, where there is a bridge. Also, tomatoes (which appeared to account for most of the unrecorded trade among the five selected products) were not usually a product which crossed the border at Elubo according to the experts.

Thus the estimated data provided by experts on recorded and unrecorded trade flows for the five commodities at each of the three border crossing points provided information that corroborated

geographical and socio-economic information about overland trade flows in Ghana.

6. POLICY IMPLICATIONS AND RECOMMENDATIONS

The following policy implications and recommendations have been identified by the researchers:

1. **There is a positive impact from liberalized trade procedures.**

   Liberalized trade procedures for exports have had a positive impact on cross-border trade reporting. More formal border crossings have been recorded, which has increased the precision of cross-border trade data. According to Customs personnel and traders, formal border crossings are more efficiently handled. The new Ghana export form has streamlined trade declaration procedures and reduced the time required to complete the form from days to hours. Financial liberalization has meant traders can obtain foreign currency from the foreign exchange bureaus and do not have to complete complicated banking forms.

2. **Government regulations that impede overland trade, and/or increase the transaction costs of overland trade, negatively impact on the economic growth of Ghana.**

   The obstacle listed as most important by cross-border trader respondents was government inspections (30 of 105 respondents or 29%). Numerous roadblocks by police and CEPS officials was the second most frequently cited obstacle, and extortion by Francophone Customs officers was third. When asked to approximate the monetary and time cost to them from these obstacles, approximately 67% of the respondents (41) reported USD 25 or less in monetary costs associated with the obstacle they listed as the most important impediment. Over half of the respondents (36 or 51%) indicated they lost from 1 to 5 hours as a result of the obstacle. More than half of the respondents (57%) lost 8 or more days in lost wages (per month) when their monetary cost was defined in terms of income.

   Government policies and regulations should be designed to encourage not only overseas trade, but trade within the sub-region as well. Ghana and other West African countries showed export similarity index values indicating relative dissimilar patterns of trade which indicated a basis for trade exists between countries in the sub-region. Trans-border trade is typically handled by traders with fewer assets than overseas traders. More women are involved in trans-border trade than overseas trade; and thus its economic impact is felt by middle-and lower-income households in Ghana. However, the positive economic impact resulting from cross-border trade activity can be easily nullified if unnecessary roadblocks and inspections impede the flow of goods and services across national borders.

3. **Police/military personnel are more likely than Customs representatives to demand**

additional payments from traders.

Traders complained more often about police/military road blocks than road blocks manned by Customs personnel. Road block objectives and procedures should be examined, with a view towards reducing their number to the strict minimum necessary for security. The economic consequences of roadblocks (particularly their effects on trade flows) should be calculated and the results presented to the appropriate policy units within MOTI, CEPS, and MOFA. The administration of road blocks and their procedures for examination of commodities should be under the jurisdiction of one government agency and not several as is currently the case.

4. **Increased border cooperation between Ghana and her neighbors would avoid unnecessary unloading and re-packing at exit/entry points, and would encourage the uniform application of tariffs.**

There is already some cooperation between border crossing points such that articulated trucks which have been inspected on one side of the border are not required to be inspected on the other side of the border. Cooperation is more apparent between Ghana and Togo then between Ghana and Côte d'Ivoire.

5. **ECOWAS tariff agreements need to be uniformly applied on both sides of the border.**

Though changes in the ECOWAS tariff structure have been passed by governments in the sub-region, they have not been made operational in some cases and are not applied uniformly. Implementing the current treaty provisions would greatly enhance the efficiency of regional trade.

6. **Illegal goods are auctioned using more transparent procedures.**

Illegal goods that have been seized by Customs agents are now publicly auctioned at routine intervals making these procedures more transparent. The seized goods are publicly warehoused until the auction occurs.

7. **Lack of adequate sea supervision increases smuggling along Ghana's shoreline.**

A lack of motorized "fast" boats makes it difficult for Customs personnel to apprehend smugglers in waters off the coast of Ghana. This type of smuggling usually involves goods of high value (including arms and drugs), so the risk to smugglers is more than balanced by their gain in avoiding contact with government officials, and in not paying the required taxes and fees.

8. **Currently unused buildings at Aflao border crossing could be utilized for cross-**

border trade activities.

Current unused buildings at the Aflao border crossing could be rehabilitated and used to accommodate cross-border trade storage requirements. These buildings could be repaired through a government-private sector partnership, with government facilitating permit and sale requirements, and the private sector purchasing and reconditioning the buildings. Once the buildings were operational and rented-out, government could collect rent on them until its costs had been reimbursed.

9. **Short-term and medium-term financing is a problem for traders.**

The lack of short-term and medium-term financing for small business owners means traders often can not buy in bulk and must buy those items for which there is a quick turnaround. Credit, when it is extended, must usually be repaid in a few hours or days. The lack of financing results in the market at times becoming saturated with too many traders selling nearly identical items that possess the quick turnaround characteristic.

