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DETERMINANTS OF AGGREGATE PRIMARY COMMODITY EXPORT SUPPLY FROM AFRICA: AN ECONOMETRIC STUDY*

Alemayehu Geda

Abstract

The literature of commodity supply functions is characterized by explanatory variables which are either current or lagged (relative) prices. This study not only underlines the existence of other factors but also emphasizes their explicit incorporation in estimation. By using pooled data of African countries, first, price focused estimations are explored. Subsequently estimation using other relevant regressors, which are rare in the literature, is carried. The result shows that (a) there is a clear difference between UNCTAD's world prices and the regional price constructed for Africa, hence previous studies using the former could have biased elasticities (b) real exchange rate has statistically significant elasticity with clear long and short run distinction, this underscores the relevance of the Error Correction Model (ECM) (c) capital formation indicators are also found to have positive elasticities, (d) there is a variation across regions and (e) estimation with foreign inflow included gives a mixed result.

Key words: Primary commodity export, supply functions, Dutch disease, Africa, co-integration, error-correction.

1. INTRODUCTION

Most of the analysis about the export problems of primary commodities of under developed countries in general and African countries in particular concludes that it suffers from price problems (especially of overvaluation, marketing board intervention etc.). Not surprisingly, the literature of the commodity (export) supply functions, although starts from structural equations which accommodates other factors, its reduced form, which is used for estimation, is characterized by explanatory variables which are either current or lagged (relative) prices. The attempt in this study is to underline the existence of other equally or more important factors which affect export of primary commodities and explicitly consider them in estimation. Two fundamental points

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* Asst. Prof., Department of Economics, AAU.

are the reason for doing so. First, exclusion of such variable is simply omitting variables and obviously bad econometrics. Second, such omission deprives countries of policy handles other than price. I have dealt with this issue first by exploring price-focused estimations. Subsequent estimations are carried by adding other relevant explanatory variables which are rare in the literature.

The rest of the paper is organized as follows. Section 2 briefly discusses the literature by focusing on supply of commodities. This will be useful in coming up with the approach followed in this study. Section 3 highlights the nature of the data used. Section 4 deals with estimation of aggregate export supply functions. Section 5 presents the conclusions.

2. THE LITERATURE

The literature on supply of primary commodities attempts to answer the question, 'what determine the supply of primary commodity exports?' Broadly, these supply determining factors include: cost and accessibility of consumer goods, farm subsidies and taxes, research and extension, road infrastructure (including its quality) and services such as marketing or credit (Binswanger, 1992). Infrastructure might include the indirect impact of services, too. Services like credit (number of commercial banks or total credit) might affect the accessibility to fertilizer. Agro-climatic condition and human capital (e.g. rural population density and literacy) are also important factors. Further, these studies show that the short run elasticities are generally low simply because the factors of production (i.e. land, labour and capital) are fixed in the short run and these constitute 70-85% of cost of agricultural production (Binswanger, 1992:151).

Attempt to specify supply functions is carried with this broad idea of supply determining factors although most writers ended up specifying their supply equations in terms of (relative) prices. In general, these studies can be categorized under two themes (a) *price focused Models* which use prices of different complexities as explanatory factors and (b) *Mixed (heterodox) factors based Models.*

2.1. Price Focused Models

Price focused supply models began from the simple 'cobweb theorem' of Ezekiel (1938) which states that output is determined by the level of price in the previous period. This has developed, through time, in to Nerlove (1958) who modified the 'cobweb theorem' assumption about previous period prices. Nerlove (1958) maintained that producers are influenced by their perception of 'normal' price which could be captured by the adoptive expectation scheme developed by Cagan (1956) for another work. In terms of commodity model classifications (See Alemayehu, 1998), these models fall under the category of *econometric market models*. This original formulation of supply and price relation went through numerous changes. Some studies emphasized the distinction between the long run (potential supply) and the short run (a proportion of potential

supply) responses (Wickens and Greenfield 1973; Chu and Morrison 1986). For instance, Chu and Morrison (1986) defined the structural equations of supply as the sum of utilization of potential output–*the utilization rate approach* and potential output–*potential supply approach*. In the end, however, supply (in reduced form) in this model is specified as the function of current and lagged prices, exchange rate and a supply shock indicator. Similar approach is used in an earlier work by Wickens and Greenfield (1973). Such classification is typically used for perennial crops and minerals.

Other studies used optimization strategy of agents, under different assumptions. This is widely used in explaining mineral extraction. It comprises: maximization of average return per unit of cost (Gray (1914) cited in Chu and Morrison 1986), optimizing the amount of total deposit to be exploited given first decreasing and then increasing cost structure over the expected life of the mine (Carlisle, 1954), maximizing the present value of discounted future net profit (Hotelling (1931) cited in Chu and Morrison 1986), optimizing expected profit under free competition both at firm and industry level (Herfindahl 1955) and finally a model which relates higher rate of short-term rate of extraction under uncertainty and high rate of interest (Parish (1938) cited in Chu and Morrison, 1986). In terms of the theoretical classification of commodity models these models broadly fall in the category of *econometric optimization models* (Alemayehu, 1998).

Following Shu (1975) and Askari and Cummings (1976), supply response functions can be categorized under three groups: those for annual crops, marketed surplus and perennial crops. For annual crops, six different models can be fitted: (i) the simple Koyck distribution lag model or the simple Nerlovian expectation model (ii) the complex Nerlovian expectation model, (iii) the Koyck second-order lag model, (iv) the Nerlovian adjustment model, (v) the expectations-adjustment model and (vi) the simple model (Shu, 1975:27). The Koyck model uses lagged prices (with a geometric lag assumption among the lagged prices) as the only explanatory variable. In Nerlove this is replaced by expected prices. The complex Nerlove adds to this other expected values (like expected yield). Koyck's second-order lag function uses lagged dependent as a regressor under the assumption of slow response due to institutional factors. Similarly, the Nerlovian adjustment model employs lagged dependent variable by assuming that farmers' adjustment by learning from their past expectation mistakes. The simple model (which has neither adjustment nor expectation variables), on the other hand, usually contains lagged price, lagged yield and trend variable to capture 'other' factors. Estimation invariably is carried by simple OLS. In fact, the theoretical models were ahead of the development of relevant estimation techniques which accommodate their basic idea of adjustment to past disequilibrum (The relevance of Error Correction Model in this context is discussed below).

As to perennial crops, the first of such models is that of Bateman (1965) which is specified to explain the supply of cocoa in Ghana. This model uses both expected (own) producer and competing crop (i.e. coffee) prices, which are believed to show expected profit, as regressors. Other non-price factors are completely ignored. The

dependent variable is the additional acreage under crop (the planted crop) in the year in question (Shu, 1975:55-69; Askari and Cummings, 1976: Ch. 7). Other models shown in Shu (1975), and Askari and Cummings (1976) (e.g. the Beherman model, The French[1] and the Matthew models) are not different in terms of explanatory variables used. Similar but alternative approach to Bateman is to use the stock of trees in stead of planted crops as dependent variable. However, differentiating such specification yields equations similar to that of Bateman except the replacement of the explanatory variable, lagged planted trees, by lagged stock of trees.[2] The latter models, although are fundamentally price based, show a trend towards including other factors in specifying supply function. However, in general, price focused models use functional forms which either explicitly exclude non-price factors or structural equations which include other non-price factors but ultimately could be explained by price. The end result in both cases is price-based estimation.

2.2. Mixed (Heterodox) Factors Based Models

The Ady (1968) model, which is used for perennial crops in Ghana, Nigeria and Uganda, is an improvement to that of Bateman in that it includes, on top of price, the existing acreage (i.e. the stock of the crop) in the pervious period. Another strand of supply function which focuses on heterodox factors is what is called the 'liquidity model.' This model takes farmer's income as additional explanatory variable to indicate his/her capacity to invest. This model is otherwise similar to Bateman's model. Its basic feature is to relate investment to the difference between desired and actual level of capital. Wickens and Greenfield (1973), Palaskas (1986), Chu and Morrison (1986) summarized such models by characterizing them as models essentially based on capital and investment behavior theory presented in Nerlovian adjustment model[3]. Alternative forms of this theory arise in specifying the factors that determine the desired level of capital stock. These different factors are: capacity utilization (capacity utilization theory); net output or return to capital (neo-classical); internal cash flow (liquidity theory) and expected profit based approach which earned different degree of emphasis by different authors (Palskas, 1986:16-18, Chu and Morrison, 1986:142-143, Wickens and Greenfield 1973). In some studies supply is also considered as a function of expected price, expected opportunity cost, production costs, stock of output (trees specifically in perennial crops), potential output of the industry and tax considerations (Kalaitzandonakes *et al*, 1992). In terms of theoretical commodity model classification such models are a hybrid of process and market models (See Alemayehu, 1998). Another important explanatory variable reported in the literature is domestic demand (Pal, 1992).

Bond (1987), based on the original works of Goldstein and Khan (1978), used exchange rate, current and lagged price, an index of productivity and a vaguely defined supply shock factor and a time trend to estimate her model. These factors are far less than the supply factors mentioned in the text of her discussion– indicating the difficulty of either quantifying or/and data. In Ramanujam and Vines (1989) supply is specified as a function of current price, lagged series of past price (due to cost of adjusting output)

and exogenous factors to capture 'others'[4]. This general form is estimated for different commodity groups. Hwa (1985) emphasized the effect of supply and demand through stock demand and supply conditions. Palaskas and Gilbert (1990) have reviewed Haw's model and argued that storage disequilibrium is an implausible basis for a price adjustment theory. They noted, first, correct specification/estimation of Haw's model shows poor performance and, second, the model essentially relates price changes to the disturbance term on stock demand equation. For them this is the least important source of price variation (Palaskas and Gilbert, 1990:1424). However, it seems they have downplayed his main/structural equations (where supply and demand are allowed to vary) simply because they focused on the reduced form equation.

Late development in commodity supply modeling hardly differs from much of the discussion above. Still, the emphasis is on relative prices, expectation and type of equilibrium across different commodity groups.[5] In other words, it is hard to find well-elaborated supply functions. A recent supply management study for tropical beverages essentially shares the tradition of using lagged prices (and sometimes output). In their recent work on coffee, tea and cocoa supply management, Maizels *et al* (1992, 1993a, 1993b) specified a commodity model which has both supply and demand sides. They specified their supply function, after a modest review of supply functions. The essential argument used in their beverage supply models is that output is explained by: area harvested (believed to reflect maximum potential output), real producer's price, a lagged output (to reflect relations between successive years) and a time trend to allow for trends in productivity. An important result in their study is that in every case area is correlated with output[6]. They also used acreage equations which relate the area harvested to lagged prices to show long run investment equation.

Finally, most studies carried about the export of African countries have also followed a similar approach. That is, the supply response is studied in terms of current and lagged prices. The finding (for small African countries and in the period of 1960s and 1970s) was that short run elasticities are high for annual crops while long-term elasticities are high for tree crops and minerals (Rwegasira, 1984:7-9). On the other hand, recent work on aggregate commodity export functions is not generally there. A recent paper which assessed the export performance of Sub-Saharan African countries called for a disaggregate estimation of export supply functions to shed light on factors which influence export volume (Svedberg, 1990:32). However, individual commodity supply function estimations are in progress (Gwyer 1971, Alibaruhu 1974, Ghashal 1975, Lupumba and Ndulu 1987, Jones and Mutuura 1989, Eriksson 1993 and Dercon 1993 are good examples).

The emphasis on supply in the above discussion need not imply that commodity models which explore the demand side and hence its simultaneous determination are not there. Such models not only avoid the simultaneous equation bias that could arise from neglecting demand, but also challenge the small country assumption when they are constructed at global level (See Alemayehu, 1998).

3. THE LINK BETWEEN SUPPLY THEORIES AND THE ESTIMATION TECHNIQUE: THE RELEVANCE OF ECM

There are three features of the commodity supply theories discussed above which allow us to link it with the ECM approach: (i) the assumption that there is a long run relationship between the variables under study, (ii) the hypothesis that it could have fairly distinct short and long run features (iii) and finally the assumed existence of some sort of adjustment mechanism in-built in the relationship. The first feature lends itself to the need for running co-integration test (as most series are I(1)). The second feature of the theories is not clear in the literature. Some writers take short/long run to be synonymous with short/long lags. Such approach dismally fails in the face of, especially, short gestation commodities (like food and agricultural raw materials). Other studies, rightly, emphasized short-term to mean utilization of potential capacity while long run is an increase in potential output. But, as most of the latter studies do not use a relevant estimation technique (a simple OLS being the most common one); they are not without problem either. Error Correction Model is a formal representation of dependent and independent variables with explicit distinction between short run variations (the immediate impact effect) and long run aspects (long run level or steady state relationship). Thus, it is an appropriate technique for estimating supply functions which are based on the theory of potential and utilization of potential output distinction. Moreover, since it explicitly includes an adjustment mechanism, it incorporates the third feature of the theories reviewed above.

4. THE THEORETICAL MODEL OF THIS STUDY

The above review gives insight into some important points in specifying export functions of primary commodities. First, factors other than price are important determinants of commodity supply. However, either lack of data and/or difficulty of quantifying them or focusing on reduced forms forced many researchers to use prices as the only explanatory variables. Second, a distinction across commodities (especially between annual and perennial crops) is essential in specifying supply functions. A third and relatively neglected factor is to place the commodity market within a macro framework where the role of stock holding and macroeconomic variables' impact is important[7].

In this study the export supply equation of a typical African economy is specified to depict the behavior of commodity producers mediated through the government. I have further assumed that output of export commodities respond to world price in broadly identical manner[8]. Although government intervention in the export sectors of most African countries is obvious, it is assumed that the impact of world price, especially the *change* in world price, will have similar signals both for the public sector as producer and the individual producers (although the latter surrenders a proportion of its income to

the government). The response to price and other supply factors will take two forms. In the short run increased capacity utilization is important. Thus, *short run* parts of the argument would be based on the commodity model of Goldestein and Khan (1976), Chu and Morrison (1986) and Hwa (1985)–where *(latent) capacity utilization theory* is the underlying hypothesis.

In the long run, producers are assumed to respond through change in potential output (capacity creation). *Expected profitability theory*, following Chu and Morrison (1986)[9], and other supply inducing factors (such as capital formation, foreign inflow) are believed to explain it. Foreign inflow, however, can have 'Dutch Disease' effects too (see Alemayehu 1997). This is largely an empirical question, however. Thus, I am essentially arguing that the different factors emphasized by different authors are basically complementary and should be explicitly consider in estimation. The lag structure would vary depending on the nature of the commodity under consideration. That is, longer lag structures should be used for beverages and minerals (which are assumed to be five years in this study), for example, than for annual crops[10]. This gives the following general theoretical model.

$$X_{it}^{ss} = a_0 + a_1\left[\frac{eP_s}{Pd}\right] + a_2\left[\frac{eP_s}{Pd}\right]_{t-1} + \left[a_3\left[\frac{eP_s}{Pd}\right]_{t-j} - k^{-1}\sum_{i=1}^{k}\left[\frac{eP_s}{Pd}\right]_{t-j}\right] + a_4(\Delta k)_{t-1} + a_5 FF_{t-j} \qquad [1]$$

Capacity Utilization | Expected Profit | Capital Formation

Where:

X - Export supply; e - Exchange rate, Ps - Export price of South; Pd - domestic price; FF - Foreign Inflow; ΔK - Capital formation indicator; the term in bracket, [..], is the expected profit indicator - the deviation of current price from k years moving average.

4.1. The Theoretical Export Supply Function and the Data

In this section the theoretical commodity export function (equation number 1), is adjusted to fit the available data. In our database, investment by commodity sector is not available. This requires the use of instrumental variables. The reparametrization of this theoretical formulation renders this possibility. The following sets of equations are used for that purpose. The distinction between the short run *capacity utilization* theory, and the long run *capital formation* argument will be maintained. To avoid the complex variables in equation number (1) I will designate the eP_s/P_d by P and the expected profit indicator by Π^{σ}. Maintaining ΔK and FF as they are, a shorter version of equation number one can be written as,

$$X_{it}^{ss} = \alpha_0 + \alpha_1 P_t + \alpha_2 P_{t-j} + \alpha_3 \Pi^{\sigma} + \alpha_4 \Delta K + \alpha_5 FF \qquad [2]$$

Our capital formation data is gross fixed capital formation (both public and private at national level). To overcome the lack of sectoral disaggregation of this data, the capital stock is specified in terms of factors that affect its formation. The possible factors and the one that I have access to are: prices, an indicator of expected profit & instability of prices (Π^{σ}), supply of domestic credit (DCR), supply of fertilizer, government investment (I_g) (indicator of infrastructure) and capital inflow (FF) (Like FDI that is important in the mining sector, and other official flows). Of these factors I will omit prices as they are specified in the equation above. This omission might imply that current (and a few periods lagged) price effect is direct (i.e. not through capital formation). However, since the indicator of expected profit & instability is computed from lagged prices the effect could be captured to a degree that is reasonably relevant. Concerning the expected profit indicator, the ideal approach is to use direct profit measures. Nevertheless, the profit data is hard to come by. Its approximation as a deviation from three years moving-average prices makes it similar to the price instability indicator. Hence, in specifying the capital formation it is included as one of the factors. Its coefficient can be interpreted both as profit and price instability index. Thus, the capital stock can formally be given as,

$$\Delta K = \beta_0 + \beta_1 \Pi^{\sigma} + \beta_2 DCR + \beta_3 I_g + \beta_4 FF \qquad [3]$$

Where: DCR is Domestic credit; FF is Capital inflow; I_g is Government investment.

Equation 3 states that capital formation in the commodity sector is determined by prices, availability of domestic credit, public infrastructure provision and foreign inflow. Substitution of this capital formation equation in equation [2] yields the final adjusted equation for estimation.

$$X_{At}^{ss} = \phi_0 + \alpha_1 P_t + \alpha_2 P_{t-i} + \phi_1' \Pi^{\sigma} + \phi_2 DCR + \phi_3 I_g + \phi_4' FF \qquad [4]$$

Where:

$$\phi_0 = \alpha_0 + \alpha_4 \beta_0 ; \quad \phi_1' = \alpha_3 + \alpha_4 \beta_1 ; \quad \phi_i = \alpha_4 \beta_i ; \quad \phi_4' = \alpha_4 \beta_4 + \alpha_5 .$$

At estimation stage the linear formulation is transformed in to log-log form, hence the coefficients to be estimated are elasticities. In the specific case of our data the expected profit indicator is found to be empirically problematic. In all cases it is a stationary series and exhibited a very high correlation (usually greater than 0.80) with the price variables. Given the latter result, the former is logical as the moving average acts as lagged price of prices and hence the series generated is nearly identical to the first difference of prices, which is stationary. This has a series multicloinearity problem and thus a shortcoming of previous studies. Thus, in the estimation below it is omitted from the functional form. The foreign inflow variable (FF) might also create simultaneous equation bias[11] (in one of the estimations) as it affects the other capital formation

indicators in the regression. This might not be a serious problem as a very tiny portion of foreign inflow is usually allocated to the primary sectors.

4.2. The Data

The relevant macro data used in this study is derived from a consistent macroeconomic database (Alemayehu *et al*, 1992). However, the most important data, export of commodities and price, are compiled from UNCTAD database (Annual Commodity yearbook). Certain changes are introduced to allow its adoption to the specificity of Africa.

1. Similar commodity categories are used for four commodity groups, these are:

a) Agric. raw materials (excluding Synthetic)	SITIC2-22-27-28-233-244-266-277
b) Tropical Beverages	SITIC 071.1+072+074.1
c) Minerals, Ores and Metals	SITIC 27+28+68+522.56
d) Fuels	SITIC 3

2. The category *food* in this study is slightly different from that of UNCTAD. In the UNCTAD methodology *All food* includes *food* (wheat, Maize, rice, sugar, beef and veal bananas, pepper, soybean meal and fish meal), *tropical beverage* (coffee, cocoa and tea) and *vegetable oil seeds and oils* (soybeans, soybean oil, sunflower oil, groundnut, groundnut oil, copra, coconut oil, palm kernels, palm kernel oil and palm oil). In this study *food* is defined to be all food except tropical beverage (i.e., food + vegetable oilseed and oils, according to UNCTAD definition).

Prices (Export prices)

For each of the commodities above UNCTAD provides a series of prices running since 1970. These price indices are computed by using the total developing countries export of these commodities in the years 1984-1986 as weights. Such index is missing for *food* as defined in our study. I have generated that index by adding price of *vegetable oilseeds and oils* and *food*, weighed by their respective group weight as computed from their share of developing countries export of commodities.

Another major change to UNCTAD's price series is to question whether the weight used in its construction is relevant to our study (i.e. in the context of Africa). In other words, does the averaging method allow to show the world price that the African economies face? To answer this question, the UNCTAD price is re-calculated by weighing it by each region's export. The comparative analysis offers the following conclusions. First, for all Africa, the *food* price index is similar in both (UNCTAD and mine) cases. For North Africa (NA) there was a gap in the 70s and late 80s. For West and Central Africa (WCA) the UNCTAD series show higher price until early 80s and then they are similar for the rest of the decade. For East and Southern Africa (ESA), the UNCTAD series understate the regional indices. Second, for *tropical beverages*, the UNCTAD price

series is nearly identical with the regional price series computed in this study. Third, for *agricultural raw materials* for all Africa the UNCTAD series overstates the actual price African economies face. This conclusion is valid to regional prices too. Such over estimation is very large for ESA countries. Fourth, for *mineral, ores and metals* for all Africa the UNCTAD series overstate the actual price African economies face. Such over-statement is severe throughout the period except in early 80s. However, for ESA, it understates the price they faced in early 70s and late 80s. Finally, a comparison of the African regional price series with the one generated by using the sample countries of this study reveals that the sample is nearly identical for all commodities and for all regions except for minerals. Diagrams 1, 2 and 3 show the above conclusion for the three regions (see Annex 1).

This result has profound implication not only to previous studies in Africa but also other studies that used world prices to analyze its regional and country impact. Obviously elasticities computed from such studies will be biased if there is a variation between the regional and that of the world (as given in UNCTAD or IFS) prices even if they have identical trends.

4.3. Estimation

4.3.1. Estimation Approach

Obviously the econometric specification could differ from this general theoretical specification. Based on the recent innovation in time series econometrics, the estimation is carried by formulating an Error-Correction Model (ECM). The estimation is done by pooling the data of the sample countries in each region (1970-90). To ensure that series are not unduly mixed when lag structure is used, careful treatment of end points is made. A constant country dummy is always used if it is found to be statistically significant. Moreover, sample sizes are adjusted (by excluding a country or countries) when such data violates almost all the diagnostic tests. The choice of the variables is made after a search process which includes both diagnostic test and co-integration test. In all cases, the estimation is fully supported by diagnostic tests (Chow, Jarque-Bera and Reset along visual inspection in data exploration process).

Preliminary estimations with current prices and capital formation indicators have shaped the approach followed in this section. That is, data is allowed to inform theory Wuyts (1992). Such preliminary estimates revealed some interesting results. First, short run current price elasticiteis are in general positive but not always statistically significant. For long gestation commodities, price affects mainly capacity utilization. Second, long run current price elasticities are both positive and negative (significantly negative for agricultural raw materials in ESA). In some cases they are not significantly different from zero. Third, capital formation variables are in general positive and significant. Finally, in three of the commodity categories (except minerals) 10-25% of any disequilibrum in the previous period is made up in the current period for countries in WCA. Indicating a general low level of adjustment to disequilibrum (or shocks), this

figure (which is 62%) is very high for minerals, however. Similar adjustment coefficients, save for minerals, are obtained for ESA. For NA the adjustment coefficients are quite high, indicating theses economies' capacity to cope with shocks.

