

**Footloose and Tax Free:
Incentive Preferences in Kenyan Export Processing Zones**

Robert J. Rolfe
Professor of Accounting and Executive Director of IMBA Program
Moore School of Business
University of South Carolina
1705 College Street, Columbia, SC 29208
Phone: 803 777-2730
rolfer@moore.sc.edu

Douglas P. Woodward
Associate Professor of Economics and Director, Division of Research, Moore School of Business
University of South Carolina
1705 College Street, Columbia, SC 29208
Phone: 803 777-2510
woodward@moore.sc.edu

and

Bernard Kagira
President
Integrated Development Consultants
Nairobi, Kenya
aedc@africaonline.co.ke

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Abstract

Tax incentives in export-processing zones (EPZs) have been widely used to stimulate economic activity in Sub-Saharan Africa. Kenya saw a major expansion in EPZ activity after 2000, with the passage of the African Growth and Opportunity Act, providing duty- and quota-free access for most African exports. This paper presents the results of an experiment conducted in Nairobi, Kenya to determine investor incentive preferences in EPZs. The experiment reveals investor preferences for upfront tax holidays and infrastructure availability. Incentives that provide benefits over longer periods, such as lower tax rates without tax holidays, were less attractive. This evidence on incentive preferences indicates weak investor commitment to the host country in the long run.

1. INTRODUCTION

Conventional economic policy favors trade liberalization through regional- or global-free-trade agreements. An alternative is selected liberalization through free-trade zones, which include spatial economic zones, industrial estates, and export processing zones (EPZs). Export-processing zones are distinct from other types of free zones in that the main objective is export promotion and stimulation of foreign direct investment. The main feature is the removal of import tariffs on production inputs, which otherwise serve as disincentives to export-oriented production. Typically, an EPZ offers export-oriented firms a site allowing full import duty exemption, often adding income tax breaks and other incentives as well. In addition, many countries have adopted manufacturing-under-bond (MUB) schemes, in which the government allows “bonded” factories located outside of specific zones the same duty-free importation of equipment, raw materials, and other production inputs.

Employment expansion in EPZ and MUB platforms in Asia, Latin America, and elsewhere suggests that a similar strategy could encourage export-oriented development in Sub-Saharan Africa. Yet critics often charge that the investments are short-term, or “footloose.” The World Bank, which exerts a major influence over economic policy in Sub-Saharan Africa, gives only tepid and limited support to the approach {World Bank (1992); Madani (1998)}. In general, the official Bank position emphasizes overall liberalization for a country, and EPZs are a second choice at best—blurring liberal and protective policy. In a comprehensive review of the subject, Madani (1998) concludes, “the [World] Bank should be very selective and cautious in its support of EPZ projects.”

Nevertheless, prominent analysts have suggested that foreign investment in EPZs and bonded factories can yield positive benefits for host countries. Easterly (2002, pp. 146-151) uses bonded garment factories in Bangladesh to illustrate how local firms learn from foreign investors and revitalize manufacturing. U.S. and European quotas hampered garment exports from the Bangladesh, so Korea took advantage of trade opportunities elsewhere. Easterly argues that the “knowledge leaks” that followed from the Korean investment in Bangladesh bonded factories helped foment indigenous industrial development in an otherwise impoverished country. With African garments now given quota-free and duty-free access to the United States under the African Growth and Opportunity Act (AGOA), apparel investment has surged

from Asian countries. In Africa, it is still too early to tell whether there will be long-term effects through “knowledge leaks” from foreign investment.

Advocates of the EPZ model in Africa also point to developing countries like Costa Rica and Malaysia, which rely on low taxes (including tax holidays), infrastructure, a liberal regulatory climate, and other incentives to attract foreign direct investment. For example, speaking before political and business leaders at the 2000 Southern Africa Economic Summit of the World Economic Forum, Jeffrey Sachs argued that tax incentives in the Costa Rican EPZ program lured a large semiconductor plant, just as similar schemes had previously done in East Asia. He asserted, "The advice given by the World Bank and the IMF to avoid investment incentives is wrong."¹

As export potential grows with market-opening initiatives like AGOA, African governments are competing with incentives for new plant investment. EPZs now almost always include an array of special inducements to lure export-oriented investment. Surprisingly, there has been little empirical research on incentive influences in EPZs and similar manufacturing-under-bond approaches.

This paper examines the role of incentive preferences in Kenyan EPZs, which started in 1990. In section 2, the paper begins with a literature review on export processing zones. Primarily, previous work has concentrated on employment potential and labor market conditions of EPZ and MUB plants, which have been strong in some parts of the developing world, but generally limited in Africa {Jauch (2000; 2002); Mireri (2002); Romero (1998)}. Despite questionable employment impacts, many African governments maintain a commitment to EPZs, with increasingly higher cost incentive packages. Accordingly, this paper provides an overview of the common African EPZ incentives in section 3. Next, in section 4 we present the design and results of an experiment conducted in Kenya to determine which incentives are considered most important to existing EPZ firms. The decision modeling approach used in the study overcomes limitations inherent in survey and econometric studies of African investment. The experimental survey was administered to investors from various countries and industries. Our main objective is to test investor preferences for incentives, contrasting those that provide short-term benefits, such as upfront tax holidays with high rates imposed at the end of the period, with long-term incentives such as relatively low rates without tax holidays. ANOVA results are presented in Section 4, followed by the paper’s conclusion in section 5.