10. **Kinship and association linkages are especially important for female traders.**

Female traders more than male traders relied on kinship and association linkages to complete trade transactions. Association linkages should be strengthened and provide members with a unified voice with which to articulate their problems to Customs officials and other governmental authorities. Associations could also offer members opportunities to utilize economies of scale in bulk purchasing and hiring of transportation..

11. **"Expert" estimation procedures provide a low cost alternative methodology for measuring cross-border trade flows.**

Estimation procedures that rely on "experts" (people with specialized knowledge of cross-border trade flows) to provide trade data information use a relatively low-cost methodology to obtain information on cross-border trade flows. Using the Aflao border crossing as an example, the estimated data provided by "experts" illustrated that 28% of overland trade in the five products examined in the study was unrecorded. While this research used experts to obtain trade flow information on only five products at three border crossings, the model could easily be expanded to include additional commodities and border crossings.

12. **Infrastructure Improvements Focused on Overseas Trade and not Trans-border Trade.**

Recent improvements in infrastructure at the port of Tema and Katoka International airport have been completed to facilitate overseas import/export trade. There is an excellent all-weather northern road linking Tamale and Paga to Burkina Faso which was

completed in 1997. Other roads linking border towns are less roadworthy, and often impassable in the rainy season. Telecommunications are more reliable between Ghana and overseas cities than between Ghanaian cities. Fax communications and cellular technology are similarly erratic between points within Ghana, and between Ghana and the rest of the sub-region. (Traders commented that it was easier to telephone someone in Los Angeles than speak with someone in Cape Coast, Paga, or Niger!) Ghana's basic infrastructure (especially its provision and delivery of electricity) is worse than other countries in the sub-region.[8]

13. Project advisory committee members involvement strengthened ownership in the research results.

The project advisory committee selected specifically for this project included members from MOTI, CEPS, USAID, MOFA and several cross-border traders. This committee was involved in product selection, border exit/entry selection, and questionnaire review. Members have been given periodic updates on research progress. Results of the project are scheduled to be presented to them in Accra. As the government committee members are all mid-level policymakers, the researchers are optimistic that results from the research will be disseminated throughout the government and will generate additional discussion on cross-border trade issues.

[8]The unfavorable comparison of the basic infrastructure of Ghana with other countries in the sub-region was reported in an unpublished June 1998 project appraisal document under the auspices of the Ghana Trade and Investment Gateway Project.

APPENDIX I

Experts were interviewed and were asked to envision what trade was like during a specific month in either 1993 or 1996 for one of the three entry/exit points used in the research (Elubo, Aflao, Bawku area). They were asked to envision the likely monthly trade distribution for a particular product crossing the border using a specific mode of crossing (e.g., truck, cart, headloader). Specifically they were presented with different scenarios identifying classes of traders that would report a certain volume of trade for a month. For instance, a MOTI official "expert" at the Paga border crossing would be presented the following scenario involving the trade of tomatoes by headloaders:

Type of Trader: HEADLOADER

Assume the following scenario:

Interviewer Question: Envision 5 headloaders of tomatoes in January 1996 who fit the profile of a headloader recording 30 kilos per trip overall for the month of January. These 5 headloaders should be representative of the group of headloaders recording 30 kilos per trip in January 1996. They should not be the 5 headloaders that you may know best, since those headloaders may not be representative of the larger group recording 30 kilos.

The "expert" would provide estimates of total trade volume made by 5 to 7 headloaders fitting this profile, and the number of trips each headloader would require to accrue this monthly total. In addition the "expert" was asked how many traders would report each monthly total. They were additionally asked the following question:

Interviewer Question: How many headloaders do you think were active in January 1996? What do you think is the number of all headloader traders carrying 64 kilos of tomatoes in two trips but recording 30 kilos of tomatoes per trip in January 1996, as opposed to recording some other figure?

In this way the expert provides us with data to estimate the conditional distribution of Y, the total mount traded per trip given X, the amount recorded per trip. The number of traders Z with this total provides information with which the marginal probabilities for the scenarios may be estimated.

A sample response would appear as follows:
Month/Year: January 1996

Expert Responses:
Recorded Total: 30 kilos

formal trader	frequency # of trips	total monthly trade	# of traders with this total
1	2	64	3
2	3	112	2
3	4	120	2
4	5	160	1
5	6	180	1

APPENDIX II

Graphical summaries suggest that a separate linear regression line is needed to model the amount of trade per trip Yijk given the amount of trade formally recorded Xijk. The conditional variance var(Yijk | Xijk) increases proportionally with the mean E(Xijk). An appropriate analysis would be a random coefficient regression model that allowed the variance to increase with the mean, using penalized quasilikelihood to estimate the parameters in the model. For computational convenience, a software package that fits a random coefficient Poisson regression model using penalized quasilikelihood was used.