The inverse relationship between export and long run current prices observed for agricultural raw materials in all regions and for minerals in North Africa is worth further examining. It provokes at least two propositions about export supply and price dynamics. The first proposition is that domestic prices might not be important and hence relative price (as opposed to nominal) is crucial. In macro context this in turn implies, domestic prices could be affected by capital inflow. This in turn opens the importance of macro variables in the determination of the supply of commodities as long as they affect the level of domestic price. This in turn implies a sort of 'Dutch disease' possibilities. In the 'Dutch disease' context, a real appreciation is possible. Thus, in Tables 5, 10 and 15, I am focusing specifically on this inflationary pressure (which could arise from the spending effect). A one period lag is assumed for the formation of such inflationary pressure. The nominal export price (instead of the real exchange rate) is used for the domestic price is presumed to be affected by the foreign inflow.[12] The use of debt stock data in ECM formulation allows us to see the 'Dutch disease' impact in the short run (for the change could be taken as a flow) and debt overhang problem in the long run. Besides, this specification further allows to see the impact of foreign inflows explicitly.

The second proposition is that the structure of foreign exchange demand (import content of industries, pattern of consumption of a section of the urban population, debt servicing, capital flight etc.) of a typical African economy is that foreign exchange is so desperately needed and hence countries are maximizing total export revenue. This logically entails lower prices trigger more exports[13]. Given these working propositions retrieved from exploratory estimation, each of the aggregate commodities of each region is estimated at three stages. *First*, current price and capital formation indicators are taken as regressors - I will call this Model I. *Second*, the current price is replaced by commodity specific real exchange rate, i.e., the ratio of regional commodity price in domestic currency to domestic price -this is Model II. *Finally*, current prices, a capital formation indicator and foreign capital inflow are used as regressors–this is Model III. Current price is chosen in Model III cognizant of the assumed correlation between foreign inflow and domestic price (which is the denominator in the relative price computation).

In all models, the current price data used is the current commodity price computed for each region. For perennial crops and minerals two sets of lagged prices are used. The one period lag is assumed to affect capacity utilization while the five-year lag is assumed to affect capacity creation. Owing to the ECM approach both period lags have short and long run effects. The variables: consumption of fertilizer, investment and capital stock are interchangeably used (depending on co-integration test, multicoliniarity problem etc.) as indicators (instruments) of capital formation. Thus, the final estimations are the result of an exhaustive search process both using Hendery's general to specific

(GS) approach and the diagnostic tests. The estimation is done using E-views and TSP. The results of this econometric exercise are discussed in the next section.

4.3.2. Results

1. East and Southern Africa (ESA)

A sample that contains eight countries in this region (Botswana, Ethiopia, Kenya, Madagascar, Malawi, Tanzania, Uganda and Zambia) is used. Before the estimation, a test for unit root of the variables of the three Models (I, II, III) is done. The result shows that the series are non-stationary (Table 1) and each model's variables are co-integrated (Table 2) (see Annex 2). The results of this estimation, obtained after an exhaustive search, are reported in Tables 3-5 in Annex 2. The following are the major findings (See Alemayehu (1996) for more details).

1(a). Food: In this region current price of food has strong and positive effect both in the short and long run in Model I and in the long run in Model III. The long run effect being stronger. When Model II is used, only the long run relative price elasticity is found to be positive and significant although significantly lower in magnitude to the elasticity of current prices. All diagnostic tests are quite acceptable. A one period lag is assumed for the impact of foreign inflows (different foreign inflow indicators: bilateral, multilateral, grants and private flows are tried) to have effect while 3 years are allowed for the impact of capital formation indicators to be felt. The result shows that all the variables are not statistically significant. The result also suggests that 'Dutch diseases' possibilities can not be sustained. It suggests the existence of a positive impact of capital formation and generally confirms the positive impact of prices in the long run.

1(b). Agricultural Raw Materials: The estimation for this commodity confirms that capital formation indicators have strong and statistically significant positive impact both in short and long run. Current prices in the long run are found to be either statistically significant and negative (Model I) or statistically not different from zero. This might suggest the confirmation of the second proposition about supply price relationship discussed above. Short run relative price is positive and statistically significant, however. Again, 'Dutch disease' problem cannot be suggested by the data.

1(c). Tropical Beverages: Current prices (with the two types of lags) are found to be positive and statistically significant only in Model I. Relative price which indicates capacity creation (in Model II) is also statistically significant in the long run. The capital formation indicator has ambiguous result (having negative value in Model II and positive in model III). In using Model III, of all capital inflow categories, only multilateral flows are found to be co-integrated with the other regressors. The lag for capital inflow is one period behind that of price and capital formation indicators to allow an inflationary pressure formation. Botswana and Zambia are excluded for they

do not have beverage export data. With quite good diagnostic test, the result shows that in the short run none of the variables, except the negative value of the long lag capital inflow–indicating 'Dutch disease' problem, are statistically significant. The foreign inflow shows a statistically significant long run negative (indicating debt overhand) and positive sings for the long and short lag aspects, respectively.

1(d). Minerals, Ores and Metals: The mineral equation is found to be the most difficult to estimate. The real level of mineral exports and its relative price are not co-integrated with 10 types of capital formation indicators. Finally, the co-integration Dickey-Fuller t-statistics for the two variables above with that of investment in the private sector is found to be -3.3 (compared to Mackinnon critical value -3.5 at 10% significance). Given the well-documented uncertainty of this test at border cases, the estimation is carried out with this reservation. The result shows statistically significant negative impact of the short run relative price relevant for capacity creation. In the long run the impact of price which affect capacity utilization is found to be statistically significant and positive. Besides, the capital formation indicator has also statistically significant positive impact. Long run prices show a negative coefficient though not statistically significant. Adjustment to disequilibrium is also found to be very low, only 18% of the past error being made up for in the current period.

In general in this region, the adjustment coefficient varies from model to model. It ranges from 10-50%. This figure is the highest for beverage around 50%. This indicates a general low level of adjustment to disequilibrum (or shocks) for all except that of beverage. It is noted that this is contrary to expectation that short gestation items might adjust fast (see Annex 2).

2. North Africa (NA)

Due to lack of data, three countries are chosen as a sample for North Africa: Algeria, Egypt, and Tunisia (leaving Libya and Morocco). Similar procedure is followed in the estimation. Since these countries have no beverage exports, I used only three sets of estimations under the three Models. A unit root test carried out shows that the series are non-stationary but co-integrated in each model (Tables 6 and 7 in Annex 3). The following observations are made for each of the commodity categories.

2(a). Food: In general, the food function for NA suggests that current prices are not statistically significant, the only exception being the long run value of Model III. The relative price effect is not satisfactory either. However, the result suggests positive elasticity for short run capital formation indicators in Model III. The food equation in Model III further shows that capital inflow had, contrary to 'Dutch disease'/debt overhang hypothesis, positive and statistical significant impact in the long run (positive but statistically insignificant in the short run).

2(b). Agricultural Raw Materials: The export of agricultural raw materials is not co-integrated with current prices and various capital formation indicators. Thus, the

estimation is carried using Model II. Model II shows that real exchange rate has a positive elasticity both in the short and long run. However, it is only the long run elasticity which is statistically significant. The capital formation indicator has also positive elasticity in both the short and long run. Only the short run elasticity is statistically significant, however. The use of Model III shows a positive and statistically significant coefficient for the short and long run capital formation indicator. Capital inflow is found to have statistically significant positive impact in the short run and negative impact in the long run. However, caution should be exercised in using Model III as the Chow value is a bit large.

2(c). Minerals, Ores and Metals: Long run current prices (except the capacity utilization indicator in Model I) are found to have a negative and statistically significant value. Supporting the hypothesis that lower price trigger exports (under revenue maximizing regime). The long run capital formation indicator does also show positive and statistically significant value in Model I (having statistically significant negative value in the short run), corroborating the argument of revenue maximization. When the above estimation is done with the real exchange rate instead (Model II), all coefficients in the short run, except the constant, are found to be statistically insignificant. In the long run, however, the price which is assumed to show capacity creation has positive and statistically significant value (capacity utilization indicator price is positive but not statistically significant). The capital formation indicator is not statistically significant in this model. When Model III is used, both types of prices in the long run exhibit negative and statistically significant result. Long run short lag effect of capital inflow is also, contrary to 'Dutch disease' theory, positive and statistically significant, while its long run long lag coefficient suggests negative values. This result may show that capital inflow can ensure capacity utilization but not capacity creation (in fact in the long run, capacity creation aspect; 'Dutch disease' and or debt overhang problems could be expected).

Contrary to the two other regions, in NA the adjustment coefficient is in general high. This shows a good part of errors from previous period are made up in the current period. This indicates a relatively higher capacity of the region to adjust to external shocks (or a deviation from the long run equilibrium) (See Annex 3).

3. West and Central Africa (WCA) Region

Ten countries are selected from WCA region as defined in UN-ECA (Economic Commission for Africa) data reporting system. The sample includes: Benin (Ben), Burkina-Faso (Bf.), Cameroon (Cam), Central African Rep (Car), Gabon (Gab), Ghana (Gha), Nigeria (Nig), Senegal (Sen), Sierra Leon (Ser), and Zaire (Zi). Four commodity export functions are estimated below. All variables used in the estimation are found to be non-stationary series. At the same time they are integrated of order one (Table 11). Thus, the estimation is carried after co-integration test is carried for each Model (I, II and III). The result shows that the variables in each equation are co-integrated, indicating the existence of long run relationships (Table 12). Tables 13-15 show the estimated result of the three Models for the four commodity categories in the WCA

region (See Annex 4). The following are the major observations made.

3(a). Food: It can be concluded that the aggregate food function exhibits a statistically significant positive coefficient (except for the long run capital formation in Model I, and the short run capital inflow in Model III) for all variables and in all models both in the short and long run. The possibility of a 'Dutch disease' phenomenon can not be inferred from the coefficient of the short-term inflow. However, long run debt overhang problem can be inferred from the statistically significant negative coefficient of Model III.

3(b). Agricultural raw materials: Regarding current prices The results suggest a positive short run elasticity in Model I and statistically insignificant values in the rest of the cases. However, relative prices are positive and statistically significant. Model I, also shows that capital formation has positive and statistically significant value in the long run Contrary to our hypothesis, capital inflows shows positive and statistically significant values both in the short and long runs.

3(c). Tropical beverages: In sum, when it comes to beverage, the result confirms that price whether current or real determines capacity utilization both in the short and long run. On the other hand prices are found to be unimportant as a factor determining capacity creation. The result also show that capital formation indicators have positive and statistically significant impact in Model II in the long run while exhibiting negative impact in Model III. Capital inflow has also statistically significant positive impact both in the short and long run.

3(d). Minerals, Ores and Metals: This estimation confirms the importance of capital formation indicators in the long run in Model I. It also confirms, both in Model I and III, the positive impact of current prices on capacity utilization in the long run. Real exchange rate (Model II) has statistically significant positive and negative impact on capacity creation and utilization, respectively, in the long run. Model III suggests the possibility of 'Dutch disease' and debt overhang problem in the sector.

In general in this region, for food and agricultural raw materials (non-perennial and short gestation) 10-25% of any disequilibrum in the previous period is made up in the current period. This figure is very high for beverage 25% and minerals 50-60%. This indicates a general low level of adjustment to disequilibrum (or shocks) for the former and a clear distinction between commodities that require long and short gestation period. This is contrary to the intuitive expectation that short gestation items might adjust fast. This might be attributed to the importance of capacity utilization (e.g. recovery rate) in minerals/tree crops.

Table 1 gives the summary result of all the estimation carried out in this study. I have reported only those values which are statistically significant (at around 10% and better). In the summary table [1] indicates Model I where current price and capital formation indicators are the regressors, [2] Model II where the price in [1] is replaced by commodity specific regional real exchange rate. Finally [3] indicates Model III where the

first, [1], estimation is augmented by capital inflow indicators.

Table 1. Summary Table of Elasticities: All Africa

	Current Price		Relative prices		Capital formation		Foreign inflow	
	Short -run	Long run	Short run	Long run	Short run	Long run	Short run	Long run
West and Central Africa (WCA)								
Food	0.46[1] 0.57[3]	2.4[1] 3.50[3]	0.27		0.11[1] 0.18[2] 0.16[3]	0.42[2] 0.50[3]		-0.39
Agr.Raw materials	0.36[1]		0.48	0.62		1.02[1]	0.21	0.79
Beverage	0.37[1]* 0.37[3]*	0.84[1]*	0.18*	0.50*	-0.25[3]	0.26[2] -0.86[3]	0.19#	0.62* 0.67#
Minerals		2.45[3]*		-2.52* 2.73#		1.03[1]	-0.88*	
East and Southern Africa (ESA)								
Food	0.29[1]	5.02[1] 1.01 [3]		0.13				0.22
Agr.Raw materials		-1.38[1]	0.33		0.18[1] 0.18[2] 0.22[3]	0.44[1] 1.19[2] 1.16[3]		
Beverage	0.14[1]*	0.54[1]* 0.30[1]# 0.77[3]#		0.12#		0.13[2] 0.58[3]	-0.24#	0.58* -0.66#
Minerals			-0.42#	1.27*		2.36[2]		
North Africa (NA)								
Food		0.90[3]			1.14[3]			0.15
Agr.Raw materials				2.40	0.62[2] 1.21[3]	1.53[3]	0.68	-0.43
Minerals		-0.91[1] -1.02[3]* -1.28[3]#		0.95#	-0.56[1]	1.14[1]		0.58*

* = short lags (indicating capacity utilization) # = long lags (indicating capacity creation)

In this study an attempt to identify determinants of commodity export supply is made. The approach differs from previous studies because (a) it emphasizes the role of other factors, besides price, in the determination of export supplies, (b) its use of error-correction model and (c) its focus on African countries. The following conclusions emerge from the above analysis. *First*, there comes out a clear distinction between short run and long run elasticities. Hence, ECMs are relevant econometric techniques in estimating commodity models, yet work in this area is in its infancy. *Second*, estimation using relative prices (real exchange rate) gave largely satisfactory results. However, it is noted that the impact of relative prices is largely confined to capacity utilization and not capacity creation. *Third*, although capital formation indicators are neglected in the literature, they are also found to have positive and statistically significant impact especially in the long run. As a result, specific parameters are obtained for each region and for different commodity categories. This has an important implication. On top of giving us one more policy handle than price, it implies boosting capital formation (internal or with aid), instead of welfare aid, can not only raise the level of exports but also has a multiplier effect on output working its way through imports.

An important variation across regions is also observed. The regional variation across commodity categories provides the following picture. For *food* the short run current price elasticity is found to be the highest for WCA. In the long run both WCA and ESA showed higher price elasticity than NA. The short run impact of capital formation indicators on food is found to be strong for NA. A negative Debt overhang effect is observed for WCA but not for the others. *For agricultural raw materials* short run price effect is stronger in WCA, while long run price effect is negative for ESA. Similar short run phenomena is observed for relative prices. Long run relative price effect is found to be strong in NA followed by WCA. Capital formation indicators are found to be strong in NA followed by ESA. Debt overhang problem is found in NA but not for WCA. *For beverage*, current and relative price and capital formation effect is found to be strong in WCA followed by ESA. 'Dutch disease' and debt stress effect is observed for ESA but not for WCA. Finally *for minerals*, long run current price effect is found to be strong for WCA and negative for NA.

The impact of the arguments used in the regression does also vary across regions. Relative price effect is negative for short lag of WCA and short run, long lag, of ESA. Longer lag (capacity creation) long run effects are found to be strong for WCA followed by ESA and NA. The impact of capital formation indicators is strong for ESA and nearly equal for the other regions. 'Dutch disease' possibilities are apparent in WCA only. The above observations leads to the conclusion that there is a variation across the different regions for the different commodities and giving due attention to such differences is very important in analyzing the pattern of trade and finance of Africa. The impact of foreign inflow on exports is not conclusive. I have obtained mixed results. So is the relationship between long run current export price and supply of export when the impact of foreign inflow is explicitly considered in the specification of the model (i.e. The result is mixed). This requires further research both for other regions and at country level.
Although most studies are based on output, and not export supply, I have contrasted them with our finding. Bond (1987) reported aggregate supply price elasticity (using relative price) for Africa of -1.28 for food, 0.70 for agricultural raw material, and -1.89 for minerals. For other regions she found lower elasticities. She attributed the perverse relation in food for population growth and huge gap between world price and producer's price. In an earlier study (Bond, 1983) she found an average aggregate price elasticity of 0.12 (coefficient of logarithm of real price) which for individual countries ranges from 0.03 to 0.22. Binswanger (1992) maintained that price elasticities of sub-Saharan Africa are not lower than other areas and in general long run elasticities are higher than short run. His result shows elasticity values ranging from 0.05 to 0.15 with the exception of Senegal (0.54) and Burkina Faso (0.22); the cross-country result being 0.06. Long run values are in the range of 0.15 to 0.24. He didn't have long run elasticities from cross country regression. Gwyer (1971) found a short run price elasticity ranging from 0.24 to 0.29 and a long run value of 0.48 for sisal in Tanzania. Alibaruhu (1974) found a short run price elasticity ranging from 0.22 to 0.26 and a long run value ranging from 0.44 to 0.66 for cotton in Uganda. Ghashal (1975) found a one period lag price elasticity of 1.16 to 1.71 for rubber in Liberia. Jones and Mutuura (1989) found an elasticity of 1.33 and 1.71 for short and long run, respectively, of cotton in Kenya. Eriksson (1993) reported

supply price elasticity estimates of Tanzania carried by different authors. He reported elasticity ranging from 0.25 to 0.43 for perennials, 0.73 (short run?) to 2.4 in the long run for cotton and a short run value ranging from 1.5 to 2.3 for food crops. Dercon (1993) has also found a short run elasticity of cotton in Tanzania ranging from 0.63 to 0.67. Ramanujam and Vines (1989) reported price (real- it seems they used real price although their glossary is not correct in defining real and current prices) elasticities of 0.10 for food 0.51 for beverages, 0.06 for agricultural raw materials and 0.33 for metals and minerals in the 'long run' (long run being long lags of 5 years). The short run (price with no lag) values are respectively 0, 0.13, 0.08 and 0.31. Abebayehu (1990) estimated an export supply function for Six African countries. His export (price) supply elasticity ranges from 0.50 to 1, if the Kenya's exceptional high value of 2.3 is excluded.

5. CONCLUSION

This study is in agreement with the previous studies in that, in general, long run price elasticities are larger than the short run one. But ours has an advantage in clarifying what long run and short run means using relevant estimation technique. Moreover, it provided stronger and positive elasticity values. The difference in our result could be attributed to the use of error correction model and well-structured database with large degrees of freedom. Since previous studies hardly touched upon other supply factors, a comparison with this study is not done.

The literature of commodity (export) supply functions is characterized by explanatory variables that are either current or lagged (relative) prices. This study not only underlines the existence of other equally or more important factors but also emphasizes their explicit incorporation in estimation. Cross-section data of African countries is used for estimation. First, price focused estimations are explored. Subsequent estimations are carried by adding other relevant explanatory variables that are rare in the literature. This section shows that (a) there is a clear difference between UNCTAD world prices and the regional price constructed for Africa, hence previous works using the former could have biased elasticities, (b) estimation using real exchange rate resulted in statistically significant elasticity coefficients with clear long and short run distinction. This underscores the importance of this particular specification and the Error Correction Model (ECM) in estimation, (c) capital formation indicators are also found to be positive and statistically significant, (d) there is a variation across the three regions of Africa and finally, (e) using the models in this section, estimation with foreign inflow included gives mixed results both as to the relation between export prices and supply of export and the impact of aggregate foreign inflows.

Notes

[1] The Ady model for cocoa and the French model for apples are the only two models prior to the 1960. During this period although the supply response literature was extensive, supply functions were rare (Palaskas, 1986:12).

[2] See Lim Lin Shu (1975), pp. 67-69 for comparison and algebra.

[3] Typical formulation of such investment function is the one which relates current investment I_t (which is the difference between current and lagged level of capital stock, K_t-K_{t-1}) with that of the desired (K^*) and actual (K) level of capital stock with adjustment variable α, included. Formally this is given as,

$I_t = K_t - K_{t-1} = \alpha (K^*_t - K_{t-1})$ (See Palaskas (1986) for analysis of alternative specification of K^*).

[4] At estimation stage these 'other' factors took different forms. For food and beverage price of fertilizer and lagged stock level are used. For agricultural raw materials a time trend and price of oil (as input price) is used. For metals lagged stock level and inters rate (to show cost of capital) are used.

[5] See Alemayehu (1998) Chapter 3 and the excellent survey by Labys *et al* (1991).

[6] This is an important result because one can use output figures as a proxy to area, for the latter data is hard to come by.

[7] See Alemayehu (1998) Chapters 6 and 8. Hwa (1985) is a good example of including stock holding variables in commodity models; Alogoskoufis and Varangis (1992) is an example of using macro variables in commodity modeling.

[8] Most studies use output of a commodity instead of exports, the assumption being change in output is easily convertible to change in exports. Export supply models, on the other hand, employ exports - assuming that change in exports are the results of change in output.

[9] The expected profit indicator used in Chu and Morrison (1986), with minor changes, is used. It can also be interpreted as price instability index. This is so for it is computed as the deviation of current price from a moving average price (at specified lag), which is assumed to show the long run average price.

[10] See Bond (1987) for empirical validity of this argument.

[11] Although in a simple level-based OLS estimation simultaneous equation bias can also arise from lack of a complete demand and supply model estimated simultaneously (like that of Goldestin and Khan (1978)), this limitation will not arise due to the use of the ECM approach (see Kennedy, 1994: 251 for instance. See also Hamilton (1994) and Rao (1994) for formal treatment of this issue).

[12] In fact, an ECM regression of domestic price (GDP deflator) on foreign inflow is separately run to justify such proposition. The result indicates a strong positive relationship. Such possibility of 'Dutch disease' effect is strong for multilateral debt (which is one of the important flows to Africa).

[13] The problem with this hypothesis is to explain why a rise in price, is then, associated with lower exports if the demand for foreign exchange is so elastic. See also Bevan et al (1987) for an alternative explanation based on the concept of rationing about the so-called perverse relation.