2. A REVIEW OF DEVELOPING COUNTRY EPZs AND INCENTIVES

Developing country EPZs emerged in East Asia during the late 1960s,² pioneered by newly industrializing countries such as Taiwan and South Korea in their historic efforts to engender export-led economic growth {Chen (1995)}. The strategy spread, notably to other Asian countries, including Malaysia, Singapore, the Philippines, and then to China in the late 1970s and 1980s. By the late 1990s, it was reported that there were more than 850 EPZs operating across the world {International Labor Organization (1998)}.³

The results were mixed {Amirahmadi and Wu (1995)}. It appears that even in the early Asian success cases there was unimpressive employment generation and questionable long-term commitment to the host economy. Since the zones offered duty-free component access, strong backward supply linkages with the local economy rarely developed. Nevertheless, similar export-oriented industrialization strategies have been pursued in Latin American, Caribbean, and in the former socialist countries of Eastern Europe in the 1990s. Even Cuba implemented EPZs in 1997, with apparently little investment {Willmore (2000)}.

Academic assessments of developing country EPZs have reached varied conclusions about their effectiveness. Positive assessments often point to “demonstration effects” for domestic producers {Rhee and Belot (1990)}. In a study of Malaysia, Johansson and Nilsson (1997) also found that EPZs could have an export “catalyst” effect; that is, foreign firms attracted to the EPZ may encourage local firms to export. In contrast, other economists see EPZs in a negative light, notably that tariff reductions in EPZs are welfare reducing for the economy as a whole {Hamada (1974); Hamilton and Svensson (1982); Young (1987)}. Young and Miyagiwa (1987), on the other hand, found that reducing tariffs on intermediate inputs could raise national income.

Some studies point to enclaves with weak backward (supply) linkages to the local economy {Warr (1987a); (1987b)}. Din (1994) modeled EPZs with an intermediate goods-producing sector (representing backward linkages). When the intermediate goods were internationally traded, capital inflow through the EPZ would have no effect on national income, while with non-tradable intermediate goods, an EPZ could increase income.

A major criticism of EPZs is that they attract short-term, footloose investments. Generally, footloose plants result from short-term direct investment that is not rooted in the local economy through

supply or demand linkages {Caves (1996)}. One potential sign of footloose behavior would be high location sensitivity to changing factor costs. Labor-intensive investments, such as garment and footwear industries, may face rising wage costs as the economy develops. Madani (1998, p. 74) finds that companies "by-and-large do not decide setting up in or leaving a zone just based on wage competitiveness." Instead, other factors may influence firm location decisions, in particular zone incentives, which we explain following our discussion of Kenya's EPZ experience in the next section.

There are clear EPZ and MUB successes. Besides the Costa Rican program cited earlier {see also Larrain, Lopez-Calza, and Rodriguez-Clare (2000)}, Mexican *maquiladoras* provide another model for developing countries. The *maquiladoras* are MUB assembly plants that import parts and components from abroad, assemble the inputs into final goods, and then export their output. Essentially, the in-bond plants have the same features as EPZs, but are not "fenced in" or tied to set geographic zones (although these in-bond plants are mostly clustered along the U.S.-Mexican border). The *maquiladoras*' impact can be gleaned from value added and employment figures. Real value added by the *maquiladora* industry increased at an impressive annual average rate of 10 percent {Hanson (2002)}. Employment in *maquiladoras* grew from 180,000 in 1984 to 1.1 million in 2002. The in-bond plants now account for over 25 percent of Mexico's total manufacturing labor force {Hanson (2002)}. One advantage offered by Mexico is local sales: 20 to 40 percent of the output can be sold domestically {World Bank (1998)}.

Many countries besides Mexico offer in-bond plants to locate freely, sometimes in combination with site-specific EPZs. In Africa, Mauritius forged another effective strategy. At independence in 1968, the country's economy was dominated by the sugar industry—a one-commodity exporter not unlike many African countries. Soon after independence, the government developed an early export-oriented industrialization strategy based on low wages. In 1970, Mauritius offered the first special EPZ tax incentives by an African nation. Over the next three decades, the employment impact has been palpable. By the late 1990s, nearly 80,000 workers were employed in the export-processing zone program, representing 17.1 percent of the country's labor force {Madani (1998)}. The vast majority (65,800) of the positions were in the apparel industry {World Economic Forum (1998)}. Since the implementation of the EPZ program, Mauritius doubled real per capita income and expanded the economic base from sugar to include apparel, tourism, and financial services. Unemployment fell to single digits during the world economic expansion of

the 1990s and remained relatively low at 8.6 percent in 2001, a rate virtually unknown in Sub-Saharan Africa {World Economic Forum (2003)}.

To be sure, the island of Mauritius has a number of unique characteristics—notably strong business ties to Asia—not found elsewhere in Africa. Still, governments in more than 20 Sub-Saharan African countries, including Kenya, Namibia, Malawi, Tanzania, Ghana, and Nigeria, have followed with EPZs offering lucrative incentives in a similar attempt to attract the export-oriented manufacturing investments that drove Mauritius' success. Unfortunately, it appears that EPZs offer no panacea for African economic development. A report covering Southern Africa points to distinct and common EPZ failures {Jauch (2002)}. In particular, employment creation has been meager. Moreover, many zones have shut down or have failed outright, notably in Senegal {Madani (1998)}.

KENYA'S EPZs

Kenya's EPZ/MUB promotion programs have met with limited success. The country began with an MUB scheme during a movement toward trade and investment liberalization in the late 1980s (under an IMF structural adjustment policy regime). As elsewhere, the bonded factories were given the right to import inputs into the plants without paying duties. A growing number of garment manufacturers initially set up operations in the early 1990s. Two problems hindered development in the mid-1990s, however. First, the United States revoked Kenya's quotas on some apparel products; second, the exchange rate appreciated and the real wage rose as Southeast Asian currencies devalued and labor costs fell {Glenday and Ndii (2000)}.