Poisson regression with random effects for the combination of product and mode is an appropriate tool given these assumptions. We assume that Yijkl, the amount recorded for the lth trip of the kth individual for the jth combination of product and mode given the amount reported is Xijkl in the ith year (1993 or 1996), is (conditionally) Poisson distributed with mean Uijkl.

The Poisson regression model considered was:

$$\log U_{ijkl} = U + a_i + B_i \log X_{ijkl} + Y_{ij} + \&_{ij} \log X_{ijkl}$$

where ai and Bi define the regressions in the two years 1993 and 1996, and where the set of parameters (Yij,&ij) are multivariate normal random variables modeling the random coefficients for combinations of product and mode. Model parameters were based on work done by Breslow and Clayton (1993), and Littel (1996). The predicted values were graphically compared for each product mode combination included in the analysis using side-by-side box plots. Model-based percentiles were also generated to compare distributions across years for each product and crossing mode combination.

APPENDIX III

Table IIIA: Sample of 1996 Monthly Total Trade Estimates, Aflao Crossing (reported in kilos)

Product	Month	Recorded Trade*	Recorded + Unrecorded Trade**	Total Trade***
Alum Pds	January	3,530	3,884	3,884
Alum Pds	June	36,025	38,193	38,193
Alum Pds	October	37,880	40,293	40,293
Iron Rods	November	87,000	89,898	89,898
Maize	March	1,444,480	1,671,296	1,731,272
Maize	May	4,480,190	5,195,682	5,358,068
Maize	August	205,175	236,534	245,605
Salt	March	879,912	942,958	942,958
Salt	July	137,834	151,426	151,426
Salt	October	1,069,840	1,136,551	1,136,551
Tomato	April	29,400	50,523	167,081
Tomato	June	90,460	175,954	450,570
Tomato	November	113,580	225,518	565,303

Source: Trade estimations based on field work 1998-1999 and statistical estimations by Palettas and Leighty.

*Recorded Trade represents monthly recorded total trade volume through the Aflao border.

**Recorded + Unrecorded Trade represents monthly recorded trade volume adjusted for estimated unrecorded trade volume through the Aflao border.

***Total Trade represents monthly trade volume of recorded and estimated unrecorded trade through Afalo adjusted for the estimated amount of trade that avoided the formal crossing point at Aflao.

Table IIIB: Sample of 1996 Monthly Total Trade Estimates, Elubo Crossing (reported in kilos)

Product	Month	Recorded Trade*	Recorded + Unrecorded Trade**	Total Trade***
Alum Pds	January	94	112	118
Alum Pds	February	310	371	392
Alum Pds	May	144	173	182
Iron Rods	January	35,000	36,268	36,268
Iron Rods	May	150,000	155,339	155,339
Salt	January	505,000	543,761	543,761
Salt	May	25,000	29,272	29,272
Salt	December	140,000	152,955	152,955

Source: Trade estimations based on field work 1998-1999 and statistical estimations by Palettas and Leighty.

*Recorded Trade represents monthly recorded total trade volume through the Elubo border.

**Recorded + Unrecorded Trade represents monthly recorded trade volume adjusted for estimated unrecorded trade volume through the Elubo border.

***Total Trade represents monthly trade volume of recorded and estimated unrecorded trade through Elubo adjusted for the estimated amount of trade that avoided the formal crossing point at Elubo.

Table IIIC: Sample of 1996 Monthly Total Trade Estimates, Bawku Area Crossing* (reported in kilos)

Product	Month	Recorded Trade**	Recorded + Unrecorded Trade***	Total Trade****
Alum Pds	February	288	370	370
Iron Rods	February	30,000	30,822	30,822
Iron Rods	August	120,750	124,251	124,251
Iron Rods	November	62,250	67,324	67,324
Salt	January	3,075,000	3,274,505	3,274,505
Salt	May	7,627,000	8,111,859	8,111,859
Salt	October	4,305,000	4,593,145	4,593,145
Tomato	July	3,000	9,802	10,945
Tomato	September	918,250	2,391,964	2,875,563
Tomato	October	92,760	244,329	298,059

Source: Trade estimations based on field work 1998-1999 and statistical estimations by Palettas and Leighty.

*Bawku area crossing includes border crossings at Kulungugu, Pulimakom, and Paga.

**Recorded Trade represents monthly recorded total trade volume through the Bawku area crossing points.

***Recorded + Unrecorded Trade represents monthly recorded trade volume adjusted for estimated unrecorded trade volume through the Bawku area crossing points.

****Total Trade represents monthly trade volume of recorded and estimated unrecorded trade through the Bawku area crossing points adjusted for the estimated amount of trade that avoided the formal crossing points.

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