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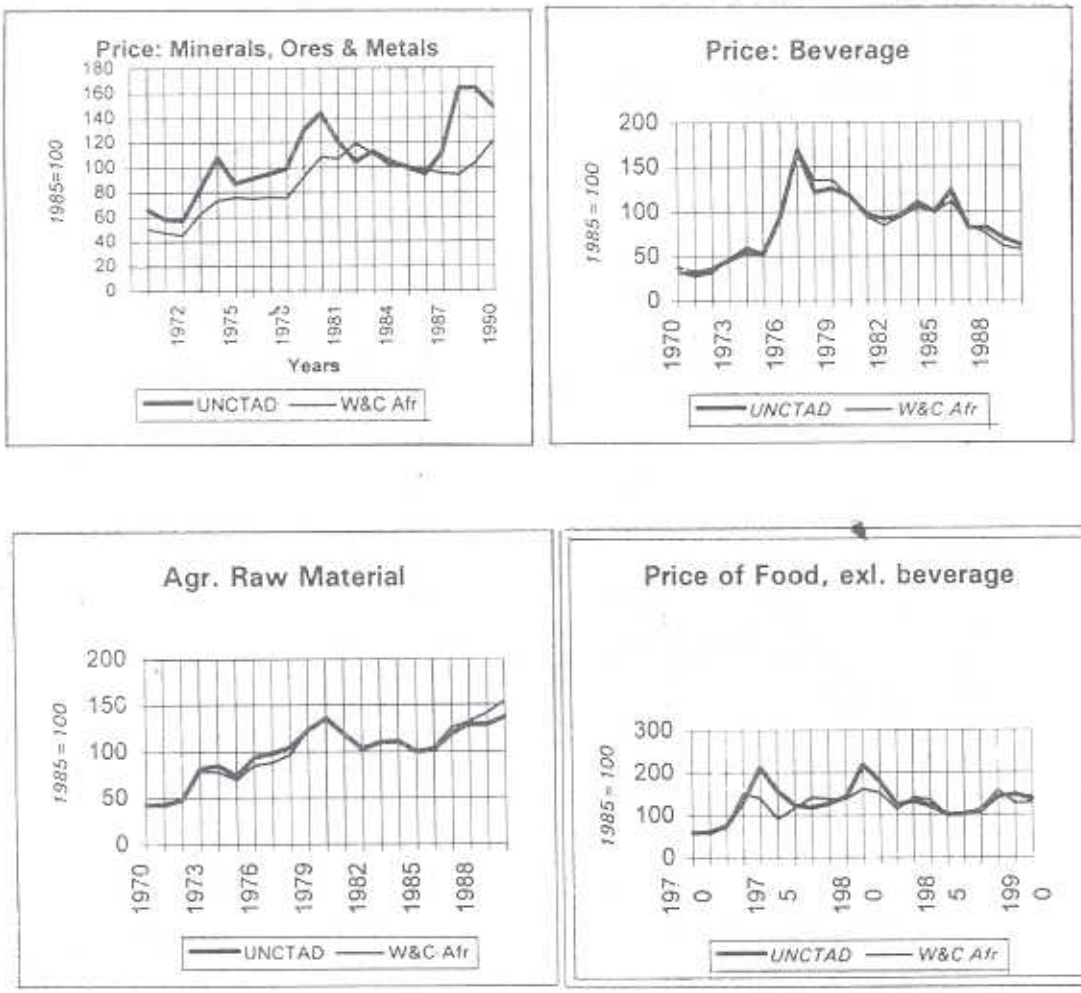
ANNEX 1

Diagram 1. The Modified and Actual UNCTAD Price Series (WCA)

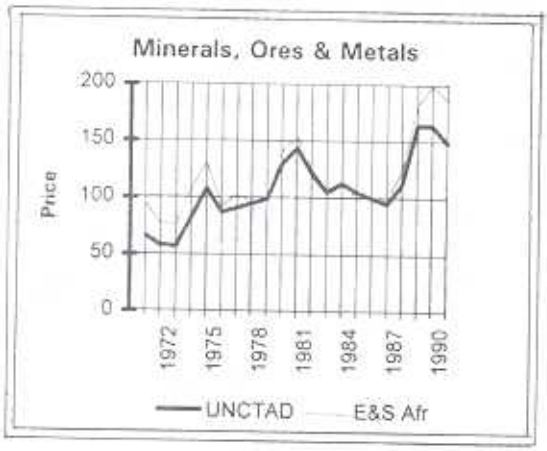


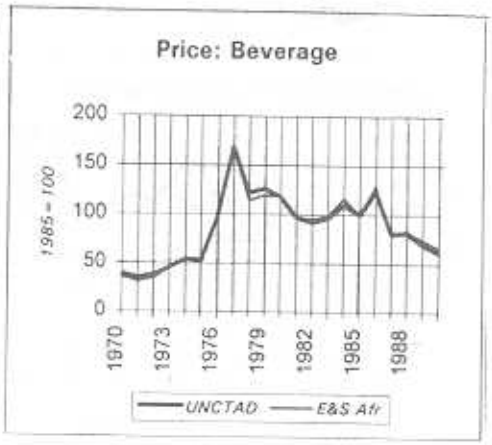
UNCTAD UNCTAD commodity price series

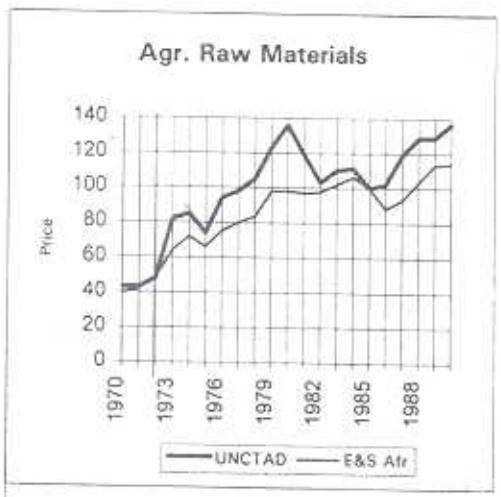
W&CAfr UNCTAD price wieghted by export of West and Central Africa region

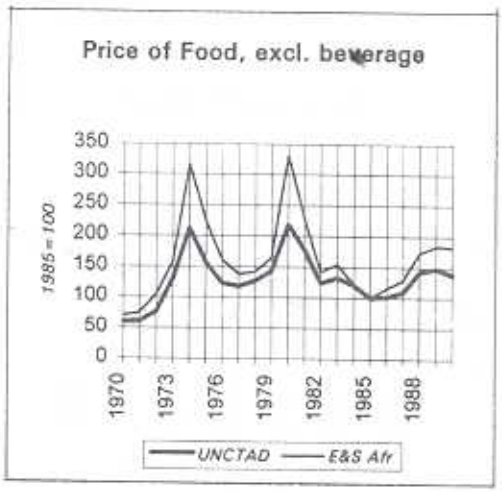
(Regions according to UN-ECA classification)

Diagram 2. The Modified and Actual UNCTAD Price Series (ECA)





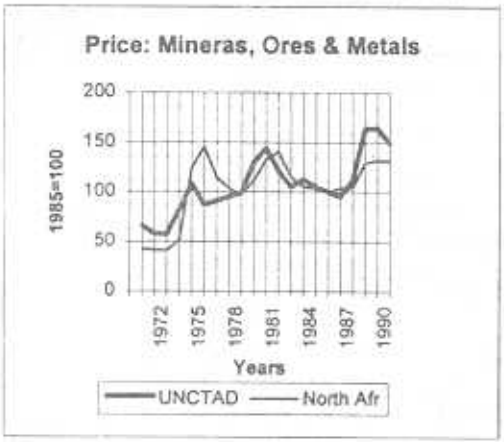


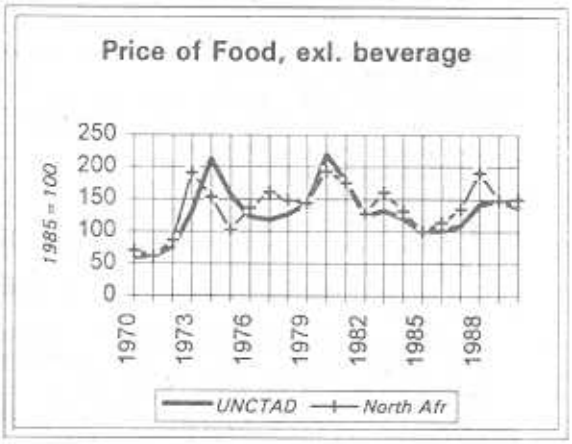


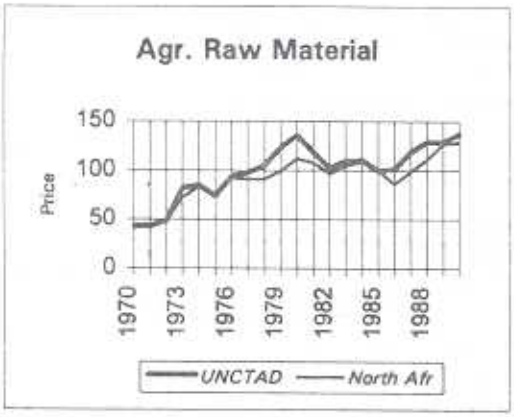
UNCTAD UNCTAD commodity price series

E&S Afr UNCTAD price wighed by export of East and Southern African countries (ESA) Regions using UN-ECA classification

Diagram 3. The Modified and Actual UNCTAD Price Series (NA)







UNCTAD UNCTAD commodity price series
North Afr UNCTAD price wighed by export of North Africa coutiries.

ANNEX 2

Table 1. Unit Root Analysis: An ADF Test at 1% Mackinnon Critical Value East and Southern Africa

Name of Variable	Symbol used	Level of Integration
Log of food real (At 1985 price)	LFOODR	I(1)
Log of Agricultural Raw Materials real (at 1985 price)	LAGRMR	I(1)
Log of Agricultural Raw Materials as proportion of GDP	LAGRMG	I(1)
Log of Beverage real (at 1985 price)	LBEVR	I(1)
Log of Beverage as proportion of GDP	LBEVG	I(1)
Log of Minerals real (at 1985 price)	LMMR	I(1)
Log of Minerals as proportion of GDP	LMMG	I(1)
Log of Price of Food, Agricultural Raw material, Minerals, beverag of West and Central Africa sample	LPFESAs, LPAESAs, LPBESAs and LPMESAs	I(1)
Log of Aggregate bilateral, multilateral, private inflows and grants respectively, Log of aggregate inflows, aggregate excluding private flows, Log of Foreign direct investment, log of fertilize consumption	LBILAD, LMULTD, LPRIVD, LGRANT, LBMPGFF, LBMGFF, LFDI, LFERTZ	I(1)
Log of capital stock as ratio of GDP, total, public, private	LKGDP, LKGVGDP, LKPGD	I(1)
Log of domestic credit as ratio of GDP: total, private, respectively	LDCRTG, LDCRPG	I(1)
Log of government investment as proportion of GDP	LIGVGDP (at 10%)	I(0) Border
Log of total, government and private investment as proportion of GDP	LIGDP, LIPGDP	I(1)
Log of (regional) Real exchange rate for food, Agr. raw materials, minerals and beverage (Regional commodity price X nominal exchange rate)/GDP deflator)	LRERF, LRERA,LRERM an LRERB	I(1)

Table 2. Co-Integration Test for East and Southern Africa

Equation	Engel-Granger ADF statistics	Mackinnon critical Value at 5%	Johansen likelihood ratio	Mackinnon critical Value	
				5%	1%
Food					
Model I	-3.929	-3.795	87.21	29.68	35.65
Model II	-3.570	-3.489**	38.20	29.68	35.65
Model III	-3.971	-3.862**	121.68	47.21	54.46
Agr. Raw materials					
Model I	-4.147	-3.794	64.79	29.68	35.65
Model II	-4.176	-4.166	41.58	29.68	35.65
Model III	-3.769	-3.870**	115.92	47.21	54.46
Beverage					
Model I	-3.879	-3.808	31.58	29.68	35.65
Model II	-3.769	-3.500**	21.71	29.68	35.65
Model III	-3.903	-3.876**	73.72	47.21	54.46
Minerals					
Model II	-3.274	-3.511**	31.92	29.68	35.65

** [*] Mackinnon critical value at 10% [1%] level of significance.
The Johansen test used assumes linear deterministic trend in the data with intercept, no trend, in the test VAR (i.e., the Co-integration equation, as an indicator of long run equilibrium relation, has no trend).

Table 3: Estimation with Current prices - East and Southern Africa

	Food		Agr. Raw Materials		Beverage		Minerals	
Dependent→	LFOODR	(t-values)	LAGRMR	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	-2.40	-3.30***	4.16	3.00***				
ΔLP_1	0.29	2.06**	0.02	0.05	0.14	1.77*		
ΔLP_5					0.05	0.50		
ΔLIPGDP_1			0.16	1.77*				
ΔLIGVGDP_1	-0.21	-1.38						
ΔLKPGDP_5					0.03	0.25		
Long run coefficients (elasticities)								
LP_2	5.03	4.45***	-1.38	-2.21**	0.54	3.26***		
LP_6					0.30	1.83*		
LIPGDP_2			0.44	1.91**				
LIGVGDP_2	-0.45	-0.69						
LKPGDP_6					0.14	0.74		
Dependent_1	-0.11	-1.87**	-0.43	-6.17***	-0.34	-3.79***		
Diagnostic test								
ECM Adjusted R^2	0.18	n=108	0.34	n=85	0.09	n=90		
Level Adjusted R^2	0.14		0.57		0.64			
Jarque-Bera	4.23**		0.40**		0.14**			
RESET(1)	5.60	Pr(0.02)	1.40	Pr(0.24)	0.01	Pr(0.91)		
Chow	1.40**		2.83***		2.77***			
Degree of Multicollin.+	Low		Very Low		Very Low			
Constant (country) dummy used			Botswan Tanzania	-0.95 1.88	Ethiopia Kenya Madagasc r Tanzania Uganda	0.59 0.80 0.30 0.46 0.64		

Notes

1. The long run coefficients and their t-values are using the Wickens and Breusch (1988) and Gurney (1989) approach. The Long run R^2 is also taken from the same regression. _1, _2 ..etc. show one , two ...etc. periods lag; ~ weakly significant (closer to 10%)
2. * significant at 10% ; ** at 5% and *** at 1% and less. For all of the equations the F value (over all fit) is significantly different from zero.
3. The Jarque-Bera $_{}^{2}$ statistics at 5% level of significance for 2 degrees of freedom is 5.99. ** indicates significance at this level or better. Note, however, that it is relevant for large sample and visual inspection is important (See Mukherjee *et al* 1997).
4. # Chow break test is carried by using two country data as one series (when there is insufficient data by each country)

\+ For Multicollinearity simple correlation between regressors around <35 is assumed VERY LOW , 35-55 LOW & 55-65 ACCEPTABLE

The error correction form, for instance, for the food equation above can be given by the following (See Appendix 6.1)
ΔLFOODR=0.29ΔLP_1-0.21ΔLIGVGDP_1-0.11(LFOODR-5.03LP_2+0.45LIGVGDP_2+21.82). The long run relationship being,
LFOODR=5.03LP_2-0.45LIGVGDP_2-21.82

Table 4: Estimation with Real Exchange Rate - East and Southern Africa

	Food		Agr. Raw Materials		Beverage		Minerals	
Dependent→	LFOODR	(t-values)	LAGRM	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	0.84	2.85***	1.02	3.05***	1.84	3.47***	0.54	1.45
ΔLP_1	-0.02	-0.15	0.33	2.25***			0.10	0.48
ΔLP_5					0.08	1.18	-0.42	-1.7*
ΔLIPGDP_2			0.18	2.15**				
ΔLIGVGDP_2	-0.19	-1.08						
ΔLIGVGDP_5							0.18	0.68
Long run coefficients (elasticities)								
LP_2	0.13	1.6*	-0.18	-1.24	0.10	1.19	1.26	1.97**
LP_6					0.23	3.16***	-0.4	-0.64
LIPGDP_3			1.19	2.77***				
LIGVGDP_3	-0.42	-1.4						
LKPGDP_6					-0.27	-2.9***		
LIGVGDP_6							2.36	3.32***
Dependent_1	-0.34	-4.5***	-0.14	-3.43***	-0.50	-4.42***	-0.18	-3.03***
Diagnostic test								
ECM Adjusted R^2	0.12	n=108	0.18	n=108	0.15	n=90	0.07	n=95
Level Adjusted R^2	0.34		0.12		0.81		0.37	
Jarque-Bera	1.53**		2.85**		2.17		74	
RESET(1)	0.17	Pr(0.68)	0.46	Pr(0.50)	1.4	Pr(0.24)	0.07	pr(0.80
Chow	1.8**		2.98***		2.3***		1.55**	
Degree of Multicollin.+	Low		Very Low		Very Low		Low	
Constant (country) dummy used	Zambia	-0.84	Botswan	-0.36	Ethiopia Kenya Madagasca Uganda	0.77 0.95 -0.64 0.29	Botswana Kenya	0.94 0.52

Notes: All Notes are as given inTable 6.3

Table 3: Estimation with Current prices - East and Southern Africa

	Food		Agr. Raw Materials		Beverage		Minerals	
Dependent→	LFOODR	(t-values)	LAGRMR	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	-2.40	-3.30***	4.16	3.00***				
ΔLP_1	0.29	2.06**	0.02	0.05	0.14	1.77*		
ΔLP_5					0.05	0.50		
ΔLIPGDP_1			0.16	1.77*				
ΔLIGVGDP_1	-0.21	-1.38						
ΔLKPGDP_5					0.03	0.25		
Long run coefficients (elasticities)								
LP_2	5.03	4.45***	-1.38	-2.21**	0.54	3.26***		
LP_6					0.30	1.83*		
LIPGDP_2			0.44	1.91**				
LIGVGDP_2	-0.45	-0.69						
LKPGDP_6					0.14	0.74		
Dependent_1	-0.11	-1.87**	-0.43	-6.17***	-0.34	-3.79***		
Diagnostic test								
ECM Adjusted R^2	0.18	n=108	0.34	n=85	0.09	n=90		
Level Adjusted R^2	0.14		0.57		0.64			
Jarque-Bera	4.23**		0.40**		0.14**			
RESET(1)	5.60	Pr(0.02)	1.40	Pr(0.24)	0.01	Pr(0.91)		
Chow	1.40**		2.83***		2.77***			
Degree of Multicollin.+	Low		Very Low		Very Low			
Constant (country) dummy used			Botswan Tanzania	-0.95 1.88	Ethiopia Kenya Madagasc r Tanzania Uganda	0.59 0.80 0.30 0.46 0.64		

Notes

1. The long run coefficients and their t-values are using the Wickens and Breusch (1988) and Gurney (1989) approach. The Long run R^2 is also taken from the same regression. _1, _2 ..etc. show one , two ...etc. periods lag. – weakly significant (closer to 10%)
2. * significant at 10% ; ** at 5% and *** at 1% and less. For all of the equations the F value (over all fit) is significantly different from zero
3. The Jarque-Bera $_{}^{2}$ statistics at 5% level of significance for 2 degrees of freedom is 5.99. ** indicates significance at this level or better. Note, however, that it is relevant for large sample and visual inspection is important (See Mukherjee *et al* 1997)
4. # Chow break test is carried by using two country data as one series (when there is insufficient data by each country)

\+ For Multicollinearity simple correlation between regressors around <35 is assumed VERY LOW , 35-55 LOW & 55-65 ACCEPTABLE

The error correction form, for instance, for the food equation above can be given by the following (See Appendix 6.1)
ΔLFOODR=0.29ΔLP_1-0.21ΔLIGVGDP_1-0.11(LFOODR-5.03LP_2+0.45LIGVGDP_2+21.82). The long run relationship being,
LFOODR=5.03LP_2-0.45LIGVGDP_2-21.82

Table 4: Estimation with Real Exchange Rate - East and Southern Africa

Dependent→	Food		Agr. Raw Materials		Beverage		Minerals	
	LFOODR	(t-values)	LAGRM	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	0.84	2.85***	1.02	3.05***	1.84	3.47***	0.54	1.45
ΔLP_1	-0.02	-0.15	0.33	2.25***			0.10	0.48
ΔLP_5					0.08	1.18	-0.42	-1.7*
ΔLIPGDP_2			0.18	2.15**				
ΔLIGVGDP_2	-0.19	-1.08						
ΔLIGVGDP_5							0.18	0.68
Long run coefficients (elasticities)								
LP_2	0.13	1.6*	-0.18	-1.24	0.10	1.19	1.26	1.97**
LP_6					0.23	3.16***	-0.4	-0.64
LIPGDP_3			1.19	2.77***				
LIGVGDP_3	-0.42	-1.4						
LKPGDP_6					-0.27	-2.9***		
LIGVGDP_6							2.36	3.32***
Dependent_1	-0.34	-4.5***	-0.14	-3.43***	-0.50	-4.42***	-0.18	-3.03***
Diagnostic test								
ECM Adjusted R^2	0.12	n=108	0.18	n=108	0.15	n=90	0.07	n=95
Level Adjusted R^2	0.34		0.12		0.81		0.37	
Jarque-Bera	1.53**		2.85**		2.17		74	
RESET(1)	0.17	Pr(0.68)	0.46	Pr(0.50)	1.4	Pr(0.24)	0.07	pr(0.80
Chow	1.8**		2.98***		2.3***		1.55**	
Degree of Multicollin +	Low		Very Low		Very Low		Low	
Constant (country) dummy used	Zambia	-0.84	Botswan	-0.36	Ethiopia Kenya Madagasca Uganda	0.77 0.95 -0.64 0.29	Botswana Kenya	0.94 0.52

Notes: All Notes are as given inTable 6.3

Table 8. Estimation with Current Prices - North Africa

Dependent→	Food		Agr. Raw Materials		Minerals	
	LFOODR	(t-values)	LAGRMR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)						
Regressors↓			No Co-integration			
Constant	2.10	0.84			8.52	3.95***
ΔLP_1	-0.26	-0.59			0.21	0.59
ΔLP_5					-0.25	-0.93
ΔLIPGDP_1	0.54	0.86				
ΔLIGVGDP_5					-0.56	-2.24***
Long run Coefficients (elasticities)						
LP_2	0.35	0.96			-0.35	-0.70
LP_6					-0.91	-3.54***
LIPGDP_2	0.08	0.18				
LIGVGDP_6					1.14	5.05***
Dependent_1	-0.96	-6.23***			-0.71	-6.90***
Diagnostic Test						
ECM Adjusted R^2	0.47	n=57			0.60	n=45
Level Adjusted R^2	0.41				0.60	
Jarque-Bera	2.73				1.5**	
RESET(1)	1.78	Pr(0.19)			1.1	Pr(0.30)
Chow	2.7***				2.03**	
Degree of Multicollin.+	Low				Low	
Constant (country) dummy used	Tunisia Egypt	1.11 1.32			Egypt Tunisia	0.48 -0.16

Notes: All Notes are as given inTable 1.3.

Table 9: Estimation with Real prices - North Africa

Dependent→	Food		Agr. Raw Materials		Minerals	
	LFOODR	(t-values)	LAGRMR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)						
Regressors↓						
Constant	4.88	4.4***	1.09	2.13**	2.55	4***
ΔLP_1	-0.52	-1.37	0.63	1.15	0.48	1.42
ΔLP_5					0.32	0.88
ΔLIPGDP_1	0.4	0.64				
ΔLDCRGVG_1			0.62	2.08**		
ΔLIGVGDP_5					-0.19	-0.61
Long run Coefficients (elasticities)						
LP_2	0.3	1.32	2.4	1.7*	0.64	1.38
LP_6					0.95	1.94**
LIPGDP_2	0.00	0.00				
LDCRGVG_2			0.56	1.44		
LIGVGDP_6					0.02	0.07
Dependent_1	-1.02	-7.1***	-0.22	-2.6***	-0.62	-5.9***
Diagnostic Test						
ECM Adjusted R^2	0.48	n=57	0.13	n=56	0.49	n=45
Level Adjusted R^2	0.46		0.56		0.40	
Jarque-Bera	541		343		0.06**	
RESET(1)	0.34	Pr(56)	0.09	Pr(0.77)	0.28	pr(0.60)
Chow	3.5***		3.6-***		4.5	
Degree of Multicollin.+	High++		Low		Low	
Constant (country) dummy used	Algeria	-1.86	Algeria	-2.2	Algeria	-2.13

Notes: All Notes are as given inTable 1.3.