Kenya also initiated an EPZ program in 1990, which was fully operational by 1993. It is important to recognize that the EPZs were officially located outside customs jurisdiction; this means sales from Kenyan firms to EPZ firms were considered Kenyan exports, while sales from the EPZ to Kenyan firms were generally considered imports. Exports from the zone to other countries, the primary objective of both EPZ and MUB factories, have not lived up to initial hopes. Together, they comprised slightly more than one percent of total exports from 1993-98 {Glenday and Ndii (2000)}. Kenya belongs to the 19-member Common Market for Eastern and Southern Africa (COMESA), which established a common market in 2000 among many of its members. As Kenya engaged in economy-wide liberalization, however, the EPZ obtained a peculiar status--EPZ sales to common market countries do not qualify for duty-free treatment

because they are considered imports into Kenya.

Kenya spent millions of dollars on EPZ promotion, but in the first five years only about 2,800 new jobs were created {Jauch (2002)}. As elsewhere, the Kenyan government attempted to resuscitate the zones with additional incentives. One strong inducement in the early years of the EPZ program was full currency convertibility. Yet in 1993-94 the country liberalized foreign exchange generally, thus eliminating the special advantage offered by EPZs. In turn, more lucrative tax incentives were offered. According to Glenday's and Ndi's (2000) detailed assessment, the EPZ program "tailored" incentive packages to compete against other countries for footloose manufacturing plants. Still, the EPZ program remained stagnant until the United States initiated the African Growth and Opportunity Act in 2000, giving Kenyan exports duty- and quota- free access to the United States. As a result, from 2000-2002 knit apparel exports from Kenya to the United States jumped from \$261,039 to \$22,602,000, while woven apparel exports increased from \$43,571,018 to \$102,890,964.⁴ More than 80 percent of the exports came from companies in the EPZs {Kenya Export Processing Zone Authority (2003)}.

After AGOA, closed garment factories re-opened and new plants started up in Kenya. Table 1 gives the official employment figures for Kenya's EPZs since 1998. More than 27,000 jobs were created in Kenyan EPZs by the end of 2002, up significantly after AGOA was implemented in 2000.⁵ Sri Lankan investors alone accounted for more than \$2.4 million in the apparel sector, creating 14,000 jobs.⁶

****Put Table 1 Here****

3. INCENTIVES IN AFRICAN EPZs

The original empirical research conducted for this paper focused on incentive preferences in Kenya's EPZs. Our goal was to get actual decision-makers to provide new information through an experimental survey designed to reveal actual investor preferences. As a basis for the experimental survey, we examined the main incentives offered by African countries. Duty-free access for supplies--the common feature of EPZs and MUB factories--remains the major inducement offered to firms. Traditionally, many zones also relaxed foreign exchange restrictions. As was noted in the earlier discussion of Kenya, however, foreign exchange liberalization throughout Africa in the 1990s rendered this once-special EPZ advantage irrelevant. It should also be stressed that other factors, notably labor conditions and wages, matter in the

decision-making process as well. Yet our major interest was in evaluating government incentives programs; these factors are not considered here. Moreover, EPZ decision-makers are often skeptical about academic and not cooperative. Investors are unlikely to be entirely candid in responses to questions about unionization, labor, and wages in their assessment of a country's attractiveness as an investment site.

Four types of incentives remain common features of African EPZs, although they differ across countries: corporate income tax holidays, quality of infrastructure, local sales allowance, and no location (zone) restrictions. In the remainder of this section we focus on these incentives in the context of African EPZs, beginning with our main consideration: tax holidays, which reduce corporate income taxes (typically to zero) for a set time period.

Profit Taxation. In an often-cited empirical location study, Bond (1981) provides a statistical analysis of the tax holiday program in Puerto Rico that established a connection between EPZs and footloose firms. Puerto Rico's tax holiday program dates to 1949, one of the first and considered one of the most successful incentive-based industrialization strategies. Bond (1981) finds evidence of firms entering simply for the tax holiday and exiting after the time period ends. There appears to be rapid plant turnover, with "newly exempt firms driving out firms whose exemptions have expired" {Bond (1981), p. 94}. He argues that denying exemptions for firms in "footloose industries" could discourage this behavior. The problem, however, may be that the tax holidays themselves are structured to attract footloose firms, with major savings upfront and then sudden leaps to high rates at the exemption period's end.

In another study, Bond and Samuelson (1986) set forth a bargaining-based explanation of tax holidays, in which the governments use these unbalanced subsidies as signals of productivity. For example, high productivity countries offer zero-tax holidays to give firms a grace period while they learn about relatively favorable investment conditions (for example, Taiwan during the 1960s and 1970s). Since the subsidies are front-loaded, any government revenue generation will require that firms keep producing at the end of the exemptions. As firms make fixed investments, they are less likely to exit high-productivity countries once normal (or even high) tax rates apply at the end of the exemption period. Bond and Samuelson (1986) argue that in high-productivity countries firms will endure relatively high tax rates at the end of the exemption period, but will leave low-productivity countries at the exemption's end, making it impossible for these countries (like many in Africa) from ever generating tax revenue.

While African economies like Kenya exhibit some of the lowest productivity in the world,⁷ governments nevertheless offer generous tax holidays. From the government perspective, it is possible they merely mimic (under advisement from outside economists) the development strategies of high-productivity countries in East Asia and elsewhere. Poor infrastructure and other investment barriers, however, may eliminate potential benefits of tax holidays. In a study of export-oriented investment in the Caribbean Basin, Rolfe and White (1992) found that tax incentives were not able to overcome unfavorable non-tax factors. African countries face similar problems attracting investment. It is not known whether firms investing in African EPZs consider tax holidays to be a particularly persuasive inducement given the poor infrastructure in many countries.

The length of tax holidays offers firms a number of options as they vary considerably among African countries. Ten years is the typical length of a tax holiday, but the period can range from three years in Nigeria to an indefinite holiday in Namibia. The tax rate charged after the holiday expires also varies. In Ghana it is a reduced rate of only 8 percent, while in Nigeria companies pay the normal 30 percent tax. Kenya has a ten-year tax holiday followed by a 25 percent tax rate (the standard rate is 42.5 percent).

With an indefinite tax holiday, Namibia is the African country with the most liberal income tax incentive. Namibia also has the advantage of having its primary EPZ located at Walvis Bay, a natural harbor with good infrastructure. The Namibian government enthusiastically launched export processing zones and predicted that 25,000 people would be employed within the first five years. The liberal tax holiday notwithstanding, only 20 investments were operational, with 350 job contracts, 150 of which were temporary {Jauch (2000)}.

Madani (1998) argues that permanent tax holidays and other generous tax exemptions may not be an appropriate policy. To encourage economic activity, he argues for a moderate tax rate (in the mid-teens) without tax holidays. Botswana adopted this approach for all manufacturing. Instead of exempting companies from income taxation for a period of time followed by high taxation after the tax holiday period, Botswana has a constant tax rate of 15 percent for manufacturing activities.

Quality of Infrastructure. Without a well-developed infrastructure--transportation system, consistent energy and water sources, and a good communication infrastructure--EPZs have not been able to prosper (Madani 1998). This has been a consistent problem with many African EPZs. Two years after its

establishment, only six companies had set up in Malawi's export processing zones, in part because Malawi is a landlocked country. However, one potential investor from Malaysia who visited the country noted that poor roads, an erratic power supply, and unreliable telecommunications were not conducive to attracting investment (Mhone 1997). This was also true with a zone established by the government of Zaire (now the Democratic Republic of Congo). The Zone Franche d' Inga was located in a remote area of the country with very poor infrastructure. Not surprisingly, the zone was a failure {Madani (1998)}. Kenya has established zones with good infrastructure, offering developed roads and water facilities.

Sales to Local Market. Traditionally, host countries require EPZ production to be exported. This is consistent with the strategy to set up zones as separate enclaves for trade. Yet, over time many countries realized that their county could be viewed as a market as well as an export platform. Local market potential could make the location more attractive for investment, and local sales from producers in the EPZ would further integrate the EPZ into the local economy. This could be a significant factor in the location decision, particularly for companies seeking a long-term relationship with the host country. Moreover, removing restrictions on local sales can increase capacity utilization and thus lower unit costs. Several African countries have adopted this flexibility: Ghana allows up to 30 percent of annual production of goods and services of an enterprise to be sold in the local market and Nigeria allows for local sales of 25 percent. Kenya does not allow local sales.

Zone Location. Some countries require EPZs to establish in particular locations, while others allow single enterprise zones. Namibia, for example, allows free-standing plants in its duty-free program along with plants "fenced in" specific EPZs. Restricting production to EPZs has clear disadvantages because the particular location may increase utility, transport, land, construction, labor, and other costs. At the end of 2002, 21 zones were operational in Kenya, with 54 export-oriented firms in operation {Kenya EPZ Authority (2003)}.

Other Factors. Naturally, an attractive set of incentives does not insure a smooth running zone. Political risk can destroy a zone's attractiveness, but that applies to all investment in the region or country. The uncertainty caused by President Robert Mugabe's controversial land reform program adversely affected the productivity of almost half of the projects in Zimbabwe's export processing zones {Marawanyika (2002)}. The resulting scarcity of foreign exchange prevented many companies from obtaining required

raw materials.

4. INCENTIVE EXPERIMENT: METHODS AND RESULTS

We used a decision modeling approach to determine investor preferences for the four incentives discussed in the last section. In contrast to surveys, this method isolates the incremental importance of variables in the decision-making process {Rolfe and White (1992)}. This method also overcomes the limitations of regression analyses of African investment, which is hampered by a lack of reliable data. Many African countries report only promised, not actual, investment in EPZs. As Jauch (2000) discovered, this often significantly overstates reality. Moreover, as all countries with EPZs offer a tax holiday to EPZ investors, traditional econometric analysis cannot be used to isolate the impact of this incentive.

Hypothetical EPZ locations offering the four incentives examined in this study were developed. In order to include as many incentives in the experiment without making it too cumbersome, each variable was assigned two levels. A full factorial design generating 16 combinations was employed.

A repeated measures design was used in which each participant evaluated the 16 hypothetical incentive combinations. One major advantage of repeated measures is that it economizes on subjects {Neter, Wasserman and Kutner (1985), p. 949}. This is important, as the population of interest (managers involved in location decisions in African EPZs) is small. Around Nairobi, Kenya, there are just 35 companies in EPZs.

4.1 Experimental Task

In evaluating the investment combinations, subjects were to act as if they had been asked by an African government to assist in developing the incentives to be offered by an EPZ. The survey instrument emphasized that the government had already decided to exempt imported equipment and components from the customs duty normally charged on imported goods. In addition, there were no restrictions on foreign exchange. Sample cases and the questionnaire instructions are presented in the Appendix. Subjects were asked to indicate the attractiveness of establishing an investment in each "location" on an 11-point scale, with -5 signifying an unattractive location and +5 signifying a very attractive location.⁸ The order of presentation of the independent variables and the level of each variable were randomized.