++ The correlation coefficient between LIPG and LRERF = 0.82 (others are LOW)

Table 10. Estimation with Capital Inflow - North Africa

Dependent→	Food		Agr. Raw Materials		Minerals	
	LFOODR	(t-values)	LAGRMR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)						
Regressors↓						
Constant	-0.68	-0.23	-6.0	-3.1***	7.8	3.6***
ΔLP_1	0.05	0.09	0.61	1.12	0.40	1.24
ΔLP_5					-0.43	-1.36
ΔLIPGDP_1	1.14	1.56~				
ΔLIGDP_5					0.31	0.82
ΔLFERTZ_1			1.21	3.2***		
ΔFF_2@	0.98	1.35	0.68	2.19**	-0.39	-0.97
ΔFF_6					-0.05	-0.26
Long run Coefficients (elasticities)						
LP_2	0.90	2.21**	-0.4	-0.6	-1.02	-2.2**
LP_6					-1.28	-3.69***
LIPGDP_2	0.17	0.39				
LIGDP_6					0.25	0.66
LFERTZ_2			1.53	12***		
FF_3@	0.15	1.8*	-0.43	-2.4***	0.58	2.54***
FF_7					-0.02	-0.09
Dependent_1	-1.06	-6.6***	-0.60	-5.5***	-0.75	-4.92***
Diagnostic Test						
ECM Adjusted R^2	0.58	n=50	0.40	n=56	0.54	n=39
Level Adjusted R^2			0.93		0.75	
Jarque-Bera	34		67		0.60**	
RESET(1)	0.49	Pr(0.48)	10.6	Pr(0)	0.06	Pr(0.88)
Chow	3.9~***		6.5		3.22**	
Degree of Multicollin.+	Low		Low		High++	
Constant (country) dummy used	Algeria	-1.53	Algeria	-2.24	Algeria	-0.68

Notes: All Notes are as given inTable 3

@ For agricultural raw material private debt with 1 period lag is used (since others flows are not co-integrated).

++ The correlation coefficient between LBMPGFF and LPMNASs =0.70 so is their difference; others are Very Low

ANNEX 4

Table 11. Unit Root Analysis: an ADF test at 1% Mackinnon critical value West and Central Africa

Name of Variable	Symbol used	Level of Integration
Log of food as proportion of GDP	LFOODG	I(1)
Log of food real (at 1985 price)	LFOODR	I(0)
Log of Agricultural Raw Materials real (at 1985 price)	LAGRMR	I(1)
Log of Agricultural Raw Materials as proportion of GDP	LAGRMG	I(1)
Log of Beverage real (at 1985 price)	LBEVR	I(1)
Log of Beverage as proportion of GDP	LBEVG	I(1)
Log of Minerals real (at 1985 price)	LMMR	I(1)
Log of Minerals as proportion of GDP	LMMG	I(1)
Log of Price of Food, Agricultural Raw material, Minerals, beverage of West and Central Africa sample	LPFWCAs, LPAWCAs, LPBWCAs and LPMWCAs	I(1)
Log of Aggregate bilateral, multilateral, private inflows and grants; same excluding private flows. Log of Foreign direct investment	LBMPGFF, LBMGFF, LFDI	I(1)
Log of total, government and private Investment as proportion of GDP	LIGNP, LIGGNP, LIPGNP	I(1)
Log of (regional) Real exchange rate for food, Agr. raw materials, minerals and beverage (regional commodity price X nominal exchange rate)/GDP deflator)	LRERF, LRERA,LRERM and LRER	I(1)

Table 12. Co-Integration Test for West and Central Africa

Equation	Engel-Granger ADF Statistics	Mackinnon Critical Value at 5%	Johansen likelihood Ratio	Mackinnon Critical Value	
				5%	1%
Food					
Model I	-6.534	-4.362*	160.05	29.68	35.65
Model II	-6.810	-4.362*	66.53	29.68	35.65
Model III	-6.612	-4.734*	227.00	47.21	54.46
Agr. Raw materials					
Model I	-4.551	-4.362*	71.35	29.68	35.65
Model II	-4.076	-3.783	27.14	29.68	35.65
Model III	-4.860	-4.502@	94.4	47.21	54.46
Beverage					
Model I	-4.142	-3.795	58.41	29.68	35.65
Model II	-3.485	-3.491**	29.58	29.68	35.65
Model III	-4.074	-3.867**	83.25	47.21	54.46
Minerals					
Model I	-3.537	-3.485**	69.32	29.68	35.65
Model II	-4.089	-3.790	109.34	47.21	54.46
Model III	-4.610	-4.163	60.31	47.21	54.46

@ is trend stationary, otherwise are not co-integrated. ** [*] Mackinnon critical value at 10% [1%] level of significance
The Johansen test used assumes linear deterministic trend in the data with intercept, no trend, in the test VAR (i.e., the Co-integration equation, as an indicator of a long run equilibrium relation, has no trend).

Table 13. Estimation with Current prices - West and Central Africa

Dependent→	Food		Agr. Raw Materials		Beverage		Minerals	
	LFOODR	t-values)	LAGRMR	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	-0.68	-0.74	-0.85	-1.6*			-1	-0.32
ΔLP_1	0.46	3.0***	0.36	1.5~	0.37	2.44***	-0.60	-0.66
ΔLP_5					0.06	0.37	-0.38	-0.40
ΔLFRTZ_1	0.11	1.63*						
ΔLIPGNP_5@					-0.07	-0.60	0.49	1.18
ΔLKG_2			0.12	0.24				
Long run Coefficients (elasticities)								
LP_2	2.4	3.5***	-0.16	-0.35	0.84	2.5***	2.45	1.96**
LP_6					0.46	1.08	-0.73	-1.00
LFRTZ_2	-0.24	-1.06						
LIPGNP_6@					-0.01	-0.04	1.03	3.15***
LKG_3			1.02	5.6***				
Dependent_1	-0.20	-3.01***	-0.25	-4.27***	-0.25	-3.94***	-0.81	-4.9***
Diagnostic Test								
ECM Adjusted R^2	0.24	n=114	0.11	n=126	0.10	n=108	0.27	n=58
Level Adjusted R^2	0.40		0.25		0.54		0.83	
Jarque-Bera	1.19**		0.06**		4.5**		5.3**	
RESET(1)	1.04	pr.(0.31)	0.07	pr.(0.79)	0.13	pr.(0.71)	0.04	pr.(0.83)
Chow	0.94**		1.93**		1.11**#		1.3**	
Degree of Multicollin.+	Acceptable		Acceptable		Low		Low	
Constant (country) dummy used	Bf, Cam, Car, Nig, Zi	-0.65, -0.37, -0.88 -0.35 -0.81	Gha, Sen	-0.30 -0.32	Ben, Car, Gab Sen, Ser	-0.89 -0.62 -0.97 -1.32 -0.57	Ben, Car	-2.75 -1.93

Notes: All Notes are as given inTable 3.
@ For Beverages we used LDCRT (i.e. Total Domestic Credit).

Table 14. Estimation with Real Exchange rate - West and Central Africa

Dependent→	Food		Agr. Raw Materials		Beverage		Minerals	
	LFOODR	-values)	LAGRMR	-values)	LBEVR	t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Repressors↓								
Constant	-0.28	-0.72	0.04	0.10			0.13	0.14
ΔLP_1	0.27	2.19**	0.48	3.3***	0.18	1.96**	-0.12	-0.19
ΔLP_5					0.12	1.1	1.14	1.12
ΔLFRTZ_1	0.18	2.7***	0.01	0.26				
ΔLIPGNP_5@					-0.04	-0.31	0.28	0.50
Long run Coefficients (elasticities)								
LP_2	0.17	1.03	0.62	1.48~	0.50	2.32***	-2.52	-3.02***
LP_6					0.25	1.14	2.73	3.29***
LFRTZ_2	0.42	2.06**	0.03	0.21				
LIPGNP_6@					0.26	2.82***	-1.44	-1.39
Dependent_1	-0.15	-2.88***	-0.12	-2.85***	-0.26	-3.64***	-0.51	-4.28***
Diagnostic Test								
ECM Adjusted R^2	0.16	n=111	0.09	n=133	0.09	n=106	0.24	n=58
Level Adj R^2	0.26		0.09		0.65		0.64	
Jarque-Bera	2.06**		0.05**		2.0**		3.29**	
RESET(1)	0.45	r.(0.50)	0.48	r.(0.50)	0.95	pr.(0.33)	0.01	pr.(0.91)
Chow	0.58**		1.3**		0.85**		0.87**	
Degree of Multicollin.+	Acceptable		Very Low		Low		ery Low	
Constant (country) dummy used	Sen Zi	0.33 -0.18	Ben Sen	-0.15 -0.23	Car Gab Gha Nig Sen	-0.64 -1.06 0.25 0.76 -1.47	Ben Car	-2.55 -2.65

Notes: All Notes are as given inTable 3.
@ For Beverages we used LDCRT (i.e. total domestic credit).

Table 15. Estimation with Capital Inflow - West and Central Africa

Dependent→	Food		Agr. Raw Materials		Beverage		Minerals	
	LFOODR	(t-values)	LAGRMR	(t-values)	LBEVR	(t-values)	LMMR	(t-values)
Short run Coefficients (elasticities)								
Regressors↓								
Constant	-2.28	-2.07**	1.08	1.28	-1.29	-0.84	-3.84	-0.87
ΔLP_1	0.57	2.96***	0.35	1.26	0.37	1.55~	0.51	0.48
ΔLP_5					-0.03	-0.17	0.05	0.05
ΔLFRTZ_1	0.16	2.54***	0.03	0.58				
ΔLIPGNP_5@					-0.25	-1.96**	0.47	1.16
ΔFF_2^	0.04	0.65	0.21	2.55***	0.28	1.23	-0.88	-1.54~
ΔFF_6^					0.19	1.7*	-0.37	-0.75
Long run Coefficients (elasticities)								
LP_2	3.5	2.2***	-1.14	-1.45	1.35	1.42	4.0	1.96**
LP_6					0.05	0.09	0.23	0.18
LFRTZ_2	0.50	2.39***	0.00	0.02				
LIPGNP_6*					-0.86	-2.16**	0.58	0.82
FF_3^	-0.39	-1.63*	0.79	4.0***	0.62	1.57~	-0.55	-0.55
FF_7^					0.67	1.7*	0.54	-0.67
Dependent_1	-0.14	-3.72***	-0.25	-3.93***	-0.24	-2.9***	-0.49	-4.16***
Diagnostic Test								
ECM Adjusted R^2	0.20	n=106	0.11	n=107	0.03	n=97	0.18	n=68
Level Adjusted R^2	0.29		0.28		0.64		0.70	
Jarque-Bera	0.13**		0.04**		1.47**		3.5**	
RESET(1)	0.02	pr.(0.88)	0.38	pr.(0.54)	0.73	pr.(0.39)	1.06	pr.(0.31)
Chow	0.72**		1.3**		0.99**		1.25**	
Degree of Multicollin.+	Low		Low		High (0.79)++		Low	
Constant (country) dummy used	Sen	0.35	Ben Sen	-0.25 -0.47	Cam Gab Gha Nig Sen	0.5, -0.6 0.7, 0.5 0.84	Ben Car	-2.6 -2.4

Notes: All Notes are as given inTable 3.

@ For Beverage we used LDCRT(total domestic credit).

^ For minerals the foreign inflow used excludes private inflow since private investment is used as one of the repressors.

++ All other correlations are very low except that between LDCRT and LBMPGFF which is 0.79.

FINANCING MICRO AND SMALL SCALE ENTERPRISES: AN EMPERICAL SURVEY IN URBAN ETHIOPIA*

Fasika Damte* and Daniel Ayalew**
Addis Ababa University, Addis Ababa, Ethiopia
**Western Michigan University, USA*
***Katholieke Universiteit, Leuven, Belgium*

Abstract

Using simple descriptive analysis of the data from the Ethiopian Urban Household Socio-economic Survey, the paper found out that micro and small enterprises are financed from own savings. However, these forms of savings have been found to finance businesses that require small amount of capital and mostly service-oriented activities. Investments in larger businesses call for external resources. But the only external finance available to micro and small enterprises is borrowing from friends and relatives, which have again a number of drawbacks. Existence of asymmetric information and lack of bankable collateral might explain lack of access to formal credit to this sector. Given the significance of bank credit to the sector, the paper suggests two possibilities for micro and small enterprises' access to formal credit, namely, group lending scheme through the provision of package program and effective risk sharing among creditors, borrowers, and the government.

1. INTRODUCTION

The role of small enterprises in developing countries is significant in terms of their employment generation capacity, quick production response and their adaptation to weak infrastructure and use of local resources, and as a means of developing indigenous entrepreneurial and managerial skills for sustained industrialisation (Aryeetey, 1994). However, their significant role in developing countries such as Ethiopia has been constrained by a number of factors including finance (Sonko, 1994).

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In Ethiopia, there were legal restrictions on entry and exit into the formal financial system for about seventeen years from 1974 to 1991. The nominal deposit and lending rates were also administratively fixed. Consequently, the real interest rates became negative or very low with the rise in the rate of inflation. During the same period, lending policies were set in favour of the socialised and priority sectors. Until the 1990 economic reform there had been a fixed asset ceiling on investment made by the private sector due to the 1975 economic policy; and yet this sector was required to provide collateral at the ratio of 2:1 (the ratio of security to loan) (CBE, 1977). What is more stringent is that most people with several immovable properties had lost them by the 1975 nationalisation, but the properties that were registered as collateral were only immovable ones. For instance Trucks, Cars, and Trailers were not considered as collateral. All these discouraged the private sector from participating in the credit market. On the other hand, the central government and all publicly owned organisations together with co-operatives enjoyed cheap and easily accessible credit. Unlike the private sector, disbursement of credit to the socialised sector did not need any collateral.

In view of the detrimental effects on growth and investment and the need to create a more conducive economic environment for the private sector, all those discriminatory policies and regulations have been reformed since October 1992. Given the nature and requirements of money markets in developing countries such as Ethiopia, financial liberalisation alone may not, however, solve the severe financing constraints faced by micro and small-scale enterprises. Hence, policy making in the financial sector in general and the micro and small-scale enterprises in particular needs an investigation. This paper attempts to look at the sources of start-up capital (patterns of enterprise financing in Urban Ethiopia), type of businesses with respect to source of start-up capital to examine quality of investment, and forms of savings (such as bank account, 'Iqub'[1] and credit association). The paper is based on data[2] of the Ethiopian Urban Socio-economic Survey undertaken by the Departments of Economics, Addis Ababa University (AAU) and University of Gothenburg with the institutional support of the Institute of Development Research (IDR), AAU.

2. THEORETICAL BACKGROUND

It is widely asserted that the rate of physical capital formation is one of the fundamental determinants of long-term economic growth of a nation. The role of money in this process has, however, remained controversial. Prior to the 1930's, money was generally thought to have a neutral effect on output and investment (Hyuha, 1982). Later in 1936, Keynes argued for non-neutrality of money. According to Keynes (1936), liquidity preference has historically tended to push the real interest rate above its full-employment equilibrium and hence income falls to equate savings and investment plans. With this argument, he suggested to repress liquidity preferences and hence the real interest rate by financial repression in the form of nominal interest rate ceilings or a Gesellian stamp tax on money holdings. The same

policy suggestion is further supported in Tobin's (1965) model of money and economic growth where households are assumed to allocate their wealth either in money or productive capital assets. Based on these theoretical backgrounds, many developing countries prior to 1973 adopted repressive financial policies, which included interest rate ceilings, the imposition of reserve requirements on commercial banks and compulsory credit ceilings with or without subsidised interest rates. The results of these policy measures were, however, disappointing. Many economies of developing countries were highly constrained by financial resources or savings. Moreover, these repressive measures indeed persuaded financial intermediaries to concentrate on lending to low-risk, large-scale, corporate borrowers. On the other hand, a large number of efficient small-scale activities, which employ the majority of the labour force in most developing countries, do not have access to institutional finance. To fill in this gap, most governments in these countries set up special financing schemes for small-scale industry and agriculture so as to finance these sectors on concessionary basis. These schemes have, however, led to a number of practical problems. First, the concessionary finance has naturally attracted, and for the most part has been absorbed by, influential borrowers of good standing who already have access to institutional finance on 'commercial' terms. Second, though again the picture varies, the default rates have been high in most cases. Thirdly, programs of lending at concessionary rates have often been associated with the misuse and diversion of funds thereby worsening the risks of non-repayment and have thus been resisted or implemented reluctantly (Anderson, 1985). Lastly, low returns on financial assets have also encouraged capital flights from many countries notably in Latin America.

Contrary to the above theoretical models, McKinnon (1973) and Shaw (1973) came up with models[3] of economic development in which financial liberalisation could accelerate the rate of economic growth. The main argument of the McKinnon-Shaw model is that financial liberalisation through a policy of positive real interest rates will encourage more savings and, in turn, leads to more investment and growth, on the assumption that prior savings are necessary for investment. Thus, it is argued that a relaxation of administrative controls on interest rates would provide an incentive for financial intermediaries to lend more widely, to small as well as to large-scale activities. It is also argued that financial liberalisation will result in a more efficient allocation of the funds. This, therefore, stands against the fundamental Keynesian argument that investment determines savings, not the other way round, and that high interest rates may stifle investment and economic growth. This is because of the fact that the effective constraint on the real capital formation in developing countries is the supply of real savings and not the inadequate willingness to invest on the assumption that investment opportunities in developing countries are abound (Mckinnon, 1973).

With an upward adjustment in the real interest rate from its low or negative level, the McKinnon-Shaw model primarily predicts an increase in the investible resources and hence an increase in investment which was constrained by low savings. The main argument behind this transmission mechanism is based on two assumptions. First,

capital markets in developing countries are very fragmented. As a result, most investments in these economies rely on self-finance. Second, indivisibility or lumpiness of investment is of considerable importance. This assumption again forces each potential investor to accumulate money balances prior to his investment. In this context, a higher real return on money balances is likely to raise physical capital formation because it enables potential investors to accumulate equity faster and also because this equity makes them more eligible for any limited institutional financing that may be available.[4] This argument implies that deposits serve as a conduit for capital formation by making deposits (or money) and capital complementary assets as long as the real interest rate does not exceed the real rate of return on investment.

3. CLASSIFICATION OF ENTERPRISES

The classification of enterprises (businesses) into different categories, namely, micro, small, medium and large-scale, requires subjective and qualitative judgements. Consequently, there is no standard definition of small-scale or any other type of enterprises as different countries use different measures (Admit, 1994:7). Some of the criteria used by many countries include annual turnover, paid-up capital and number of paid employees.

In Ethiopia, there is no clear-cut definition that helps to distinguish different scales of enterprises. Handicraft and Small Scale Industries Development Agency (HASIDA), in its report on the survey of private small-scale manufacturing and repair service establishments (HASIDA, 1989), defined small scale manufacturing and engineering services as any manufacturing activity which uses either manually operated or motive-power-driven machinery and equipment with a total value of fixed assets not exceeding Birr 1 million for sole proprietorship and Birr 2 million for partnership excluding investments on land improvement and building and which employs at least one person other than the owner/owners, unpaid family workers and/or apprentices. This definition is not, however, applicable to small enterprises other than manufacturing and engineering and has very little relevance for this study. As a result, this study resorts to the classification of Aryeetey et al. (1994), as applied in their analysis of supply and demand for finance of small enterprises in Ghana. They used total number of workers engaged in the business to differentiate enterprises into different groups. Accordingly, businesses with 1 to 4 workers termed 'microenterprises'; 5 to 29 workers, termed 'small' and 30 to 140 workers, termed 'medium'.

The distribution of the businesses by employment size, from the survey data, is given in Table 1. Accordingly, 386 businesses are categorised under microenterprises group with 1-4 workers while only 38 businesses are in the small-scale group. Hence, one can safely conclude that most of the businesses are operated by one man assisted by his family members. Therefore, the term 'micro and small scale enterprises' is used to refer generally all the businesses covered in the survey.

Table 1. Businesses Classified by Number of Persons Engaged

Workers	Number	Percentage
1	288	68.0
2-4	98	23.1
5-9	22	5.2
10 or more	16	3.8
Total	424	100

Source: Computed from the Data on the Ethiopian Urban Household Socio-economic Survey.

4. PATTERNS OF ENTERPRISE FINANCING

The growth and development of small enterprises is constrained by inadequate access to finance. It can be argued that lack of access to formal credit is one of the major impairments to small enterprises and entrepreneurs to flourish. This constraint is, however, mainly determined by policies and institutions external to the enterprises (Admit, 1994:4). Hence, the financing and saving patterns of individuals and households are briefly discussed in this section in order to draw appropriate intervention schemes in the sector.

4.1. Financing of Start-up Capital

The important sources of start-up capital open to micro and small-scale enterprises in developing countries are: (i) personal (own) savings; (ii) formal financial institutions; and (iii) informal financial institutions which include loans from friends and relatives, the system of rotating savings, local money lenders, and credit unions which could be described as semi-formal financial institution.

In Africa, small enterprises often use own savings, loans from friends and relatives and occasionally informal sector loans to start a new business that have gravely limited the scale of activities and investment (Nissanke, 1991). This study, thus, seeks to investigate the sources of finance for start-up capital used by specific enterprises covered in the survey. We found out that personal savings, borrowing from friends and relatives, bank loans, inheritance and suppliers' loan are identified as sources of start-up capital by various types of enterprises located in the seven major urban centres. A more detailed analysis is given below.

Micro and small enterprises from the seven major urban centres followed the general pattern in financing their start-up capital. Personal savings were the main source of finance to start a new business, followed by borrowing from friends and relatives. Table 2 shows that own savings were the principal source for about 68 percent and among the top two for about 73 percent of the businesses covered in the survey. The table also shows that almost all the businesses that used own savings as a source of finance except one rank it among the main two sources. In addition, the number of

businesses steadily increases as the percentage share of personal savings from the initial or start-up capital increases (see Table 3). The table depicts that about 82 percent of the enterprises in this category generated 75 or more percent of their initial capital from own savings, while only 7.4 percent reported less than 50 percent from own funds. On the average, this source accounted for about 88 percent of the initial capital for the entire population under this category (Table 4).

The most important alternative source of finance to own savings is borrowing from friends and relatives used by nearly 25 percent of all businesses. Close to 18 percent of the micro and small enterprises in the study were established principally from loans from friends and relatives (Table 2). The percent increases to about a quarter if our reference point is the top two sources. About 48 percent of those reported to have borrowed from friends and relatives obtained 75 or more percent of their start-up capital from this source (Table 3). This source, on the average, comprised of 66.7 percent of start-up capital for those who had access to borrowing from friends and relatives in establishing new businesses (Table 4).

Inheritance ranked third as a source of start-up capital next to private savings and borrowing from friends and relatives. This indicates the relative importance of bequest to that of formal finance, specifically bank loans, to start a business. Over 9 percent of all enterprises used inheritance as a source of start-up capital; of which it is a primary source for about 7 percent of the sample (Table 2).

The contribution of bank and suppliers' loans in financing the initial investment of micro and small-scale enterprises is insignificant as compared to the other sources. Only 2 percent and slightly greater than 1 percent of all firms used bank loans and suppliers' credit respectively, as a primary source of start-up capital (Table 2). This confirms the general consensus that micro and small-scale entrepreneurs in developing countries and particularly in Africa have little access to formal finance in order to start their businesses. Most of the enterprises depend upon own savings and borrowing from friends and relatives as an alternative source of financing start-up capital. This shows the relative importance of the informal sector in financing micro and small enterprises in urban Ethiopia.

The other important issue, which needs to be addressed with respect to source of finance, is the relationship between firms' access to formal and informal finance to start a business and their respective size. The argument here is that firms that borrow from friends and relatives are unlikely to be big. In contrast, access to formal external finance at the time of starting the business is highly associated with larger size firms (Aryeetey, 1994). However, it is difficult to reach a conclusive result as the number of enterprises that used bank loans to finance their start-up capital are too few for the analysis to provide meaningful generalisation. Hence, we only look into the relationship between size of firms and loans from friends and relatives.

For this purpose, enterprises are categorised under six groups based on their initial investment. Table 4 portrays that for relatively small investors with start-up capital less than or equal to 100 Birr, borrowing from friends and relatives was the main alternative form of financing to personal savings. In this group the mean percentage share of borrowing from friends and relatives in start-up capital was 90 percent which is comparable to that of own savings (around 95 percent). For relatively bigger businesses (with start-up capital above 50,000), the mean percentage share of borrowing from friends and relatives (14 percent) was by far lower than own savings (73 percent). Moreover, the mean percentage share of the former steadily declines as the size of firms increases except in the case of group four. In general, there is a declining tendency in the percentage share of loans from friends and relatives in start-up capital. These differences in the group means are statistically significant. An analysis of variance (ANOVA) is conducted to test the null hypothesis that the means in all the groups are equal. This null hypothesis is, however, rejected at zero level of significance with an F-statistic of 7.1332. These results indicate that the role of the informal sector, more specifically, borrowing from friends and relatives, decreases as the size of micro and small-scale enterprises increases.

Table 2. Sources of Start-up Capital

	Principal Source		Top Two Sources (Cumulative)[b]		Total Responses (Cumulative)[b]	
Sources	Number	Percent	Number	Percent	Number	Percent
Personal Savings	289	68.2	310	73.2	311	73.4
Borrowing, Friends and Relatives	74	17.5	103	24.3	104	24.5
Inheritance	31	7.3	36	8.6	39	9.3
Bank Loan	8	1.9	12	2.8	12	2.8
Suppliers' Loan	6	1.4	8	1.9	8	1.9
Other	20	4.7	28	6.6	36	7.5
Total	424[a]					

Source: ibid.

a. The sum of the column is 428 which is greater than the number of enterprises. This is owing to double counting as individuals reported more than one source as principal sources of finance.

b. Cumulative refers to the cumulated frequencies for a particular source of finance ranked as first or second most important source in the case of the top two sources and irrespective of its rank in the case of total responses.

Table 3. Percentage Share of Personal Savings and Borrowing from Friends and Relatives in Start-up Capital

Percentage Share	Personal Savings		Borrowing from Friends and Relatives	
	Number	Percent	Number	Percent
Less than 25	5	1.6	12	11.5
25 – 49	18	5.8	18	17.3
50 – 74	34	10.9	24	23.1
75 or more	254	81.7	50	48.1
Total	311	100.0	104	100.0

Source: ibid.

Table 4: Percentage Share of Personal Savings and Borrowing from Friends and Relatives in Start-up Capital by Business Size

Start-up Capital in Birr	Personal Savings		Borrowing from Friends and Relatives	
	Number	Mean Percentage Share	Number	Mean Percentage Share
100 or less	77	94.6	31	90.0
101 – 1000	117	87.5	32	60.9
1001 - 5000	46	80.5	25	57.6
5001 - 10000	16	93.4	4	68.8
10001 - 50000	20	81.0	9	43.9
50001 or more	11	73.0	2	14.0
Mean for the Entire Population		**88.2**		**66.7**

Source: ibid.

4.2. Characteristics of Enterprises

So far we have seen how enterprises finance their start-up capital. We found that enterprises predominantly rely on internal source of finance. This type of financing is, however, argued to encourage low quality investment and the retention of traditional technology (Laumas, 1990). Hence, type of businesses and the magnitude of start-up capital are examined in this section to get an insight on the quality of investment in micro and small-scale enterprises.

Type of Businesses

A report by ACORD (1996) pointed out that the most striking feature of small towns in Ethiopia is the predominance of service functions, mainly retail trades and 'buna bets' (bars) and complete absence of production related activities. This is confirmed by our results from the survey data which indicate that most of the individuals in the sample with their own businesses are engaged in two major activities: retail trade (32.8 percent) and food and beverages preparation (20.3 percent) (Table 5). In the latter group, bars, hotels and restaurants account for about 35 percent. The dominance of service-oriented enterprises highly limits the desired forward and backward linkages of micro and small enterprises with that of medium and large-scale enterprises. In addition, their contribution in creating rural urban linkages will be restricted.

Table 5. Type of Businesses and their Percentage Distribution

Type of Business	Number	Percent
Food and Beverages Preparing	86	20.3
Textile and Leather Products	57	13.4
Furniture Making and Handicrafts	47	11.1
Transport/communication Services	25	5.9
Retail Trade	139	32.8
Professional and Other Services	33	7.8
Other	37	8.7
Total	**424**	**100.0**

Source: ibid.

The concentration of enterprises in certain areas may, however, be attributed to lack of entrepreneurial skills. The Policy Framework Paper prepared by the Transitional Government of Ethiopia (TGE) underscored the limited knowledge of investment opportunities in the country as one of the impediments for the development of the private sector. Businessmen/women are, thus, supposed to find their own way to assess the viability of their proposed investment, as there is no agency which can provide advice on investment opportunities or carry out feasibility studies. As a result, they 'simply replicate the latest businesses considered to be profitable' (TGE, 1995: 18-19). Furthermore, mismatch between capital holding and entrepreneurial skills poses problems to the development of the sector. This exacerbates the weakness of self-financed investment while investment requires a relatively more entrepreneurial skills and start-up capital (TGE, 1995). Hence availability of external finance as source of credit may instigate the endeavour of potential entrepreneurs.

Capital Base

As indicated in Table 6, over 68 percent of enterprises covered in this study had an initial capital less than 1000 Birr. Only 3.4 percent of them had a start-up capital of more than 50,000 Birr. The maximum amount of start-up capital was 100,000 Birr with a minimum of 4 Birr. The average start-up capital for the entire population was around 5,540 Birr. The summary statistics in Table 6 indicate the dominance of enterprises that require very small capital base, which may be due to the predominance of personal savings in financing new enterprises.

Table 6. Start-up Capital

Start-up Capital in Birr	Number	Percent
100 or less	116	30.2
101 – 1000	146	38.0
1001 – 5000	64	16.7
5001 – 10000	18	4.7
10001 – 50000	27	7.0
50001 or more	13	3.4

Source: ibid.

The important implication that can be derived from the predominance of self-finance is that investments will be undertaken in service-oriented type of activities that require small start-up capital and turnover.

5. FORMS OF SAVINGS

It is difficult to thoroughly investigate the form and nature of savings by micro and small entrepreneurs using the survey data. Despite lack of comprehensive data on this issue, the available information can provide an insight on financial arrangements

or connections of households. In the survey, households were asked if at least one member has a bank account, belong to 'Iqub' (a form of rotating savings club) and/or credit association.

Table 7: Households Membership of 'Iqub' and Credit Association and Bank Connection (In Percentages)

	Total Sample	Households with Businesses
Bank Account	21.9	30.0
'Iqub'	24.1	33.9
Credit Association	8.9	5.7
(Number of Households)	(1494)	(369)

Source: ibid.

Table 7 shows that 'Iqub' is relatively the most widely used form of savings for both the households and households with at least one member running a business. Around 24 percent of the surveyed households and 34 percent of the households having business/es reported that at least one member of the household belong to an 'Iqub'. Next to this, almost 22 percent of the surveyed households and 30 percent of households having business/es have bank accounts. In both cases, the proportions of households having business/es are greater than that of the total households covered in the survey. However, the connection of micro and small enterprises with the banking system is not satisfactory especially when compared to other developing countries. In Ghana, for example, 74 percent of small entrepreneurs accumulated their investment funds in banks (Aryeetey, 1994).

6. IMPLICATIONS FOR INTERVENTION

The data of the Ethiopian Urban Household Survey supports the idea that small businesses in developing countries such as Ethiopia are financed from own funds. The share of credit from any source for start-up capital is relatively small. Thus, efforts to promote micro and small enterprises should pay attention to savings. One policy recommendation to this end is financial liberalisation in the form of interest rate adjustment that is expected to encourage investment by increasing savings and by making the accumulation of equity faster. But positive real interest rate by itself may not enable the economy to achieve the above objective given the major structural problem of the inaccessibility of financial institutions to most people in rural areas and small towns. As discussed in the previous section, only 30 percent of the surveyed households, having business in the seven major towns, have bank accounts. Further, self-finance has a number of major drawbacks. It is widely argued that individual investment opportunities may not match available resources or may be inefficiently limited by them (WB, 1989:29). The problem becomes more serious when there is a need to invest in larger businesses and/or when faster growth through more investment is needed. This, therefore, indicates that lack of external

financing curtails the exploitation of highly profitable opportunities, and growth of the sector could be accelerated if credit were more readily available. Survey results in many developing countries reveal the existence of high rates of application for loans among small and medium enterprises (SMEs) and also their willingness to pay above market rates of interest indicating strong excess demand for credit (Aryeetey, 1994:1).

In developing countries, most of the external finance for the non-corporate sector comes from the informal sector such as moneylenders, suppliers' loans and friends and relatives especially in the early stages of financial development. This source of external finance has, however, a number of limitations. The scale of lending is small, the range of services is limited, markets are fragmented, and interest rates are sometimes usurious (WB, 1989:4); no deposit mobilisation[5] and no provision of term finance. All these shortcomings work against the long-term planning and investment necessary for an increase in productivity and growth of the economy (WB, 1989:116).

In the absence of well-developed domestic equity market, the only sources of external finance left are bank loans and foreign debt though the latter is not available to SMEs. Financial liberalisation, which is expected to increase bank credit due to an increase in deposits or loanable fund, has had little effect on improving SMEs' access to bank credit in a number of developing countries. The main reasons behind this may be the existence of asymmetric information and lack of bankable collateral among micro and SMEs in most developing countries deterring creditors from providing long-term funds. The weakness of accounting, auditing and disclosure regulations in these economies limit the information available to lenders about borrowers. The Urban Household survey for instance reveals that only 28 percent of the businesses keep accounts. Legal procedures for collateral, foreclosure and enforcement are poorly specified making repayment very difficult. Experience from Philippines reveal that a large proportion of the borrowers were not repaying loans because of their perception of weak reaction by the institution and legal authorities to default and lack of incentives to repay (Anderson *et al., 1985*:356-357). Related to this, Stickey and Tapsoba in their 1978 survey in Upper Volta, as reviewed in Anderson and Khambata (1985), found that of the 31% of the accounts in default, three-quarters of the borrowers (farmers) did not pay due to various failings of the institutions implementing the credit program and to borrowers 'feeling no obligation to repay their loans'. Experiences in a number of countries suggest that a policy of simply letting interest rates float in itself is unlikely to induce banks to lend to small businesses. Higher interest rates as argued by Stiglitiz and Weiss (1981) may instead attract the riskier borrowers, deter the more conservative, and induce others to undertake yet riskier projects in the expectation of higher returns (Anderson *et al., 1985:354).*

In general, the problems of information and collateral result in high costs and risks. This may entail government intervention in a number of ways. A report by the World Bank suggested that governments can intervene in the credit market by modernising

legal systems and making contracts more easily enforceable; by clarifying property rights and improving title transfer and loan security; by improving bank regulation and supervision; by training accountants and auditors; and by ensuring adequate disclosure of information (WB, 1989:5).

Currently, most governments in developing countries have also recognised the relative low cost of information and operation, and risks associated with informal institutions. Thus most of them have established programs to link informal markets more closely with formal markets as one means to overcome the above problems. In this regard, the Ethiopian government currently has started to introduce a new scheme for microenterprise development through group lending. In doing so, care must, however, be taken because of the widespread problems of entrepreneurship and lack of effective demand for the products of micro and small-scale enterprises (see Solomon, 1995) for the application and disbursement of loans through this scheme in the town of Debre Berhan). Related to this, Sonko (1994) pointed out that around 73 percent and 58 percent of the surveyed small-scale enterprises in Addis Ababa have reported difficulty in marketing their products and in getting skilled personnel, respectively. These, therefore, call for the provision of a package program instead of simply making credit available. The package may include effective project identification by looking at the supply and demand balance with the consideration of the marketing constraints, information provision, technical and managerial training, effective monitoring and regulation of projects financed through the scheme.

On top of group-lending scheme, the Korean experience tells us that in the absence of well functioning domestic equity market, the huge investment requirements for rapid industrial expansion calls for an effective risk sharing among creditors, borrowers and the government. In doing so, the government primarily has to have a clear focus to target narrowly on certain sectors deemed essential for development. Moreover, the government has to ensure the successful operations of the supported firms and projects by monitoring and consulting them closely. Like Korea, credit policies might need to be well co-ordinated with other economic policies, consistent with long-term economic development plans. The implementation of this has to be subjected to less political abuse as to overcome the problem of political abuse which is common in many other developing countries where credit programs are often used for political ends, and, as such, their sheer size and the heavy subsidies they provide, simply open opportunities for rent-seeking (Cho *et al.*, 1995:8). In Korea, this indirect impact of government credit policies is thought to have a more important effect than the credit subsidies *per se* for its rapid industrialisation (Cho *et al.*, 1995:7).

Experiences from other countries again reveal that care must be taken in such schemes because the government risk sharing may aggravate the moral hazard issues for firms and banks. This is because firms may be encouraged to depend on the government for support without giving enough attention to their project identification and feasibility study. Moreover, with government risk sharing, banks will have little incentive for serious credit evaluation and monitoring (Cho *et al.*, 1995:65).

7. CONCLUSIONS

Based on the data from the Ethiopian Urban Household Socio-economic Survey, the paper found out that most micro and small enterprises are financed from own savings. However, this form of savings has been found to finance businesses that require small amount of capital and mostly service-oriented activities. This, therefore, implies that investments in larger businesses call for external resources. The survey results, however, reveal that the only external finance available to micro and small enterprises is from the informal sector mainly from friends and relatives, which is found to have a number of drawbacks. Existence of asymmetric information and lack of bankable collateral might explain lack of access to formal credit to this sector. Given the significance of bank credit to the sector, the paper suggests two possibilities through which micro and small enterprises could access formal credit, namely, group-lending scheme through the provision of package program and effective risk sharing among creditors, borrowers, and the government.

In both cases, more attention has to be given to credit availability instead of interest rate subsidies. Thus, all costs related to lending to these activities have to be covered with the corresponding interest charges by letting interest rates reflect the opportunity costs of raising and administering resources, including a premium to reflect risks. In developing countries like Ethiopia, absence of interest subsidies may have a number of advantages including:

First, as means to increase financial savings in the banking sector and hence the availability of more loanable funds. By this, most firms that are illegible to bank credit could become legible. Moreover, an increase in savings could lead to an increase in self-financed investment.

Second, positive real interest rates could increase the average efficiency of investment. Instead of direct investment, inefficient households and firms put their money in the banking sector to be lent to more efficient investors. Market determined interest rates ration out inefficient investors from borrowing in the banking sector and give guarantee against the misuse and diversion of credit from the targeted sector. Further, a number of authors 'unanimously agree on the point that concessionary finance leads to unprofessional and unseemly collusion between the borrowers and those involved in lending decisions' (Anderson *et al.*, 1985:365).

Finally, all the regulated credit-programs mentioned above would be sustainable as long as their costs are covered by the interest charged from the borrowers. With regard to this, experiences and information must be shared among financial staff members so as to reduce costs and risks by using the information to improve screening and supervision procedures.

Notes

[1] 'Iqub' is a kind of rotating credit and savings association (ROSCAs).

[2] The data set used in this study is from the first round survey of the Ethiopian Urban Socio-economic Survey jointly undertaken by the Departments of Economics of Addis Ababa University and Gothenburg University in 1994. The survey consists of a sample of 1500 households in seven major urban centres of the country. The urban centres, namely, Addis Ababa in the centre, Mekele and Dessie in the North, Bahir Dar in the Northwest, Dire Dawa in the East, Awassa in the South and Jimma in the Southwest were selected to reflect the different socio-economic characteristics of the urban centres in the country (for the details see the Report on the 1994 Socio-economic Survey of Major Urban Centres in Ethiopia). Systematic sampling technique was used in selecting the sample households in each urban centre. The sample size in each town was proportional to the population of the respective urban centre based on the Central Statistics Authority 1992 projections. Correspondingly, 900 households in Addis Ababa, 125 in Dire Dawa, 75 in Awasa and 100 in each of the other four towns were selected. The survey was not specifically designed to produce extensive data on the financing of small-scale enterprises. As a result, it is not possible to get detailed information in some important aspects of micro and small-scale enterprises found in the major urban centres in the country. In spite of this, the survey provides a wide range of data on household demographics, rural-urban migration, employment and income, consumption and expenditures, health status and other welfare indicators. However, some findings are appearing from this study based on 369 households from all the seven urban centres that are involved in business activities. A total of 424 persons from 369 households are engaged in business activities as employer or own account workers.

[3] Although both models suggest financial liberalisation as a possible policy measure, they have a clear distinction in terms of the transmission mechanism of savings into investment. McKinnon (1973) emphasises the importance of higher real interest rate in increasing self-financed investment while Shaw's (1973) analysis is based on the debt-intermediation hypothesis which focuses on the role of deposit accumulation in expanding the lending potential of financial intermediaries through higher real interest rate. But both are viewed to be complementary since it is unlikely (in developing countries) that a project is fully bank financed. Rather, in the limiting case, projects are financed in part with own funds and in part with borrowing.

[4] Repressed financial markets impede efficient allocation of the available resources, compel enterprises to depend on internal sources of investment and consequently promote the use of traditional technologies. As a result, positive real interest rate is also expected to enhance the efficiency of investment (Laumas, 1990).

[5] Nissanke (1991) pointed out that any fund mobilised by one informal group is hardly used to finance other groups. This, therefore, implies that the importance of the informal sector for economy wide diversification is negligible.

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AN ANALYSIS OF FINANCIAL SECTOR AND CREDIT POLICIES DURING THE DERG PERIOD AND POST-DERG REFORMS

Gebrehiwot Ageba*

Abstract

The paper provides systematic analysis of the past and current financial sector, credit, and other related policies in Ethiopia based on a critical examination of the provisions of the numerous proclamations, regulations, and directives governing economic activities in the country, the incentive/dis-incentive elements contained in them, and their consequences. It also gives an assessment of developments in the financial sector following the reform, as well as the depth and structure of the financial sector.

A severe form of financial repression which, unlike many other financially repressed economies where suppression was generally through taxes, stamp duties and an un-conducive legal framework, mainly took the form of outright prohibition and was driven by ideology, existed during the Derg regime. Financial institutions were effectively reduced into mere instruments for channelling private sector resources for public sector use. The government also reserved for itself a large share of the income transfers from ultimate lenders (i.e. savers) to borrowers resulting from ceilings on interest rates. Restrictions on private sector access to credit together with the stringent absolute limit on single borrower loans served as effective instruments in suppressing the private sector.

A marked increase in the magnitude of loanable funds of the banking system, mainly due to a switch out of non-earning existing assets, and a fundamental shift in the flow of credit towards the private sector occurred during the post-Derg period. Entry into the financial sector has been slow but steady. However, concentration in terms of ownership, asset portfolio, as well as institutional, sectoral and geographic distribution of intermediation services, remains too high. Besides, some regulatory issues of critical significance remain yet to be addressed.

1. ECONOMIC POLICY DURING THE DERG

1.1. Introduction

This paper discusses policies during the period of financial repression and the financial sector reforms and liberalisation that followed. The policies which were in

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* Assist. Professor, Department of Economics, AAU, and Office of the Prime Minister. Some of the material used is taken from my D. Phil. thesis. The opinions expressed here do not necessarily reflect the views of the Office of the Prime Minister. The final version of this article was submitted in August 1999.

place during the socialist period with a focus on government attitude towards the private and financial sectors, and on policies and measures affecting investment and credit are discussed in section 1. Section 2 gives the recent policy reforms/liberalisation and some aggregate outcomes. Section 3 outlines the depth and structure of the financial sector and concludes.

1.2. General Economic Policy of the Derg

Four months after it assumed power[1] the *Derg* declared *Hibrettesebawinet* (Ethiopian Socialism), explained to mean "equality; self-reliance; the dignity of labor; the supremacy of the common good; and the indivisibility of Ethiopian Unity", as its guiding ideology. It used the banner *Ethiopia Tikdem* (Ethiopia First[2]) which, it declared, means that the *common* good is paramount over *individual*, *corporate*, *ethnic*, or *regional* interest (PMGE 1974:8). The same declaration stated the economic policy of the *Derg* as:

> .... those resources that are either crucial for economic development or are of such a character that they provide an indispensable service to the community will have to be brought under government control or ownership. Essential economic activities which are not amenable to centralised public management will, though outside the public sector, be subject to public monitoring to ensure that the public interest is properly served. Activities in the private sector which are not harmful to the interest of society will be left in private hands in so far as they do not impede the objectives of "*Ethiopia Tikdem*" (PMGE, 1974:10).

The Derg found it necessary to clarify its economic policy, which it did by issuing (in February 1975) the Declaration on Economic Policy of Socialist Ethiopia. This delineated sectors and activities/areas reserved for the state, those for joint state-private capital participation/co-operation, and those left to the private sector, with the financial sector falling in the first group, i.e. exclusive reserve of the state. Small-scale business and industry, domestic and foreign trade, and road transport constituted the third category (PMAC, 1975a:3).

A swift wave of nationalisation followed. The financial sector was the first target: all banks[3] financial organizations and 13 insurance companies were nationalised in January 1975. Most of the banks in existence were state owned even before[4] while the insurance companies were private (and almost all foreign owned (Giday, 1991). Next, it nationalised 72 of the largest companies and acquired majority interests in 29 others (February 1975), promising to pay fair compensation, which it never did. If it did, however, it would have marked a major policy *inconsistency* and *double standard* since no compensation was promised or paid in the case of financial institutions. That it reneged on this promise was, perhaps, one of the early signs that it could not be trusted, hence the beginning of erosion of its credibility. To make the nationalisation drive complete, three other proclamations followed: The Public Ownership of Rural

Lands Proclamation No. 31/1975 (PMAC, 1975b), which made all rural lands collective property, and the Urban Lands and Extra Houses Proclamation No. 47/1975 (PMAC, 1975c), which transferred urban lands and extra (i.e. rented out) houses to the government, brought two of the main factors of production (land and capital) and the housing property under its control. Next came the Public Ownership of Private Schools Proclamation No. 54/1976, which nationalised schools.

In its determination to suppress the private sector, the *Derg* felt that the nationalisation and restrictions of activities for private sector participation were not sufficient. Thus, in December 1975, it issued the Proclamation Relating to Commercial Activities Undertaken by the Private Sector No. 76/1975, the purpose of which was to limit the type and extent of private capital in the economy as well as in the activities/areas left to the private sector (PMAC, 1975d). According to this legislation, new licenses were to be issued to individual enterprises based on the amount of capital invested. It put ceilings on the amount private entrepreneurs could invest: Br 200,000 (US $96,000) for retail establishments, Br 300,000 for wholesale establishments, and Br 500,000 (raised to Br 1 million in 1985) for industry. The capital limit does not apply to firms already above it, and does not take inflation into account. It also prohibited pulling together of capital through partnership or company (with the exception of general partnerships, which should not exceed 5 persons). While these limits would have led to proliferation of a large number of small businesses, there were other restrictions in the same legislation which ensured that this would not happen. The number of licenses (or business activities) was limited to one per individual and with no branches; and individuals with a permanent job or any other source of income were prohibited from getting a license. These restrictions in effect also limited re-investment of profits and dividends in new businesses or expansion of existing firms; only replacement investments are possible once the capital limit is hit.

To what extent these limits had been effectively enforced is, of course, another matter. There were attempts to find ways round them; e.g. getting licenses in the names of family members/relatives, understating capital when applying for license, etc. Befecadu (1994) notes that profitable opportunities created by shortages were large enough to tempt entrepreneurs to exploit them by circumventing the law, with help from those responsible for implementation of the legislation. "... limits on plant size as well as branching restrictions were ignored. Production went underground and industrial entrepreneurs mushroomed in the backyards, garages as well as open spaces". Nevertheless, the hostile government attitude towards the private sector remained a major obstacle to private investment and development. Moreover, for those sufficiently motivated to invest by circumventing the law, the bribes involved increased their costs of entry and of doing business. Another, perhaps more effective, limit on private investment came from the limits on single borrower loans (which were just Br 500,000 in the case of AIDB and Br 1 million in the case of CBE) intended to limit large exposures by banks (NBE, 1986c). This constitutes a constraint which is unlikely to be circumvented easily and, to the extent potential investors have no own

funds, a *binding* one. These low single borrower limits remained in place even after the ceilings on private capital were raised (discussed below).