As described in the previous section, typical government incentives that could influence the attractiveness of an EPZ are (1) sales to local markets, (2) zone location, (3) profit taxation, and (4) quality of zone infrastructure. The levels of the independent variables are summarized in Table 2.

****Put Table 2 Here****

4.2 Participants

The participants in this study were managers of companies located in an export-processing zone near Nairobi, Kenya. As these individuals are involved with the operations of an EPZ, they have a good understanding of the significance of the factors examined in this study. Thirty-five instruments were mailed to all of the companies located in the EPZ with 23 returned (a responses rate of 66 percent). One experiment was not complete and was thus eliminated, leaving a total of 22 useable experiments. Table 3 gives a profile of the participants in the study. The vast majority (77 percent) were upper-level managers, giving further validity to the appropriateness of this group. The subjects were roughly evenly divided among Kenyan (36 percent), Asian (36 percent), and European/North American (28 percent). The Asian home countries included India, China, Sri Lanka, Taiwan, and Dubai. A large number of the companies produced apparel (36 percent). Other types of manufacturing included sporting goods, jerry cans, and batteries. The assets of the parent company ranged from U.S. \$600,000 to U.S. \$ 200 million. Sixty-five percent of the subjects had parent companies with assets between U.S. \$1 million and U.S. \$ 10 million.

****Put Table 3 Here****

As discussed earlier, we employed a repeated measures design. We controlled for the repeated measures effect with a blocking variable for each subject. Our study had 22 subjects, each making 16 decisions, for a total of 352 total observations.

4.3 Empirical Results

The overall mean level of attractiveness was 0.538. As was mentioned earlier, each variable had two levels, one of which was positive and the other was negative. Since there were an equal number of occurrences in which the variables were positive or negative in the 16 replications, a mean level near zero was expected. Table 4 reports the mean attractiveness by each level of the independent variable.

****Put Table 4 Here****

As in the case of the overall mean level, the mean levels by independent variables gravitate toward zero. The order of largest positive values was identical to the order of largest negative values. For example, *quality of infrastructure* had the largest positive and negative values, and therefore the largest difference between the two levels. Cases that had an excellent infrastructure received an average evaluation of 1.801. In contrast, cases with a poor infrastructure had an average rating of -0.722. Not surprisingly, a poor infrastructure is a significant barrier to investment in an EPZ.

The average value given by the participants in the cases where a tax holiday was present was 1.489, slightly lower than the positive rating for infrastructure. In contrast, the average attractiveness for cases without a holiday but with lower tax rates was -0.409. When given a choice, investors preferred paying no current taxes, even if it meant paying at the rate of 40 percent at the end of the holiday period. The differences for the other variables, *sales to local market* and *zone location*, were small. The importance of the variables is analyzed through analysis of variance.

The coefficient of multiple of determination (R^2) for the full model (all independent policy variables, the blocking variable, and a dummy variable for investors from Kenya and the apparel industry) is 0.392. As can be seen in Table 5, only two policy variables, *profit taxation* and *quality of infrastructure*, were significant at the 0.05 level. Neither the ability to sell part of the production to the local market nor the freedom to locate anywhere in the country significantly affected investors' decisions.

The apparel variable was also significant. As a result, a separate analysis was conducted, comparing apparel and non-apparel investors. As can be seen in Table 5, apparel investors placed significance on profit taxation and infrastructure quality. In contrast, non-apparel investors also placed significance on the ability to sell part of their production to the local markets. Apparel investors' lack of interest in this factor makes sense as most apparel production is exported, especially after the passage of AGOA. Further analysis is needed, however, to determine the degree of importance this factor has on the evaluations made by non-apparel manufacturers.

****Put Table 5 Here****

Since a variable's statistical significance does not measure its relative influence as a major factor in a location decision, additional analysis was performed to determine the importance of the incentive factors. One method is the eta-squared statistic; that is, the percentage of variance in the dependent

variable explained by each treatment (incentive). It is calculated by dividing the sum of squares explained by each variable by the model's total sum of squares. The sum of these values equals the R^2 . Table 6 reports the eta-squared for each of the independent variables, for three specifications: all participants, apparel investors, and non-apparel investors. In the model with all participants, the two significant policy variables, *quality of infrastructure* and *profit taxation*, explained 21.68 and 12.68 percent of total variance, respectively. The other significant variables, subject effect and apparel effect, explained only 1.84 and 3.05 percent of the variance.

Table 5 shows that the local sales effect variable was significant in the non-apparel investors' model. This was a major difference between the apparel and non-apparel producers' models. However, as can be seen with the eta-squared analysis, only 1.40 percent of the variance non-apparel producers' model was explained by this factor. As a result, one can conclude that the impact of an incentive allowing some local sales is negligible, even for non-apparel producers. There is an interesting difference, nonetheless, between models for apparel and non-apparel investors. Apparel investors had only 15.56 percent of their variance explained by the infrastructure effect as opposed to 26.47 percent for non-apparel investors. This suggests that the quality of infrastructure may be more important for non-apparel manufacturers. The results may reflect the low-technology character of the garment industry. In contrast, the profit taxation effect was much stronger in the apparel industry (26.26 percent) than for non-apparel investors. This could be a further indication of the footloose nature of garment manufacturing.

****Put Table 6 Here****

4.4 Limitations

The results of this study cannot be generalized beyond the parameters established in the experiment. While the results show the relative importance of four investment factors, the magnitude and order could change if the variables were manipulated at different levels. In addition, the results may be limited to the geographic region tested in the experiment.