Still another constraint was lack of access by the private sector to trained manpower. All college and university graduates were being allocated by the government and placement was strictly within the public sector only.

All the above measures aimed at stifling the private sector were further supported by a progressive business income tax; the marginal tax rates for unincorporated business incomes and profits were 82% in industry and 89% in agriculture, and were applicable to annual incomes above Br 36,000. These restrictions have implications on private sector credit demand (more on this later).

1.3. Reform Attempts by the Derg

In January 1983, the government, in an effort to promote development through foreign capital participation issued the Joint Venture Proclamation No. 235/1983. About 44.5% of the planned total investment in its Ten-Year Perspective Plan (TYPP), covering the 1984/85-1993/94 period, was to be financed from foreign sources. The joint venture legislation allowed participation of both private and public foreign capital (up to a maximum of 49%) in joint ventures with Ethiopian public (but not private) capital; provided business income-tax relief, and import and export duty exemption; and allowed remittance of foreign exchange and exemptions of taxes on dividends. However, neither did foreign resources flow in, nor was economic performance satisfactory.

As can be inferred from the measures that followed, there was dissatisfaction on the part of the government itself, although not admitted in public, in its economic achievements. Thus, in November 1988, the 9th Plenum of the Central Committee of the Workers Party of Ethiopia (WPE) passed thirteen resolutions which were to lead to the first major attempt at policy reform, including investment policy. Among the elements of the resolution were:

> "... raise the ceiling on private capital in small-scale industries .. [and] create legal conditions for private investors with adequate capital and management skills to participate without any capital limitations, privately, in partnership, concessional arrangements or joint ventures with the government in the fields of large-scale agriculture, animal husbandry and animal by-products, industry and services ..."

The guiding ideology, however, remained socialism: poor implementation, lack of commitment and adequate support rather than the socialist policy as such were blamed for the disappointing performance. The resolution also sought to create conditions conducive to enabling the private sector to "contribute to the construction of socialist economy" rather than to develop as a sector in its own right (resolution

10). It was to be covered in the indicative plan (resolution 5).

The resolutions were followed by two proclamations: the Small-Scale Industries Development Proclamation No. 30/1989 (1989) and the Hotel Services Development Proclamation No. 31/1989. The former raised the capital ceiling on investment to Br 2 million for individual entrepreneurs and Br 4 million for business organizations; permitted investment in more than one enterprise, provided the overall amount did not exceed Br 4 million for individual entrepreneurs and 8 million in the case of business firms; exempted co-operatives from any ceiling; provided customs duties exemptions for initial purchases of capital goods and income tax exemption to small-scale enterprises in manufacturing which export at least 10% of their annual sales. The latter raised the capital ceiling to Br 3 million for individual entrepreneurs and Br 6 million for a business organization; and provided tariff exemption on imports of basic infrastructure with value up to Br 300,000. However, these did not have any meaningful positive effects on investment.

In a drastic reversal of its socialist policy, as articulated in the Program of the National Democratic Revolution (PNDR), the government, following the resolution of the 11th Plenum of the Central Committee of the WPE, declared the New Economic Reform Program (NERP) in March 1990. The NERP aimed to promote a mixed economy and actively encourage the private sector (which, so far, it regarded as an adversary) through new incentives and elimination of state controls including limits on capital, area of participation (PDRE, 1990), marking a shift in the government's attitude towards the private sector from hostile to supportive.

Accordingly, in May 1990, a new investment decree (Special Decree No. 17/1990) was issued. Size restrictions on private investment were removed, and private sector participation was encouraged in most sectors except public utilities, banking and insurance which was subject to prior approval of the Council of Ministers. The restriction on foreign capital participation to joint venture with state capital only was lifted, allowing foreign investment directly and through joint ventures with Ethiopian private or state capital. A range of incentives including exemptions from customs duties and taxes, income tax holidays (albeit limited to investments of over Br 300,000 in agriculture and Br 500,000 in industry) and personal tax exemption to expatriate employees were provided to both domestic and foreign investors. Forms of business organizations such as ordinary and general partnerships, limited partnerships, share companies and private limited companies were allowed; restrictions on number of investment licenses and branches were lifted. The marginal business income tax was reduced from 89% to 59%, albeit for incorporated enterprises only (i.e. not for individual entrepreneurs). The investment decree was followed by a series of regulations designed to implement the new policy: regulations No. 7/1990, 8/1990 and 9/1990 referring to Licensing of agricultural projects, industrial projects and hotels and tourism, respectively, and regulation No. 10/1990 on the modalities of participation of foreign investors were issued. Moreover, the Multinational Investment Guarantee Agency (MIGA)[5] convention was ratified (decree

No. 39/1990). The government also signed the convention in September 1990.

Although the NERP significantly reduced (but did not remove completely, as we will see in the next section) restrictions on economic activity and discrimination against the private sector, and provided strong incentives, it came too late to see implementation. By then the government had lost control over most of the northern part of the country to the opposition forces and was facing major military defeat. Indeed, the reform itself arguably was partly motivated by its defeat in the war front; it hoped to buy popular support with the reform.

1.4. Financial Sector and Credit Policies of the Derg

All elements of financial repression existed in their severe form: controls on financial prices (i.e. interest rates and exchange rates) and restrictions/controls on new entry to the sector as well as on the activities and portfolios of existing financial institutions. The central bank, the NBE, had the power to "... control the operations of banks and other financial institutions" and to "... direct banks and other financial institutions to deny credit allocations to enterprises ..." (Proc. no. 99/1976, articles 9(4) and 9(5)).

All financial institutions (except the SACCs, whose asset[6] shares do not exceed 1% of the sector's assets and whose loan services are limited to their members) were publicly owned and entry was barred, thereby establishing a public monopoly in the financial sector. Moreover, the financial system has been segmented with financial institutions having specialized functions; specialisation not based on efficiency in risk and transaction cost considerations: individual institutions have been operating in specific businesses allocated to them, each enjoying a monopoly in its segment.

AIDB[7] (now DBE) specialized in development loans by raising funds only through (both foreign and domestic) borrowing and time deposits: although article 8(10) of proc. 158/1979 authorised the bank to accept savings deposits (but not demand deposits) it never did. Neither has it used equity participation despite a provision for this (article 8(9) of Proc. 158/1979) and the emergence of possibilities for equity investment due to the joint venture proclamation. HSB[8] (now CBB) had monopolised the loan business for housing development and construction industries. It was authorised to mobilise funds through time and savings deposits but not current accounts (Proc. no. 60/1975). The central bank also specified that time deposits of Government-owned Undertakings (i.e. public enterprises and state farms) shall be maintained only with the AIDB or HSB, while savings deposits shall be maintained only with the HSB or CBE[9]. Such enterprises were ordered to transfer their deposits maintained with other banks accordingly[10] (NBE 1986d, 1986e). Neither AIDB nor HSB provided other banking services such as overdrafts, remittance transfers, safe keeping and exchanges (import and export) to the general public. The EIC[11] and PSSA (now SSA), the only formal[12] contractual savings institutions, specialized in insurance and pensions, respectively.

Bank credit was administratively allocated, mainly to the socialised sector (i.e. Public Enterprises, State Farms, and Cooperatives). Interest rates on loans to different economic and social sectors were administratively fixed. The NBE set lending rates ranging between 4.5-9.5%, depending on the type of ownership and sector. Authorities used elaborated policies which specified financial instruments and their returns; interest rates on different types of deposits were administratively set. Time deposit interest rates ranging between 1-7.5% depending on type of depositor and maturity[13] were fixed – the minimum period required for time deposits to earn interest was 1 year. The structure of interest rates on savings deposits was such that large deposits earn a lower rate, the exact opposite of the structure commonly found in market-oriented economies: the interest rate on savings deposits up to Br 100,000 was 6% per annum while deposits above this were earning 2% (note that the minimum rate on savings deposit is higher than that on time deposits). The government also specified the types of instruments each financial institution could issue, hence public and private enterprises as well as individuals can hold, thereby severely limiting the ability to diversify portfolio and manage funds (e.g. Government Owned Undertakings were prohibited from holding time deposits with maturity longer than 1 year). The earning financial instruments available to the general public were restricted to savings and time deposits only. The use of credit instruments such as overdraft facility was discouraged. An unpublished government document, "Credit Policy for Banks", states that "overdraft facility, which is a hindrance to the rational and flexible allocation of funds by the banks must be discouraged"(emphasis added). Usury has been made illegal, driving the activity underground, hence making it not only difficult to borrow from the informal credit market but also expensive; i.e. interest rates such lenders charge may involve a premium for the risk of being caught.

The government restricted equities through its prohibition of the pulling together of capital through partnership (discussed earlier). It also restricted both foreign and domestic private bonds, thereby preserving a sheltered market for its bonds and bills (although they were not available to the general public) as a source of cheap funds. Not only did they offer low yields (only 3% for treasury bills and 5% for bonds until 1 October 1992) but were also illiquid since, given the absence of secondary market, they had to be *directly held* until maturity (rather than being traded).

In addition, high reserve and liquidity ratio requirements, and exchange rate controls were in place (the exchange rate was fixed at Br 2.07 to the US dollar).

Unlike many financially repressed developing countries where suppression was generally through various types of taxes, stamp duties and an unconducive legal framework, financial repression in Ethiopia mainly took the form of outright prohibition. The financial sector was simply regarded as a means of channelling resources in accordance with the national plan and as subservient to the real sector rather than as an economic activity in its own right.

> ... it has become necessary to establish a wider base for growth by reorganizing, co-ordinating, controlling and centralizing the banking system in order to assure a more rational and effective allocation of resources and banking services with due regard to the country's social and economic needs and in keeping with the broad objectives of the national plan [Proc. no. 99/1976] (emphasis added).

Credit policy was driven by ideology, as can be seen from the explicitly stated priority given to the socialised sector (*ipso facto* marginalising the private sector):

> " ... in the transitional period from a mixed economy to a socialist economic order; financial institutions will use the credit facility as factor of strengthening and expanding the socialized sector and encouraging projects for as long as such projects are economically and socially desirable; the socialized sector will receive priority in credit allocation" [NBE, 1976].

Financial institutions in effect served as means of generating and channelling resources to the public sector (i.e. central government, public enterprises, and state farms) in three ways. First, through the zero-yield required (and excess) bank reserves; second, through capital charges, taxes and 'dividends'. Public financial institutions had to pay a capital charge of 5% of the state capital plus the general reserve fund, and 50% profits tax, as well as sales & transaction taxes and excise taxes; to make special contribution (equal to 30% of net surplus) to the general reserve fund (until such fund equals 60% of the state capital); and transfer the residual surplus to the government, as an owner, as 'dividends' (Proclamation No. 163/1979).

The third is through credit. The public sector has been the major user of bank credit. The share in domestic credit of the central government alone (i.e. excluding credit to public enterprises and state farms), which was only 11% in 1974, averaged 47% during 1975-90 (and 50% during 1980-1990). In 1990/91 the central government and public enterprises together accounted for 87% of total loans & advances outstanding. To the extent that controlling deposit and lending interest rates results in income transfers from ultimate lenders (i.e. savers/depositors) to borrowers and that the share in total loans determines the proportion of these transfers going to a certain borrower, the government, by giving itself and public enterprises priority access to bank funds, reserved for itself a large share of the transfers.

There are also indications that banks channelled *private* sector resources to the *public* sector. While this is not peculiar to Ethiopia, it is large compared to other developing countries. The public sector had a negative resource balance, on the average, of 15% of GDP (the private sector had been the largest saver and the only sector with positive savings-investment balance) during 1981-90 (World Bank, 1991) which is almost twice the average figure for Sub-Saharan Africa (which is 7.6%) and more than twice that for low income countries (see Annex 2.3). And the ratio of private sector borrowing from CBE to private deposits with the same was only 17%

(the remaining 83% available for use by the public sector). Thus, in effect, the CBE served as an agency for channelling private sector savings for public sector use at low cost (Gebrehiwot, 1994). Private sector crowding-out had been quite high: its share in domestic credit, which was about 86% in 1974 fell to just less than 5% in 1990. 95% of HSB, 89% of CBE, and 78% of AIDB loan portfolios in 1989/90 were with the socialised sector (Gebrehiwot, 1994). Even in flow terms, the share of the private sector had been disproportionately low: between 1981/82 and 1989/90, public enterprises and co-operatives received more than 69% of the loans and advances disbursed by the banking system (NBE Annual Report, own calculation). It should, however, be noted that the observed low share of the private sector partly could have resulted from lack of private sector credit demand; the various restrictions the sector faced (discussed earlier) translate into limited demand for investment, and consequently for credit, by the private sector.

Discrimination against the private sector was not limited to credit access. The interest rate schedule (effective 1 July 1986) explicitly price-discriminated against the private sector: a directive by the NBE fixed lending interest rates of 9% for private, compared to 8% for public, industrial enterprises; and 8% for private as opposed to 6% for public enterprises in agriculture (NBE, 1986a). Private enterprises faced further discrimination in credit since banks required them to insure their assets (this was not a requirement for public enterprises,[14] for an insurance fee of 1 to 2 percent of the loan amount, thereby increasing their effective cost of borrowing. Additional discrimination, hence costs, emanated from bureaucratic hurdles in financial institutions and difficult procedures including the valuation of assets not only of borrowers' but also of their personal guarantors'[15] various (legal and illegal) charges therein, and delays in extending credit. There were also up-front charges demanded by unscrupulous loan officers. According to a World Bank study, "... such costs may be as high as 10 percent of the loan amount" and small borrowers are particularly vulnerable to this (World Bank, 1991, Annex IV). Moreover, the single borrower limits, of Br 500,000 and Br 1 million imposed on AIDB and CBE loans to private borrowers respectively, limited the amount of bank finance they can receive.

Despite all these, the NERP, which is widely regarded as far-reaching and which, in many respects, represented a radical departure from socialism, introduced neither changes in the credit and financial sector policies which were designed to build a socialist economy nor financial sector reform of any sort. This represents a major policy inconsistency in the NERP: trying to encourage private sector participation while continuing to discriminate against it in financial services. The government claimed now to believe in the role of the private sector in economic development, similar to "government organizations, cooperatives and mass organizations":

> " whereas it is believed that investments by participants in mixed economy, namely, government organizations, cooperatives, mass and private organizations, Ethiopian entrepreneurs and foreign investors can immensely contribute to the country's economic development by making available better

and wider supply of goods and services..." (Proc. No. 17/1990).

Yet, it failed to take measures to give it improved, if not equal, access to credit. Moreover, for all its pervasive problems of inefficiency, bureaucratic hurdles (even corruption) and complicated borrowing procedures, there was no attempt to reform the financial sector. The only indication of an intention on the part of the government to reform this sector comes from article 5(3) of the Council of State Special Decree on Investment No. 17/1990 (Negarit Gazeta, 1990b) which states that "investment in the provision of ... banking and insurance ... activities shall require the prior authorisation of the Council of Ministers".

Besides, unlike in the other sectors, this was never followed by any regulation designed to guide its implementation. Of course, as it turned out, even the reforms that were followed by such regulations were not implemented since the government was toppled in May 1991.

In summary, the *Derg* period was characterised by private sector restrictions, price distortions and institutional weaknesses. Despite some late reform attempts, the private sector had been subjected to sectoral restrictions; overly regulated and bureaucratized licensing system; cumbersome and time consuming business registration procedures, including acquisition of premises as a precondition for registration; difficulties of access to land, foreign exchange, trained manpower and other inputs; and gross discrimination in the formal credit market. Moreover, the financial sector remained a state monopoly and severely repressed.

Following the overthrow of the *Derg* regime, changes in economic policies as well as political, administrative and institutional structures began to be introduced by the Transitional Government of Ethiopia (TGE). The changes aimed at removing restrictions on private sector and price distortions, and institutional reforms. We now turn to a selective review of the relevant policy changes, in the light of private investment, availability of loanable funds, entry and competition in the financial sector, credit demand, and access to credit.

2. RECENT REFORMS AND LIBERALISATION

Policy, legal, regulatory, supervisory and institutional reforms have been undertaken. The TGE distributed its draft economic policy for the transition period for public comment. The Transition Period Economic Policy (TGE, 1991) clearly defined the role of the state in the economy, explicitly acknowledging state control over the entire economy as the major cause of economic decline and the need to shrink that role, concentrating on the social sectors and infrastructure. It also broadened the scope of private investment. Moreover, it gave full autonomy to state-owned enterprises (SOE) and financial institutions, and imposed hard budget constraints. SOEs are required to use profitability criteria and to operate in competition with the private sector, hence

ending the credit access priority and other special privileges they enjoyed: "they should be treated like any private enterprise without favours and privileges whatsoever" (TGE, 1991). In addition, it declared its intention to privatise.

The TGE adopted a World Bank/IMF supported SAP, launching the first three-year program in late 1992, which was continued by the EPRDF government which (voted in the May 1995 election) took power in August 1995. The main reforms covered by the SAP are exchange and trade systems; public enterprises; financial, agricultural and transport sectors; fiscal reforms; and investment promotion. Here the focus is on investment incentives and financial sector reforms/liberalization.

2.1. Investment Promotion

A number of legislative and institutional measures have been taken. A new investment code and tax system have been introduced. The Proclamation to Provide for the Encouragement, Expansion and Coordination of Investment No. 15/1992 laid the legal and institutional basis. The Investment Office of Ethiopia (now Ethiopian Investment Authority) was established to serve as a one-stop office for the administration of investment; the registration and business licensing system inherited from the previous regime involved several preconditions and cumbersome procedures of double-checking (e.g. acquisition of premises was a pre-condition for registration while potential investors had to go through a lengthy process to get a license).

Guarantees and constitutional protection of private investment were provided, ruling out by legislation, for the first time, nationalisation *without adequate compensation and legal procedure*. In contrast, both Proc. 242/1966 of the Imperial era and Proc. No. 17/1990 of the *Derg* were silent on this issue. In the latter case, despite the declared shift to mixed economy, the silence, given the *Derg's* history, not only of aggressive nationalisation, but also of expropriation of private property in violation of its own proclamations[16] fresh in people's memory, was perceived as deliberately leaving the option open, thereby creating uncertainty to potential private investors.

Fiscal incentives have been introduced to encourage private investment, the main instruments in use being tax holidays, customs duty exemptions on equipment & machinery, tax reductions, and investment tax credit. The tax holidays are non-discriminatory in the sense that both domestic and foreign investors are eligible and that they apply both to new investments as well as expansion or upgrading. However, they discriminate by size and location in the sense that large investments (i.e. above Br 250,000 in case of domestic investors, US $500,000 in case of foreign investors, and US $300,000 for joint ventures) and investments in "underdeveloped regions" receive favourable treatment (Proc. no. 37/1996). Income tax for organizations, which was 59%, has been reduced first to 40% in 1994/95, and then to 35% - a rate considered as internationally competitive standard (Proc. No. 62/1993; 36/1996). Moreover, export taxes have been abolished except for coffee (Proc. no. 38/1993).

Cognisant of the public nature of investment in R & D and training, all such expenditures have been made tax deductible. While the use of tax holidays and duty tax exemptions is not new in Ethiopia (both the Imperial and *Derg* regimes used them), it is apparently for the first time that tax incentives are provided to encourage *private* investment in R & D and training.

The incentives have been further improved by Proc. No. 37/1996 which systematised and consolidated them in line with the federal structure of the government. The proclamation: (a) expanded the scope for foreign capital participation by allowing foreign investment in the form of sole proprietorships, business organizations incorporated in Ethiopia or abroad, public enterprises or cooperative societies; (b) simplified the procedure for investment permit and eliminated the requirement for trade or operating license until the completion of project implementation and the commencement of production or rendering of service; (c) allowed foreign investors to operate foreign currency accounts in authorised local banks for transactions related with their investment; (d) permitted foreigners to remit incomes from liquidation of assets, transfer of shares, profits, dividends and employment as well as repayment of external loans and payments related to technology transfer; (e) reduced the required minimum share of domestic capital participation in joint ventures from 51% to 27%, eliminating, for the first time, the legal requirement of at least 51% equity holding by domestic partners - during the imperial as well as the *Derg* eras, foreign capital participation in joint ventures was limited to a maximum of 49%; and (f) abolished the cash deposit requirement on foreign investors of at least 25% of the investment capital to obtain a permit.

2.2. Financial Reform/Liberalisation

Public Enterprises Proclamation No. 25/1992 provides the legislative basis for the implementation of public sector reforms, divestiture and privatisation.

The financial reforms and (internal) liberalisation undertaken include elimination of priority access to credit; interest rate liberalisation; restructuring (including portfolio cleaning and re-capitalisation of state-owned banks) and introduction of profitability criteria; reduced direct government control of financial intermediaries and limits on central bank and banks loans to the government; enhancement of the supervisory, regulatory and legal infrastructure and power of the NBE[17] allowing private financial intermediaries through new entry of domestic private intermediaries (rather than privatisation of existing ones); and introduction of treasury bills auction markets.

Interest Rate Liberalisation

Financial liberalisation has been gradual rather than a big-bang. It began at the end of 1992 when nominal interest rates on deposits and loans were raised,[18] discrimination of credit access and interest rates by type of ownership (i.e. between SOEs, Co-operatives and private firms) eliminated, sectoral interest rate

discrimination reduced, and domestic establishment of private financial institutions allowed and encouraged (Proc. No. 29/1992; NBE 1992b). This was latter followed by a promulgation of a series of legislation relating to the financial sector.[19]

Further, liberalisation in September 1994 eliminated sectoral discrimination of lending rates, which had continued (favoring agriculture and housing & construction), albeit at a reduced degree; lending rates were increased to 14-15% for all sectors of the economy, and deposit rates to 10-12% (NBE 1994a, 1994b). On the average, interest rates were above inflation (see Table 1).

Table 1. Interest Rates and Inflation

	1992/93	1993/94	1994/95*	2 Jan. 1995 - 30 Nov. 1995	1 Dec. 1995 - 15 Sep. 1996	16 Sep. 1996 - 30 Dec. 1997
Nominal deposit rate	10-12	10-12	10-12	10	11	7
Nominal lending rate	11-15	11-15	14-15	15	16	10.5
Interest spread (nominal)	1-5	1-5	2-5	5	5	3.5
Inflation	10.0	1.2	13.4	0.9	0.9	-6.4**

source: NBE Annual Report, 1994/95.

* interest rate figures apply only up to end of 1994 since a policy of a floor on deposit interest rates and a ceiling on lending rates was adopted as from January 2, 1995. The interest rate figures shown for the period since the beginning of 1995 are the respective floors and ceilings, hence the indicated spread is the maximum.

** for Fiscal Year 1996/97.

Since January 1995, the central bank switched to a policy of *floors*[20] on deposit interest rates and *ceilings* on lending rates, allowing banks to set interest rates (provided they do not discriminate between similar categories of depositors and of borrowers) (NBE 1994b, 1995c). The floors and ceilings restrict the pricing schedules of banks; i.e. limit the spread between deposit and loan rates (the maximum nominal spread was 5% between December 1995 and early September 1996, reduced to 3.5% beginning mid-September). Nevertheless, these rates, combined with relatively low inflation, resulted in positive real rates. This, together with the non-taxability of interest income and the implicit government guarantee on deposits, especially deposits with the CBE[21] make deposits quite attractive assets to savers. While controlling inflation rather than raising nominal interest rates has been the government's preferred means to achieve positive real rates, the ceiling on lending rates, by putting a cap on bank earnings from lending, avoids the risk of banks, eager to increase their market share, the new banks in particular, raising deposit rates too high in a competitive bid to attract deposits. Another argument in favor of a ceiling would be to prevent adverse selection among borrowers which may arise if lending rates are too high, leading to inefficient credit allocation, rather than as a mechanism to control the cost of capital.