One common limitation of questionnaire/experiments is the uncertainty of whether the experiment captures the actual behavior of the respondents in a "real world" setting. This questionnaire was reviewed by experts in African investment and pre-tested twice. All of the most important decision variables mentioned in the literature, as well as by the reviewers of the questionnaire, were either included as a

treatment or identified in the questionnaire as variables that did not differ among the cases. The relatively high R^2 values for most of the respondents provides evidence that they took the experiment seriously.⁹ Other potential limitations associated with repeated measures designs, such as practice effect and carryover effects, were minimized by randomizing the order and sequence of the levels of the independent variables.

5. CONCLUSION

Pioneered by East Asian economies in the 1960s, EPZs remain popular, yet controversial in developing countries. To date, African EPZs have had little real employment generation outside of Mauritius, which developed through its close trading ties to Asian firms. Nevertheless, governments across Sub-Saharan Africa promote EPZ programs with generous incentives, encouraged by prominent economists who point to achievements in other parts of the world.

Our evaluation of Kenyan EPZs tested the influence of tax holidays along with other commonly offered incentives: infrastructure improvements, local market access, and freedom to locate outside designated zones. The results show that investors prefer an upfront tax holiday and, as expected, excellent infrastructure. These features of the EPZ package are important for all investors and corporation types surveyed. The subjects clearly favored no tax imposed for ten years rather than the low, steady profit tax rate advocated by World Bank economists for EPZ development {Madani (1998)}.

Our tax holiday experiment revealed a short-term outlook on the part of investors, which may aggravate rather than alleviate Kenya's unstable labor market and other economic problems. Plants often exit when the tax holidays expire, as Bond (1981) found in his early and important study of Puerto Rico. While the Kenya program is still relatively young, with no investors past the ten-year exemption period, there are reasons to believe firms may be particularly sensitive to short-term incentives. Consider the apparel (garment) industry, which is highly sensitive to quotas imposed by the United States and Europe. The global industry is governed by the Multi-Fibre Arrangement (MFA), which benefits many African countries by setting up barriers against cheap and highly productive Asian exports. The quota system is constantly altered, however; in fact, the MFA will be phased out in 2005. Countries in Sub-Saharan Africa may only be attracting plants eager for short-term gains--factories looking to fill quota niches for certain products, where profits can be made within a few years before the quota system is dismantled. Another

constraint stems from the AGOA legislation. Currently, garments assembled in approved Sub-Saharan African countries can qualify for AGOA benefits even if they are made from cloth manufactured outside Africa or the United States. This provision expires in September 2004. After that date the cloth must be manufactured in Sub-Saharan Africa or the United States. Serious questions remain as to whether African countries can produce the cloth needed for assembly. If not, garment assembly may move to other regions of the world. Thus, the long-term benefits of AGOA are uncertain. Basing a development strategy on garment exports is questionable at best. Apparel is the quintessential footloose industry, as it appears in our results by opting for short-term tax incentives.

Further research will be needed to determine whether any EPZ plants represent long-term commitments. Yet for many investments, especially garments, it appears that the incentives may attract highly mobile plants sensitive to shifting quota regimes and trade policies. In the early 2000s, a favorable complement to the EPZ platform has been the elimination of trade barriers for African exports to the United States. For the first five years EPZ job creation reached only 2,800 workers {Jauch (2002)}. After the passage of the African Growth and Opportunity Act, which offers duty- and quota-free access for Kenyan goods, manufacturing employment surged in Kenyan EPZs to almost 25,000 workers.

Nonetheless, developing countries should be wary about incentive programs that provide special treatment to footloose firms that rarely have a proven impact on the labor market. Beyond incentive-laden EPZs, regional free trade pacts like COMESA may offer more hope for long-term economic development by opening greater market-oriented investment opportunities in Kenya.

APPENDIX: SAMPLE QUESTIONNAIRE

Please assume an African country currently is in the process of establishing an Export Processing Zone to attract export-oriented foreign investment. **It has decided to exempt imported equipment and components from the customs duty normally charged on imported goods.** However, it is still debating which other incentives it should offer foreign investors. Please respond to the following 16 cases as if you have been asked to assist this country's government in the process.

Please indicate the attractiveness of the location for foreign investment for each case by circling number ranging from -5 (very unattractive) to +5 (very attractive).

Base your decision on the four variables described below. These variables are the only factors you should consider that differ among the cases. **Assume in all cases that imported equipment and components are exempt from import duties.**

1. Sales to Local Market

The Government is debating whether it should allow part of the production to be sold locally. In some of the following cases, **25 percent of production** can be sold locally, in other cases **none** can enter the local market.

2. Zone Location

In some scenarios, all investments must be made in a designated zone. In other combinations, factory units can locate anywhere in the country and still qualify for Export Processing Zone treatment.

3. Profit Taxation

Cases which have a **corporate profits tax of 40 percent also offer a 10-year tax holiday** where no income tax is paid until the eleventh year. In other cases, the country would impose a **corporate tax of 15 percent but offers no tax holiday.**

4. Quality of Infrastructure

The quality of the communications, transportation, energy, plant sites varies in the following combinations. In some, the infrastructure of the Export Processing Zone is **excellent** and in others it is **poor**.

Sample Incentive Combinations

Combination 1

Sales to Local Market	Zone Location	Profit Taxation	Quality of Infrastructure
25%	Anywhere	15% No tax holiday	Poor

HOW ATTRACTIVE (UNATTRACTIVE) IS THIS LOCATION FOR AN INVESTMENT?

Very Unattractive										Neutral								Very Attractive	
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5									

Combination 2

Sales to Local Market	Zone Location	Profit Taxation	Quality of Infrastructure
25%	Anywhere	15% tax rate No tax holiday	Excellent

HOW ATTRACTIVE (UNATTRACTIVE) IS THIS LOCATION FOR AN INVESTMENT?