In any case, further interest rates liberalisation was taken by eliminating the ceiling on lending rates (effective January 1998), hence removing the policy limit on interest spread (although, contrary to expectations, even a year after the ceiling was removed, most banks, including the private banks, continued to lend at more or less the same rate as before (see Gebrehiwot, 1998c)).

The liberalisation also raised nominal yields on treasury bills and bonds to 12% and 13% respectively (since October 1992), yielding positive real returns except in 1994/95. Later, a government securities market was established (January 1995) through the introduction of monthly (later made bi-weekly) auction of 91-days treasury bills, with 28-day and 182-day bills added in December 1996: T-bills are now on offer to financial institutions, business firms as well as the general public.

Bank Restructuring and Entry Rules

The state owned banks have been restructured financially and operationally. Changes in corporate governance have been introduced: banks have management autonomy and their own boards;[22] management have been replaced or reorganised; new incentive schemes have been introduced;[23] and banks are to operate in a competitive environment using commercial criteria. They have been re-capitalised to improve their solvency. Their portfolios were improved by cleaning up[24] [25] non-performing loans to Public Enterprises and Cooperatives through "carve-outs" or "debt socialisation" (i.e. banks received government bonds to replace non-performing loans) (Proc. No. 75/1993), partly to enable them to compete with new private banks which start from a clean balance sheet. It may also prevent the emergence of moral hazard in banks and the indebted public enterprises.[26] Re-capitalisation and clean up have created opportunity for banks to cut off insolvent clients should they choose to. Whether they will do so is another matter; even if banks are free to drop troubled firms, they may choose not to in an effort to maintain a client base, especially if it is to lead to mass bankruptcy. What happened in the Czech Republic is a good example. Czech banks were faced with the choice between dropping insolvent firms (while hoping to retain their business with the good firms in the face of increased competition from foreign banks) or raising interest rates on paying customers as a means of replenishing their capital and "buy time to sit on the loans to the troubled firms in the hope that these firms would form a captive client base". They chose the latter (Hayri and McDermott, 1995). Besides, the banks may believe that the insolvency of public enterprises in the past had to do with government intervention and lack of clear commercial criteria (after all, the banks themselves have been subjected to such circumstances). Now that the enterprises have autonomy and use profitability criteria, may be worth retaining them as clients.

Moreover, the banks have been converted into universal banks (i.e. allowed to do both commercial banking and brokerage, sale shares as agents, and participate in equity investment) (see Regulations No. 200/1994, 202/1994 and 203/1994). Restrictions on their portfolios[27] (including the kinds of businesses they can finance)

and financial instruments have been removed; banks are no longer required to specialise their credit services to certain sectors of the economy or hold government bonds. Nor do they face restrictions on the types and sources of deposits they accept. Moreover, banks are decentralising[28] loan decision-making which will have the advantage not only of making speedy processing of loans possible (thereby reducing transaction costs of borrowing), but also of reducing screening, hence transactions, costs of lending. Both tend to reduce borrowing costs, the former directly and the latter by inducing decreases in lending interest rates, assuming sufficient competition between banks and to the extent the other components of transaction costs (i.e. administrative costs and default risk costs- high provisions on substandard, bad and doubtful loans) do not increase so as to offset this effect.

Entry restriction into banking was lifted for domestic (but not foreign) private sector. Entry rules have been clearly defined: guidelines for entry including professional standards directors, managers, and principal officers are required to meet (articles 3(1e) and 30 of Proc. No. 84/1994)[29,30] minimum capital base and maximum ownership by a single shareholder[31] in banks (to limit ownership concentration[32]) have been issued. Capital adequacy and other prudential requirements have been specified: banks are required to keep at least 8% of risk weighted assets[33] or Br 10 million, which ever is greater[34] , hence complying with the Bank for International Settlements' (BIS) standard,[35,36] to protect depositors (Proc. no. 84/1994, article 13(1)). Large exposures/risk concentration limit (i.e. limit on exposure to a single borrower) of 10% of net worth[37] has been imposed, hence making loan portfolio diversification[38] a regulatory requirement. Rules regarding connected and insider lending (i.e. limits on accommodation) have been introduced: loans to bank directors, or business organizations in which the bank or its director(s) have stakes, or persons to whom the bank or its director(s) are guarantors, are controlled.

However, there are some regulatory issues which neither the banking proclamation (Proc. No. 84/1994) nor the various relevant NBE directives have addressed. The provision on ownership concentration does not explicitly address the issues of cross-ownership (ownership through affiliated companies or investors), hence leaving a potential for concentration. Given that there is no restriction on *inter-locking* directors, there is a potential for conflict of interest. Financial institutions have no code of corporate governance yet. There is no provision to ensure that sponsors of banks and insurance companies make sufficient financial commitments. The limits on accommodation are not comprehensive in that services provided to and fee-based transactions with *related parties* are not covered. Moreover, the regulation does not cover the possibility of insiders of different banks rewarding each other loans on the basis of reciprocity.

Legal Environment

Another major step, as far as banking is concerned, is the amendment of the 1960 Civil Code with respect to sale of bank collateral (Proc. No. 65/1997). The

amendment provides for an *agreement with the borrower* authorising lending banks to sell directly and quickly (with 30 days notice) collateral from delinquent borrowers, hence contribute to the effectiveness of enforcement of credit contracts. Moreover, urban land acquired through lease can now be used as collateral (although it is equally important that transferability is ensured). These are expected to reduce the constraints on lending/borrowing. However, the capacity and efficiency of the court system remains limited; although specialized commercial courts exist, their number is not large enough, not to mention their quality. Moreover, court fees are believed to be too small to encourage settlement outside the court system such that even minor disputes/small claims seek resolution through the court procedure. Although a formal enforcement mechanism should be low-cost, it should be the last, rather than the first, resort which aggrieved parties can turn to.

2.3. Some Aggregate Level Outcomes during the Period

Thee aim of this sub-section is to assess some relevant positive aggregate outcomes or developments during the liberalisation period, not to give rigorous analysis of effects.

Loanable Funds and Private Sector Credit

There are indications of significant increases in financial savings: growth rates of total deposits as well as its components, the two interest-bearing deposits in particular, during 1992/93-1995/96 were significantly higher compared to the 1986/87-1991/92 period while that of currency outside banks declined considerably (see Table 2). The time since the interest rate increase (for the period data is available) is relatively short for a significant change in agents' saving behavior to have occurred so as to generate new savings. This suggests that most of the observed increase is likely to be due to portfolio substitution out of non-deposit assets (currency, gold, curb market assets, real assets,[39] foreign assets) and out of non-earning bank deposits[40] (i.e. portfolio substitution in the stock of existing assets) rather than due to new savings. We should also note, however, that in 1994/95 Ethiopia enjoyed a coffee boom, hence an estimated windfall gain of 2.25% of GDP, resulting from high world price- IMF (1996). But, Table 2 also shows a slight increase in the share of currency outside banks in total financial assets, implying that no substitution out of currency has taken place. However, there has been a clear portfolio switch from non-earning to earning assets as can be seen from the decline in the share (in total financial assets) of demand deposits and the increase in the shares of time and savings deposits. A change in the structure of deposits can be observed from Table 3. The share of demand deposits decreased (by about 4%) while that of saving and time deposits increased since 1992/93, suggesting that, although demand deposits still account for a significant percentage of total deposits, some portfolio switch from non-earning to earning deposits has occurred.[41]

Table 2. Percent Growth of Financial Assets and Composition (average per annum)

	Growth (percent)		Average Share in Total Financial Assets*	
Year	1986/87- 1991/92	1992/93- 1995/96	1986/87-1991/92	1992/93-1995/96
Currency outs. Bank	18.6	7.3	41.3	42.5
Demand deposits	8.2	11.8	33.6	27.2
Saving deposits	13.5	25.9	22.6	26.6
Time deposits	-6.7	64.6	2.5	3.7
Total deposits	9.1	23.6	58.7	63.6

Source: calculated from NBE Annual Report and Quarterly Bulletin, various issues.
* total equals currency outside banks plus deposits

Table 3. Composition (%) of Non-central Government Deposits (1985/86 - 1995/96)

	1985/86	86/87	87/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96
Demand dep	55.6	59.4	60.1	56.6	56.7	55.9	53.9	50.6	50.4	50.1	40.3
Saving dep	32.9	34.4	36.3	38.8	39.7	40.6	42.6	43.2	43.7	44.4	51.6
Time dep	11.5	6.2	3.6	4.6	3.6	3.6	3.5	6.2	5.9	5.4	7.9

Source: Calculated from NBE Quarterly Bulletin, various issues.

There is also indication that savings mobilisation, hence availability of loanable funds, has increased. Deposits as a ratio of GDP increased from 21% in 1990/91 to more than 30% in 1996/97 while the ratio of broad money (M2) to GDP, which was 40% in 1990/91, increased to 44% in 1996/97.

Available loanable funds put an upper limit on domestic credit, hence on credit access. A look at the financial resources of the banking system shows that availability of funds has been increasing. Total non-central government bank deposits grew at an average rate of 16% per annum during 1991/92-1996/97 compared to just 7.4% during 1987/88-1990/91. Moreover, the banking system as a whole experienced continued rise in liquidity, in recent years in particular, in the sense that resources mobilised exceeded disbursements by a considerable margin (by a margin of 20 to 52%), between 1987/88 and 1995/96 (the period for which we have data on this) except 1993/94. Of course, there are differences between banks, which may not be surprising given that, during the period of financial repression, some banks faced more restrictions than others on the types of deposits they receive and that they were made to focus on loans of medium and long-term nature (e.g. financing agricultural and industrial development, housing, etc.). As discussed earlier, it is only recently that AIDB (now DBE) and HSB (now CBB) were allowed to accept demand deposits and to do universal banking. Liquidity at the CBE and HSB has been on the increase throughout this period. In fact, CBE continued to have substantial amounts of both excess reserves (which are non-earning) and excess liquidity: in June 1998 *actual* reserves were more than 15% of its total deposits, as opposed to the required 5%,[42,43] while the *actual* liquidity ratio was 51% of its short-time liabilities[44] compared to the 15% regulatory requirement. Theoretically, this excess liquidity (and reserves) may be due to lack of credit demand or due to preference by banks to accumulate excess liquidity rather than lend to *non-prime* borrowers[45] (e.g. this may happen if

banks are unable to buy sufficient government bonds or T-bills to absorb the excess) - but holding such huge non-earning excess reserves in the face of rising cost of funds (due to decline in the share of zero-cost demand deposits) and constrained loan earnings (i.e. interest rate ceiling) cannot be prudential. It should be noted that the excess liquidity problem is not unique to CBE; even the private banks, despite their limited capital and share in deposits (hence loanable funds) appear to have excess liquidity implying that an inter-bank money market may not solve the problem. That there has never been any transaction since the necessary regulatory mechanism for this market was in place starting September 1998 may partly be a reflection of this.

The AIDB, however, experienced a decline in liquidity starting 1991/92 partly due to a decline in its borrowing from the NBE, which has been its single most important source of funds; this is largely responsible for the decline in overall bank liquidity observed during the same fiscal year. The bank also had serious problems of loan recovery, especially from state-owned enterprises, including state farms, and co-operatives, both of which had priority access. The latter dissolved almost overnight (rather than through orderly liquidation) immediately following the March 1990, which allowed formation of co-operatives to be strictly voluntary and allowed members to dissolve them if they want to, leaving creditors banks with no one to claim payments from. Most co-operatives did not have tangible assets the banks can foreclose, other than their offices and stores, usually located in remote rural areas, hence difficult to liquidate. In addition to banks losing money (at the expense of the tax-payer), this may have signalled that you can borrow money from a bank and get away with non-repayment.

The observed rise in liquidity could not have resulted from a decrease in credit as there has been a substantial increase in bank credit. Gross domestic credit increased by about 92% between 1990/91 and 1995/96. Total fresh bank loans and advances disbursed, which was Br 1,476 million in 1992/93, reached Br 4,303 million in 1995/96; an increase of 192%. Loans and advances disbursals to the private sector in 1995/96 were 312% higher compared to 1992/93.

Furthermore, there has been a significant shift of credit towards the private sector. Central government's share in domestic credit outstanding, which had reached 40% in 1990/91 (end of the socialist era), declined to about 23% in 1995/96 partly due to the termination of government borrowing from the banking system (no fresh bank loans and advances were disbursed to the central government since 1994/95) and partly due to repayment of existing loans, hence releasing resources for private sector lending. The ratio of private sector (excluding co-operatives) credit disbursed to GDP rose from 1% in 1991/92 to 8% in 1994/95. In flow[46] terms, the proportion of bank loans and advances disbursed to the private sector, which remained well below 30% of total disbursals during the socialist period and was only 49% in 1992/93, increased considerably, reaching 91% in 1996/97 (see Table 4), the socialised sector receiving only 9%. In the case of AIDB, loans and advances going to the private

industrial sector, which, during the 1980s, never exceeded 11% of its disbursals to the sector, reached 36% in 1992/93. %. In other words, now it is the socialised sector that is being crowded-out.

Table 4. Private Sector Share (%) in Total Loans and Advances (disbursal) for the Period 1987/88 - 1996/97

Year	1987/88	88/89	89/90	90/91	91/92	92/93	93/94	94/95	95/96	96/97
Private sector's % share of Loans & adv. disbursed	23.0	22.9	27.9	39.6	44.9	49.0	80.6	80.8	69.2	90.9
Industry's % share	-	-	19.9	21.6	20.4	26.9	18.6	8.1	12.1	10.8

Sources: Calculated from NBE Annual Reports, 1987/88 to 1995/96, and other unpublished sources.

Entry and Competition

Following the lifting of entry restriction into the financial sector, several domestic private financial institutions have been established: as of November 1998 five banks, eight insurance companies, and eight registered "micro financing institutions" were in operation [despite the relatively high new entry paid up capital requirements of Br 10 million and Br 7 million for bank and insurance[47] respectively]. This raised the total number of banks and insurance companies to eight and nine respectively. There are stories that in the main urban centres, especially in Addis, the state-owned financial institutions are already beginning to face competition from the new FIs, especially in lending; private banks' share in the loan market has been increasing, reaching 17% of total loans disbursed in 1997/98 (MEDAC, 1999).

Nevertheless, the state-owned banks are still dominant in the markets for deposits and loans with little competition between them. Within this, the CBE has been, and still is, dominant in terms of market share in total deposits as well as credit and bank branches: As of June 1998, it accounted for more than 87% of the total deposits (96% of demand deposits, 87% of savings deposits, and 41% of time deposits – DBE and CBB accounted for more than 53% of the latter[48]). The private banks appear to be doing relatively better in attracting interest-bearing deposits (9.3% of savings and 5.5% of time deposits compared to only 3% of demand deposits), although it is not clear how much of this resulted from the banks' efforts rather than from the general reluctance on the part of the CBE to accept term deposits. CBE's nation-wide network of 168 branches (about 70% of all bank branches) gives it dominance in the payments system and better access to savings, the zero-interest demand deposits in particular, hence a comparative advantage. It should be noted though that this cost advantage is usually exaggerated, since the higher (non-earning) reserve requirement which the CBE has been subjected to (8%, compared to 5% for private banks – until it was reduced to 5% starting January 1998) partly offsets this cost advantage[49] over other banks. As in June 1998, CBE's share in total bank loans disbursed was 58% compared to about 87% in 1994/95.

Table 5. Percent Share in Total Bank Deposit Holdings and Loans and Advances Disbursed

A. Deposits Held	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95	1997/98
CBE	86.5	86.2	88.5	92.3	93.1	95.3	87.6
AIDB (DBE)	3.8	3.8	2.9	2.4	2.1	0.8	3.6
HSB (CBB)	9.7	10.2	8.6	5.3	4.8	3.9	3.2
Private Banks	-	-	-	-	-	-	5.6
B. Loans & Advances							
CBE	46.0	62.5	66.1	86.1	83.1	86.5	58.4
AIDB (DBE)	43.0	28.7	26.8	11.2	10.6	10.1	19.0
HSB (CBB)	11.0	8.8	5.1	2.7	6.3	3.4	0.8
Private Banks	-	-	-	-	-	-	21.8

Source: calculated from NBE Annual Report, various issues, and other unpublished sources.

As noted earlier, the interest rate spread for banks is narrow, perhaps too narrow to encourage entry if we consider the high cost of default risk implied by the required high provisions on bad and doubtful loans (100% and 50% respectively), and administrative costs, hence transactions costs of lending, and the non-earning reserve requirements. Such narrow spread, if it were the result of competition, would indicate efficiency of intermediation. However, being the result of *policy limits* and *preceding competition*, this spread may rather hinder competition since it does not give much incentive for new entrants to come in. It may also reduce the willingness of existing banks to attract interest-bearing deposits. It is also likely to hinder growth and branch expansion of existing banks. With this margin, the small banks may find it difficult to raise additional capital through new equity or retained earnings; the potential profits (compared to other sectors) are not attractive for new investors, and for existing bank shareholders to forego dividends in favor of re-investment. The relatively low dividend income tax (10%) and high capital gains tax (30%) may also induce preference for dividends over retention. While it may be argued that the low margin is a good thing as it puts pressure on banks to strive for efficiency (hence consumers may benefit from reduced transactions costs), the extent of underbanking of the economy (and the need to mobilise domestic savings and absence of alternative mechanisms of savings mobilisation such as post office savings facilities) calls for more banks and branches. For example, the population per bank branch is 232,098 (or 4.2 branches per 1 million persons) compared to branches per 10,000 persons of 2.4 in Italy, 6.5 in France and Germany, and 4.3 in Britain (more on this later). In view of this and the limit on the ability of existing banks to grow, allowing participation of foreign banks (through wholly owned bank subsidiaries, bank branches, or partnership with local investors)[50] may be desirable. This is in addition to the usual arguments for foreign banks participation arising from their role in enhancing credibility of reforms and modernisation of the banking system, as sources of additional capital and expertise, and their higher ability to make prudent risk judgement as well as to diversify risk over a wider international portfolio.

T-bill Market

There has been a gradual increase in sales volume of T-bills (from Br 210 million during the first auction to Br 830.5 million in the 82nd auction). However, the bills are mainly absorbed by institutional investors (such as the Pension Fund and the CBE[51])

and public enterprises rather than the private sector; the SSA, lacking alternative interest-bearing assets (CBE and other banks being reluctant to accept huge interest-bearing institutional deposits), and the CBE, with its excess liquidity,[52] have high demand for T-bills (as alternative to excess cash holdings), thereby depressing the auction-based nominal yield. Besides, investing in T-bills involves transaction costs. Hence, savers prefer savings and time deposits. Although some attribute the limited participation in the T-bill market by private institutions and the general public to the high minimum denomination of the T-bills (which was Br 50,000), its reduction to Br 5,000 (effective 26th August 1998) has not resulted in any noticeable change in participation;[53] neither the number nor the nature of participants has changed. The T-bills market thus remained thin and shallow with no participation by the general public (see Gebrehiwot, 1998d for an analysis of the T-bill market).

We now turn to an assessment of the extent of financial deepening and structure of the financial sector.

3. FINANCIAL DEPTH AND STRUCTURE OF THE FINANCIAL SECTOR

There are several indicators of financial sector development used in the literature, which, while individually imperfect, together give a useful picture of financial development. One is the relative size of the formal financial intermediary sector measured by the ratio of liquid liabilities of the financial system to GDP (liquid liabilities being currency outside banks, demand and other interest bearing liabilities of banks and non-bank financial intermediaries- M3 or M2). It indicates the degree to which the formal financial sector mobilises domestic savings. A second indicator is the ratio of stock market capitalisation to GDP (or GNP) which measures stock market development (i.e. relative equity market size): A higher ratio reflects greater financial development since better developed stock markets make it easier for individuals to price and diversify risk, to raise capital, and to take-over poorly managed[54] firms. The number of listed firms, trading volume and market concentration also give useful insights into the level of capital market development. A third measure is the share of private non-bank financial intermediary assets in total financial assets; it measures the importance of non-bank financial institutions that complement commercial banks and often also function as effective substitutes for the commercial banking sector when the latter is suppressed by regulations or taxation. A fourth measure is the degree of government ownership of commercial banks, indicating bank independence (or the lack of it) from government (Demirguc-Kunt and Levine, 1996).

In terms of the first indicator, deposits as ratio of GDP amounted to 29% while the broad money (M2) to GDP ratio was 45% in 1995/96. The latter, while high compared to countries like South Korea and Kenya, is still low compared to some East Asian countries such as Thailand and Malaysia (see Table 6). Size of the financial sector in

terms of its contribution to GDP remained low, reaching 7.2% in 1997/98, its highest ever.

Table 6. Broad Money (M2) as % of GDP - Comparative Data

Country	M2/GDP (%)
Ethiopia	45.0
South Korea	41.0
Kenya	38.0
Zimbabwe	26.0
Nigeria	25.0
Malawi	15.0
Thailand	74.0
Malaysia	85.0

Source: World Development Indicators CD-ROM, World Bank, February 1997.

Until 1994, the formal financial sector consisted of a central bank, three banks, two contractual financial institutions (the EIC and SSA) and about 484 Savings and Credit Co-operatives (SACCs[55]). Recently, financial sector size has increased through both branch expansion of the state-owned financial institutions and emergence of new private ones. Currently, there are eight banks, nine insurance companies and nine microfinancing institutions,[56] in addition to the EIC, SSA, and the SACCs. The emergence of microfinancing institutions, mainly designed to provide rural banking services, is an important step in the direction of financial deepening and, if successful, will fill a large gap in financial intermediation: mobilising small savings of and providing financial services (including interest-bearing financial assets) to the rural population which constitute about 85% of the total; whereas individual savings in rural areas may be small, the aggregate amount that could be mobilised, given the population size, is likely to be large.[57]

Nonetheless, the share of private non-bank financial intermediary assets in total financial assets is generally low. Besides, non-bank financial institutions (such as finance houses, leasing companies, discount houses, and venture capital schemes) as sources of finance to complement (let alone substitute) bank finance, have yet to emerge. Stock and corporate bond markets do not exist. In developed countries institutional investors such as mutual funds (unit trusts) and insurance companies, including private pension funds, are important sources of long-term corporate finance (as well as contributing to corporate governance). In Ethiopia, private pension funds are non-existent. The public pension funds are far from being important sources of investment finance. Although the SSA runs three separate *mandatory, contributory* and, *de jure, funded* public pension schemes[58] to which both employees and employers contribute, in the first two schemes contributions consistently failed to meet pension payments, forcing the government to adopt a *de facto* pay-as-you-go system (instead of the legislated fund system), paying benefits to civilian and military pensioners out of the national budget (Gebrehiwot, 1991b).[59] Though there are a large number of SACCs, they face legal restrictions on mobilisation of resources as

well as on the use of their funds in that they can only accept deposits (other than the regular contributions) from and lend to their members (and are subjected to reserve requirements), hence, do not serve as alternative sources of firm credit. However, since their funds are deposited in banks they are available for bank lending to firms, although this potentially involves a financial layering, hence high intermediation cost.

The structure of the financial sector has been characterised by high concentration in terms of ownership, asset portfolio (i.e. limited diversification across sectors, regions, etc.) as well as institutional, sectoral and geographic distribution of intermediation activities. All financial institutions except the SACCs (which hold just less than 1% of the sector's assets and lend only to their members) were state-owned, and had a common board. Although state ownership has continued, direct government control over them has been reduced considerably not just because they have autonomy but, more importantly, because *legislative* limits have been imposed on bank loans to the government). Banks dominated in the financial sector, accounting for more than 93% of net assets during 1986-1990. Within banks, two banks, the NBE and CBE, between them accounted for more than 71% of net bank assets. CBE and AIDB were the most important channels for bank loans, their share reaching 89% of non-central bank lending.