Very Unattractive										Neutral								Very Attractive	
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5									

Combination 3

Sales to Local Market	Zone Location	Profit Taxation	Quality of Infrastructure
None	Designated zone	15% No tax holiday	Poor

HOW ATTRACTIVE (UNATTRACTIVE) IS THIS LOCATION FOR AN INVESTMENT?

Very Unattractive										Neutral								Very Attractive	
-5	-4	-3	-2	-1	0	+1	+2	+3	+4	+5									

Combination 4

Sales to Local Market	Zone Location	Profit Taxation	Quality of Infrastructure
None	Designated zone	40% 10-year tax holiday	Poor

REFERENCES

- Amirahmadi, Hooshang and Weiping Wu (1995), "Export Processing Zones in Asia," *Asian Survey*, vol. XXXV, no. 9, September, pp. 828-849.
- Bond, Eric W. and Larry Samuelson (1986), "Tax Holidays as Signals", *The American Economic Review* 76, 4 (Sep., 1986), 820-826.
- Bond, Eric W.(1981), "Tax Holidays and Industry Behavior," *The Review of Economics and Statistics* 63, 1 (Feb., 1981), 88-95.
- Caves, Richard E (1996), *Multinational Enterprise and Economic Analysis*. Cambridge, U.K.: Cambridge University Press.
- Chen, Xiangming (1995), "The Evolution of Free Economic Zones and the Recent Development of Cross-National Growth Zones," *International Journal of Urban and Regional Research* 19, 4, 593-621.
- Din, M. (1994), "Export Processing Zones and Backward Linkages," *Journal of Development Economics*, 43 (March), 369-385.
- Easterly, William (2002), *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, Cambridge, Mass.: The MIT Press.
- Glenday, Graham and David Ndii (2000), "Assessing Export Platforms: The Case of Kenya", CAER II Discussion Paper No.75. Cambridge, Mass.: Harvard Institute for International Development, Consulting Assistance on Economic Reform (CAER II).
- Hamada, K. (1974), "An Economic Analysis of the Duty-Free Zone," *Journal of International Economics* 4, 225-241.
- Hamilton, C. and Svensson, L.E.O (1982), "On the Welfare Economics of a Duty-Free Zone," *Journal of International Economics* 20, 45-64.
- Hanson, Gordon (2002), "The Role of Maquiladoras in Mexico's Export Boom, University of California, San Diego and National Bureau of Economic Research, July 2002. Paper Prepared for the Conference, "Prospects for Industrial Parks in the Palestinian Territories," Rice University, July 26-27, 2002. http://migration.ucdavis.edu/ols/sandiego/hanson_jan2003.html, accessed April 3, 2003.
- International Labor Organization (ILO) (1998), *Labour and Social Issues Relating to Export Processing Zones*. Geneva: International Labor Office.
- Jauch, Herbert (2002), "Export Processing Zones and the Quest for Sustainable Development: A Southern African Perspective," *Environment and Urbanization*, 14, 1, April, 101-109.
- Jauch, Herbert (2000), "Export Processing Zones in Namibia: Taking a Closer Look," Winhoek, Namibia: Labor Resource and Research Institute (LaRRI).
- Johannsson, Helena and Lars Nilsson (1997), "Export Processing Zones as Catalysts," *World Development*, 25, 12, 2115-2128.
- Kenya Export Processing Zone Authority (2003), *Annual Report 2002*. Nairobi, Kenya.
- Larrain, Felipe B., Luis F. Lopez-Calva, Andres Rodriguez-Clare (2000), "Intel: A Case Study of Foreign Direct Investment in Central America", Harvard Center for International Development (CID) Working Paper No.58, December.

- Madani, Dorsati (1998), *A Review of the Role and Impact of Export Processing Zones*, May. Washington, D.C.: World Bank.
- Marawanyika, Godfrew (2002), "AAGM: EPZ Projects Under Threat," *Zimbabwe Independent*, April 26, 2002.
- McIver, J.P. and E.G. Carmines (1982), *Unidimensional Scaling*. London: Sage.
- Mhone, Chatonda (1997), "No Takers for Malawi's Export Processing Zones," *African Economic Digest* 8, p. 3.
- Mireri, Caleb (2002), "The Impact of Export Processing Zone Development on Employment Creation in Kenya," *Singapore Journal of Tropical Geography*, 21, 2, 149-165.
- Neter, J. W. Wasserman and M.H. Kutner (1985), *Applied Linear Statistical Models*. Homewood, Illinois: Irwin.
- Nunnally, J.C. (1967), *Psychometric Theory*. New York: New York: McGraw-Hill.
- Rolfe, Robert and Richard White (1992), "Investors' Assesemnt of the Importance of Tax Incentives in Locating Foreign Export-Oriented Investment: An Exploratory Study." *The Journal of the American Taxation Association*, 14 (1), 39-57.
- Rhee, Yung Whee and Therese Belot (1990), *Export Catalysts in Low-Income Countries: A Review of Eleven Success Stories*. World Bank Discussion Paper 72, Washington, D.C.
- Romero, Ana Teresa (1998), "Export Processing Zones in Africa: Implications for Labour", *Competition & Change*, 2, 391-418.
- Warr, P.G (1987a.), "Malaysia's Industrial Enclaves: Benefits and Costs," *The Developing Economies*, XXV 1, 30-55.
- Warr P.G (1987b.), "Export Promotion via Industrial Enclaves: the Phillipines' Bataan Export Processing Zone," *The Journal of Developing Studies* 23, 2, 220-41.
- Willmore, Larry (2000), "Export Processing Zones in Cuba," United Nations Department of Economic and Social Affairs (DESA) Discussion Paper No. 12. New York: United Nations.
- World Bank (1998), "Export Processing Zones," *PREM Notes*, December (Number 11).
- World Bank (1992), *Export Processing Zones*, Policy and Research Series, no. 20, Washington, D.C.: World Bank.
- World Economic Forum (2003), "Mauritius: Competitiveness Profile," <http://www.weforum.org/site/knowledgenavigator.nsf/Content/Mauritius+KN+sessions>
Accessed April 4.
- World Economic Forum (1998), *Africa Competitiveness Report*. Geneva: World Economic Forum.
- Young, L. (1987), "Intermediate Goods and the formation of Duty-free Zones," *Journal of Development Economics* 25, 369-384.
- Young, L. (1992), "Unemployment and the Optimal Export-Processing Zone," *Journal of Development Economics* 37, 369-385.

Young, L. and K.F. Miyagiwa (1987), "Unemployment and the Formation of Duty-free Zones," *Journal of Development Economics* 26, 397-405.

Table 1

Kenyan EPZ Employment: 1998-2002

	1998	1999	2000	2001	2002
Employment (Kenyans)	3,645	5,077	6,487	13,444	26,447
Employment (Expatriates)	74	83	133	314	701
<i>Total Employment</i>	<i>3,719</i>	<i>5,160</i>	<i>6,620</i>	<i>13,758</i>	<i>27,148</i>

Source: Kenya Export Processing Zone Authority (2003)

Table 2

Levels of Independent Variable

<u>Variable</u>	<u>Positive Level</u>	<u>Negative Level</u>
Sales to Local Market	25 percent of production can be sold locally.	None of production can be sold locally.
Zone Location	Investment can be located anywhere in country.	Investment must be in a designated EPZ location.
Profit Taxation	40 percent tax after 10 year holiday.	15% tax with no tax holiday.
Quality of Infrastructure	Excellent	Poor

Table 3

Characteristics of Study Participants

<u>Home Country</u>	
Kenya	36%
Asian Country	36%
European/North American Country	28%
<u>Industry</u>	
Apparel	36%
Other Manufacturing	36%
Horticulture	9%
Services	18%
<u>Level of Management</u>	
Upper Management	77%
Middle Management	14%
First-Level Management	9%
<u>Size of Parent Company*</u>	
Assets less than U.S. \$1 million	12%
Assets between U.S. \$1 million and U.S. \$5 million	65%
Assets greater than U.S. \$5 million	23%

*Five participants did not indicate the size of assets. Percentages are based on 17 responses.

Table 4

Overall Attractiveness: Means by Independent Variable Level			
	Mean Value*		
Variable	Positive Level	Negative Level	Difference
Sales to Local Market	.681	.400	.281
Zone Location	.676	.403	.273
Profit Taxation	1.489	-.409	1.898
Quality of Infrastructure	1.801	-.722	2.523

Number of observations: 352

Table 5

ANOVA Results			
P-Values of Independent Variables			
	All investors	Apparel investors	Non-apparel investors
Model	.0001	.0001	.0001
Local sales effect	.2132	.2667	.0293
Zone location effect	.2321	.7347	.1000
Profit taxation effect	.0001	.0001	.001
Infrastructure effect	.0001	.0001	.001
Blocking effect	.0063	.0001	.4618
Kenyan investor effect	.6660		
Apparel investor effect	.0001		

Number of observations: 352

Table 6

Eta-Squared			
Independent Variable	All investors	Apparel investors	Non-apparel investors
Local sales effect	0.27%	0.51%	1.40%
Zone location effect	0.25%	0.0%	0.80%
Profit taxation effect	12.27%	26.26%	7.52%
Infrastructure effect	21.68%	15.56%	26.47%
Blocking effect	1.84%	7.63%	0.16%
Kenyan investor effect	0.0%		
Apparel investor effect	3.05%		

Endnotes

¹ Quote from Jeffrey Sachs, World Economics Forum, “Southern Africa: Hobbled Hopes,” *World Link*, July/August 2000, p. 85. Intel represents the high-technology investment in a Costa Rican EPZ referred to by Sachs.

² The first EPZ strategy was started in 1959 and based around the Shannon International Airport in Ireland.

³ Chen (1995) estimates more than 900 EPZs of various types located in some 90 countries.

⁴ Export figures taken from the Global Trade Atlas, www.gtis.com/gta.

⁵ Osmoni, Vitalis, “AGOA-type Pacts No Good for African in the Long run,” *East African* (Kenya), March 17, 2003. See also “EPZ Investment in Major Growth,” *The Nation* (Nairobi), November 8, 2002.

⁶ Office of the U.S. Trade Representative, 2003 Comprehensive Report on U.S. Trade and Investment Policy Toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act. May 2003. <http://www.agoa.gov>

⁷ According to one report, Kenya’s labor productivity has declined by 30 percent since 1985. In contrast, Indonesia’s labor productivity increased 82 percent and South Korea 183 percent over the same period. See Economist Intelligent Unit, Competitiveness: The Secret of Success. *Business Africa*, October 1-15, 1998, page 9.

⁸ Nullally (1967) demonstrated that an 11-point scale was more reliable than the traditional 5-point and 7-point scales. McIver and Carmines (1981, 30) indicate that “the greater the number of items in a scale, the less each will contribute to the variance of the scale and consequently, the less bias will be introduced by each item.

⁹ Fifteen of the participants had R^2 greater than 0.70.