Another feature of the Ethiopian banking system is geographic concentration of services. For example, according to the World Bank (1991), about 80% of CBE and AIDB loans and 91% of HSB loans were in Addis Ababa, which is residence for only 5% of the population. There was no policy requiring banks to plough back a certain percentage of the mobilised deposits in the same area, to prevent the siphoning out of resources from rural and semi-urban areas for lending in major urban centres.

Financial deepening as measured by bank branch density, although still shallow, has increased recently. The population per branch, which was 276,923 persons (or 3.6 branches per 1 million population) in 1990, fell to 232,098 (or 4.2 branches per million) in 1997 (The figure will obviously be smaller if the microfinancing institutions are included, for which we have no information on number of branches.). Comparing this with the number of bank branches per 10,000 inhabitants of 2.4 in Italy, 6.5 in France and Germany, and 4.3 in Britain suggests the extent of under-banking. It should also be noted that most of the bank branches are concentrated in urban areas (see Annex 2) while a large majority of the population lives in rural areas with little or no modern transport link with the urban areas. Moreover, some of the branches provide very basic services only.

In summary, priority access to cheap credit by the public sector has been eliminated; limits on bank loans to the government imposed; private sector discrimination in credit removed; interest rates liberalised (i.e. administrative fixing of interest rates abolished and nominal rates increased); state-owned banks (and enterprises) restructured, made autonomous and use commercial criteria; private sector entry into banking permitted; and generous investment incentives introduced. However, there exist

some regulatory gaps with respect to ownership concentration, inter-locking, transactions with related parties, etc. Despite the emergence of a number of private banks, the state-owned banks remain dominant in terms of both assets and market share partly because the private banks are small.

Notes

[1] Following the mass movement of February 1974, the Co-ordinating Committee of the Armed Forces, the *Derg*, formed on 27 June 1974, declaring "*Ethiopia Tikdem*" (Ethiopia First) as its motto in July 1974, usurped power on September 12, 1974, establishing the Provisional Military Government of Ethiopia, PMGE.

2 However, this motto was quickly interpreted by some political organizations and activists as an indication of the fascist nature of the Derg government, drawing an analogy with the motto used by Mussolini, *Italia Grande*.

3 The nationalized private banks are the Addis Ababa Bank S. C. (60% domestic owned) and two fully foreign owned banks, namely Banco di Roma (Ethiopia) S. C., and Banco di Napoli (Ethiopia) S. C. The three were consolidated to form the Addis Bank (Proc. No. 69/1975), which itself was later merged with the CBE (Proc. No. 184/1980).

4 The state-owned banks were NBE, CBE, Development Bank of Ethiopia, Ethiopian Investment Corporation, Savings and Mortgage Corporation of Ethiopia S. C., and Imperial Savings and Home Ownership Public Association.

5 MIGA is an agency established on April 12, 1988 as an affiliate of the World Bank Group to provide international investors guarantee against risks such as currency transfer, expropriation, war and civil disturbance and breach of contract of the host government; and to provide advisory services to its member developing countries on means to improve their attractiveness to foreign investors.

6 Total assets of SACCs in 1990 were Br 90 million.

7 AIDB was re-established in 1979 by reorganizing the Agricultural and Industrial Development Bank S. C. (Proc. no. 158/1979).

8 HSB was created by merging the Savings and Mortgage Corporation of Ethiopia S. C. and the Imperial Savings and Home Ownership Public Association (Proc. no. 60/1975).

9 CBE was created in 1963 as a result of the division of the State Bank of Ethiopia, which has been discharging both central bank and commercial bank functions since its establishment in 1942. Accordingly, the National Bank of Ethiopia was created to do central banking functions and the CBE to do commercial banking business (Proc. No. 207/1963).

10 These restrictions meant that public enterprises lacked liquid asset management options.

11 EIC was established in 1975 by consolidating all existing insurance companies, almost all foreign owned, which were nationalized (Proc. No. 68/1975).

12 Informal or less formal traditional ones like Iddir exist in large numbers.

13 For Financial Institutions and Government Owned Undertakings 1%; Private Organizations, Urban Dwellers Associations, other Mass Organizations and Professional Associations 4-5.5%; and Individuals, Savings and Credit Cooperatives, Idir, Ikub 6-7.5% (NBE 1986a).

14 One possible argument for this is that it is less costly for the government to self-insure. This, as noted by the World Bank (1991), ignores the benefits to be obtained from partial re-insurance abroad, especially for very large enterprises. Besides, EIC being the only insurance company and publicly owned, what may be paid as insurance premium by public enterprises ultimately goes to the government anyway (in the form of capital charges, profits, excise, sales and transaction taxes, transfer of residual surplus, etc.).

15 According to the Financial Sector Review (1991) of the World Bank, banks also used to require personal guarantors to appear, together with their spouses, in banks to jointly sign documents in connection with the guarantee, which is an additional hassle to borrowers.

16 There were so many cases of this type that the TGE found it necessary to enact a proclamation (Proc. No. 110/1995) for the return "to their rightful owners" of properties expropriated by various organs of the *Derg* regime in violation of the relevant proclamations issued by the regime itself. As in October 1997, in Addis Ababa alone, 64 properties expropriated this way have been returned to their former owners.

17 The NBE, the central bank, has been empowered to impose accounting rules, to enforce its decisions in line with its regulatory and supervisory responsibilities, etc. and has established a supervision department and is training supervisors. However, a lot more needs to be done in the area of supervision capacity building for the NBE to cope with its task of supervising financial institutions engaged in modern banking businesses employing modern technology.

18 By 60-900% and 58- 144%, respectively. Lending rates, which, during repression, ranged between 4.5 - 9.5%, depending on the type of ownership and sector, were raised to 11 - 15% depending on the sector, but not ownership until September 1994. Deposit interest rates, which ranged between 1-7.5% for time deposits, and 6% for savings deposits up to Br 100,000 and 2% above that, were raised to 10 -12%.

19 The main ones include: the Proclamation to Provide for the Transfer of Doubtful Banks' Debt to the Government No. 75/1993; the Monetary and Banking Proclamation No. 83/1994; the Licensing and Supervision of Banking Business Proclamation No. 84/1994; the Licensing and Supervision of Insurance Business Proclamation No. 86/1994; NBE/INT 2/1994; NBE/INT 3/1994; NBE/INT 4/1994; the Social Security Authority Establishment Proclamation No. 38/1996; the Licensing and Supervision of Micro Financing Institutions Proclamation No. 40/1996; and the Civil Code (amendment) Proclamation No. 65/1997.

20 One argument for setting a floor is to promote financialisation of savings or to prevent banks, given lending rate ceilings, from pushing deposit interest rates too low such that bank deposits become less attractive relative to other domestic assets (including real assets) and foreign assets.

21 Given the dominance of the CBE in the payments system, share in total deposits and loans, and the fact that it is state-owned, despite the budgetary implications of a bailout, it is hard to imagine that the government will let it fail should trouble occurs. And it will be wrong to let it fail under the current circumstances. In other words, there is an implicit deposit insurance. In addition to encouraging excessive risk taking by the CBE (moral hazard), this may encourage existing banks to grow large (and establishment of new large ones) to achieve a too-big-to-fail status/size rather than large number of small banks *ipso facto* undermining development of a competitive banking system. Moreover, that it is state-owned makes the cost of bail-out higher than would have been if it were private since the bank's capital, which is the first line of defense, also belongs to the state. The cost to the public of rescuing failing financial institutions is lowered by making other financial institutions (through persuasion or pressure by monetary authorities) share the costs (i.e. provide the fund required); after all, they are also affected (both financially as well as in terms of the public's loss of confidence in financial institutions in general, and consequent business decline) by such failures. Such cost sharing is, however, possible only if financial institutions with enough resources exist. None of the banks currently in existence has the capacity to participate, hence any cost of bail out is likely to be born entirely by the tax payer, with implication on the budget.

22 Although some concerns are voiced with respect to the composition, independence, performance, etc. of management boards of some state owned enterprises and banks (e.g. see various papers in Tegegne and Molla, 1997).

23 In addition, the state-owned banks made significant pay rises to their employees.

24 Special government bonds of value equal to debts so transferred were issued to creditor banks, and the Ministry of Finance is authorized to collect these debts from the concerned public enterprises and cooperatives.

25 Although a necessary step, re-capitalisation/clean-up may create expectation of bail-outs in the future unless it can be credibly signaled that there will be no repeat of this. A good example is Hungary: it had to recapitalise its large state banks four times since 1991, at large budgetary cost, "because bank management practices and borrower incentives did not change enough to avoid the need for new rounds of re-capitalisation"; re-capitalisations were not accompanied by needed reforms in bank ownership, management, and governance, and have been undermined by lack of fiscal discipline and resistance to privatization and liquidation (Borish, Long and Noel, 1996).

26 With large bad loans, banks may lack incentives to price accurately the risks of new loans while managers may have little benefit from being prudent in lending "relative to a high-risk gamble that could keep them in business". Bad loans also destroy the incentive for the insolvent firms to maximize profit (Fries and Lane, 1994).

27 However, there is still *functional separation* between baking and insurance, and the two groups of financial institutions are subject to different regulatory and supervisory rules banks being subject to stricter rules and standards (i.e. capital, professional, age, character, reporting, etc. requirements are higher).

28 One argument against decentralization of loan decision-making is that it reduces bank's control over loan portfolio quality.

29 According to the banking proclamation, no person who is declared bankrupt or made a composition with creditors in Ethiopia or elsewhere, or is convicted of an offence involving dishonesty or fraud in Ethiopia or elsewhere, or has been a director, manager, or principal officer of or otherwise directly or indirectly concerned in the management of any bank that has been wound up whether in Ethiopia or abroad shall without written approval of the NBE act as a director, manager of principal officer or otherwise be directly or indirectly concerned in the management of any bank in Ethiopia (see also NBE Directive No. SBB/1/94).

30 Financial institutions need to be specially regulated and supervised (differently from other firms) to ensure solvency because bank failure, unlike firm bankruptcy, is likely to have economy wide consequences. Besides, the potential for fraud and other forms of abuse by insiders tends to be greater.

31 ownership by a single shareholder (jointly or severally with spouse and/or with a person who is below the age of 21 and related to him/her consanguinally in the first degree relationship) is limited to a maximum of 20% of the bank's shares. A bank has to be a share company with its shares fully subscribed, their total par value paid up and deposited, and shares should be of one class, registered ordinary and of same par value. However, even the 20% is probably on the high side; it is high enough for a shareholder to have controlling ownership.

32 The need for regulatory limit on ownership *concentration* is based on two costs that are likely to arise when ownership is concentrated, namely non-diversification of core investors and the agency problem it creates which results in expropriation of minority shareholders by large ones. However, some trade-off is involved to the extent that concentrated ownership ensures that there are shareholders with high enough stakes, hence incentives, to monitor managers (i.e. reduce the free-rider problem which occurs among small shareholders), thus reduce the principal-agent problem between management and shareholders (Jensen and Meckling 1976; Fischel 1986; Shleifer and Vishny 1986). For a summary review of the information asymmetry and agency (incentive) problem issues in the area of finance see also Ageba (1998a, chapter 6).

33 The 8% incorporates risk exposures arising from off-balance sheet items like guarantees and loan commitments of banks, in addition to the risk-weighted bank assets.

34 Banks are not allowed to pay dividends or make any transfer from profits (other than a transfer to its Legal Reserve Account) until the minimum capital and reserve requirements are met.

35 In 1988 the Basle Committee on Banking Supervision adopted an international standard for capital adequacy to account for credit risk. The minimum standard, according to the 1988 Basle Accord, is 8% and incorporates, in addition to risk-weighted bank's assets, off-balance sheet exposures/activities such as guarantees and loan commitments of banks. This is also recommended by the Bank for International Settlements (BIS), the Switzerland based international organisation established in 1933 "to promote central bank co-operation and provide additional facilities for international financial operations", i.e. a central bank of central banks.

36 The 8% risk-weighted Basle capital adequacy requirement is, in a sense, arbitrary. For discussion on the arbitrary nature of capital adequacy ratios and an alternative suggestion see Goodhart (1997). For criticism of the inadequacy of the 8% Basle ratio in the context of developing countries see Caprio, Atiyas and Hanson (1993). However, the adoption of an international standard by *legislation* (i.e. as a rule rather than leaving it to the discretion of the central bank) in itself is of some significance: it signals a commitment on the part of the authorities to build a sound and safe banking system.

37 The *absolute* limits on single borrower loans (Br 500,000 and Br 1 million in the case of AIDB and CBE respectively) which were in place during the socialist period were eliminated.

38 One problem with the limit on exposure to a single borrower to 10% of bank's net-worth is that it puts a limit on the ability of small banks, including most of the new private banks, to serve large corporate customers as far as their capital remains small.

39 While it is not clear whether and to what extent economic agents in Ethiopia use inflation hedging, that inflation has been consistently low (in 1995/96 and 1996/97 in particular) may also have reduced the need for inflation hedges, thereby encouraging a switch out of hedge assets into interest-bearing assets.

40 Whereas repatriation of flight capital is, theoretically, another possible source of growth in deposits, to the best of the author's knowledge there is no systematic study showing whether capital flight of any significance took place in Ethiopia during the period of repression and of any capital repatriation following liberalisation.

41 The shrink in the share of the interest-free demand deposits plus the floor on deposit interest rates have implications on banks' cost of funds which, together with the required high provisions on bad and doubtful loans, increases total costs (more so for the state-owned banks given that loans granted before liberalisation but not yet matured earn the low rates of the repression period, and the substantial rise in wages and salaries). This in turn, together with the ceiling on lending rates, has implications on profits, hence viability, of banks, and, consequently, the health of the banking system. While an investigation of this is beyond the scope of this paper, it is certainly an issue that needs to be addressed in future research.

42 The required reserve ratios were 10% of demand deposits and 5% of savings and time deposits until 1986 when a lower and consolidated ratio of 5% of total deposits was introduced by the Credit Regulation - NBE/CR/2 Reserve Requirement in May 1986. Only the CBE was subject to the statutory reserve and liquidity requirements (i.e. liquid assets equal to 20% of its short-term liabilities were required in addition to the reserves of 5% of its total deposits as non-earning deposits with the NBE) until 1994 (Supervisory Regulation - NBE/SU/1 Liquidity Requirement, May 12, 1986); the liquidity ratio has been reduced to 15%. It should be noted though that the excess reserves of the CBE were being on-lent by the central bank, the NBE, to the former AIDB.

43 The reserve requirement for the CBE was increased to 8% effective 19th December 1995. For private banks the reserve and liquidity requirements were lower; 5% and 15% respectively of demand, saving and time deposits and similar liabilities with one month maturity (NBE- SBB/ 5/1995; NBE- SBB/ 6/1995).

44 Short-time liabilities are defined as all liabilities payable in one year including demand, savings and time deposits.

45 In some cases *temporary* high or excess liquidity may be observed which may result from a deliberate decision by a bank facing high non-performing loans (or a requirement by the regulating body) to slowdown new lending until the situation is rectified.

46 Shares in loans and advances disbursed are more appropriate than shares in outstanding credit because the latter, being stocks, include bank loans extended to public enterprises, coops and the central government during the socialist period that are not fully repaid (i.e. partly reflect past credit policy).

47 To engage in long-term insurance business only the capital requirement is Br 4 million while for general insurance it is Br 3 million.

48 Most of the observed decrease in CBE's share in total time deposits resulted from the large time deposits by the Social Security Authority (SSA) with the DBE and CBB which increased the latter's share considerably.

49 Given that reserve requirements are non-interest earning (at least to the extent that the requirement is not met using T-bills), a higher reserve requirement increases the cost of funds to a bank.

50 The main reason for not allowing foreign banks has been the absence of regulatory and supervisory capacity that can cope with foreign banks given their sophisticated technology (a legitimate fear in view of the frequent occurrence of large scale financial scandals and fraud, even in countries with fairly developed regulatory and supervisory capacity, and financial crisis), although, as would be expected, the domestic private banks often put forward the old infant industry protection argument against allowing wholly-owned foreign banks and bank branches, especially into the short-term lending business, while welcoming their participation in partnership with them. Another argument emphasizes the *strategic* nature of the banking industry, hence the need to retain domestic control so as to use financial resources domestically to promote development (whereas foreign banks' credit allocation is guided by their international, as opposed to local, opportunities and strategies) which requires indigenous development of enterprises and institutions (including banks). There are also other arguments for being cautious in allowing foreign banks discussion of which is beyond the scope of this paper. See Stiglitz (1994) for this.

51 Other institutional investors in T-bills include EEPCO (Ethiopian Electricity and Power Corporation), Maritime, and EIC (Ethiopian Insurance Corporation), and Awash International Bank (AIB). Recently, participation by non-bank institutions and private organisations has increased.

52 Since T-bills are among the assets that are accepted by the NBE as liquid assets for the purpose of bank liquidity requirements, they offer banks the opportunity to meet this requirement while at the same time getting a return, albeit small, rather than holding idle cash balances.

53 However, reducing the minimum denomination has both direct and indirect effects of participation which work in opposite directions, and the net effect depends on which of the two dominates; the direct effect (which is positive) is that smaller denomination means that T-bills become within the reach of small savers. The indirect effect arises from the fact that, given the supply of T-bills, which currently depends on the financing needs of the government (rather than as a monetary policy tool), the increase in participation, i.e. higher demand for T-bills, will reduce the yield on T-bills by raising the offer price, (making it less attractive relative to interest-bearing bank deposits) which in turn discourages participation. What incentives do savers have to hold T-bills whose yields are far lower than the return on deposits (even taking safety considerations into account), which involve transaction costs (e.g. bid documentation, including a bid bond equal to 5% of the amount demanded, and redemption process), which are not always available (auctions are held fortnightly), and which are relatively illiquid (T-bills have to be held until the redemption period since there is no secondary market) when they can hold bank deposits with a guaranteed minimum interest of 6%, and which are more convenient (just going to the nearest bank branch) and relatively liquid?

54 Recent empirical evidence, however, indicates that poorly performing firms are not the typical targets of hostile takeovers (see Mayer, 1997).

55 Most of the SACCs are owned by public sector employees partly because the legislation which provided the legal framework during the Derg period, the Co-operative Societies Proclamation No. 138/1978, provides for SACCs to be formed by "individuals working in one undertaking or office" while there were no private enterprises with employees large enough to form SACCs.

56 Considering those registered with the NBE.

57 A quick arithmetic gives us an idea about the potential: with 85% of the 56.4 million Ethiopians living in rural areas, under the conservative and simplistic assumption of an annual average saving of Br 20 per person, close to one billion Br of savings a year could be mobilized. The existence of rural savings which can be mobilized through *appropriate* financial markets has been well documented in the rural finance literature (see Kehnert and Von Pischke 1982; Meyer 1987), which also finds some evidence that the marginal propensity to save in rural areas is higher than usually assumed, even higher than in urban areas (see Alamir 1974; Williamson 1968).

58 These are the Public Service Civilian Pensions Fund, the Public Service Military Pensions Fund and the Pensions Fund for Employees of (government-owned) Undertakings.

59 One major recent step is the finalisation of preparations for the conduct of an actuarial study by an international expert. Currently, SSA faces limited opportunities to invest even the limited funds it has (not more than 1 billion) due to absence of long maturity non-deposit financial assets and the reluctance on the part of banks, CBE in particular, given their excess liquidity, to accept large interest-bearing deposits, forcing it to regularly participate in the T-bills market despite the low yields. A large proportion (about 46%) of its total funds are held as time deposits with DBE and CBB, the rest invested in government bonds and T-bills.

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Notes

[1] Following the mass movement of February 1974, the Co-ordinating Committee of the Armed Forces, the *Derg*, formed on 27 June 1974, declaring "*Ethiopia Tikdem*" (Ethiopia First) as its motto in July 1974, usurped power on September 12, 1974, establishing the Provisional Military Government of Ethiopia, PMGE.

2 However, this motto was quickly interpreted by some political organizations and activists as an indication of the fascist nature of the Derg government, drawing an analogy with the motto used by Mussolini, *Italia Grande*.

3 The nationalized private banks are the Addis Ababa Bank S. C. (60% domestic owned) and two fully foreign owned banks, namely Banco di Roma (Ethiopia) S. C., and Banco di Napoli (Ethiopia) S. C. The three were consolidated to form the Addis Bank (Proc. No. 69/1975), which itself was later merged with the CBE (Proc. No. 184/1980).

4 The state-owned banks were NBE, CBE, Development Bank of Ethiopia, Ethiopian Investment Corporation, Savings and Mortgage Corporation of Ethiopia S. C., and Imperial Savings and Home Ownership Public Association.

5 MIGA is an agency established on April 12, 1988 as an affiliate of the World Bank Group to provide international investors guarantee against risks such as currency transfer, expropriation, war and civil disturbance and breach of contract of the host government; and to provide advisory services to its member developing countries on means to improve their attractiveness to foreign investors.

6 Total assets of SACCs in 1990 were Br 90 million.

7 AIDB was re-established in 1979 by reorganizing the Agricultural and Industrial Development Bank S. C. (Proc. no. 158/1979).

8 HSB was created by merging the Savings and Mortgage Corporation of Ethiopia S. C. and the Imperial Savings and Home Ownership Public Association (Proc. no. 60/1975).

9 CBE was created in 1963 as a result of the division of the State Bank of Ethiopia, which has been discharging both central bank and commercial bank functions since its establishment in 1942. Accordingly, the National Bank of Ethiopia was created to do central banking functions and the CBE to do commercial banking business (Proc. No. 207/1963).

10 These restrictions meant that public enterprises lacked liquid asset management options.

11 EIC was established in 1975 by consolidating all existing insurance companies, almost all foreign owned, which were nationalized (Proc. No. 68/1975).

12 Informal or less formal traditional ones like Iddir exist in large numbers.

13 For Financial Institutions and Government Owned Undertakings 1%; Private Organizations, Urban Dwellers Associations, other Mass Organizations and Professional Associations 4-5.5%; and Individuals, Savings and Credit Cooperatives, Idir, Ikub 6-7.5% (NBE 1986a).

14 One possible argument for this is that it is less costly for the government to self-insure. This, as noted by the World Bank (1991), ignores the benefits to be obtained from partial re-insurance abroad, especially for very large enterprises. Besides, EIC being the only insurance company and publicly owned, what may be paid as insurance premium by, public enterprises ultimately goes to the government anyway (in the form of capital charges, profits, excise, sales and transaction taxes, transfer of residual surplus, etc.).

15 According to the Financial Sector Review (1991) of the World Bank, banks also used to require personal guarantors to appear, together with their spouses, in banks to jointly sign documents in connection with the guarantee, which is an additional hassle to borrowers.

16 There were so many cases of this type that the TGE found it necessary to enact a proclamation (Proc. No. 110/1995) for the return "to their rightful owners" of properties expropriated by various organs of the *Derg* regime in violation of the relevant proclamations issued by the regime itself. As in October 1997, in Addis Ababa alone, 64 properties expropriated this way have been returned to their former owners.

17 The NBE, the central bank, has been empowered to impose accounting rules, to enforce its decisions in line with its regulatory and supervisory responsibilities, etc. and has established a supervision department and is training supervisors. However, a lot more needs to be done in the area of supervision capacity building for the NBE to cope with its task of supervising financial institutions engaged in modern banking businesses employing modern technology.

18 By 60-900% and 58- 144%, respectively. Lending rates, which, during repression, ranged between 4.5 - 9.5%, depending on the type of ownership and sector, were raised to 11 - 15% depending on the sector, but not ownership until September 1994. Deposit interest rates, which ranged between 1-7.5% for time deposits, and 6% for savings deposits up to Br 100,000 and 2% above that, were raised to 10 -12%.

19 The main ones include: the Proclamation to Provide for the Transfer of Doubtful Banks' Debt to the Government No. 75/1993; the Monetary and Banking Proclamation No. 83/1994; the Licensing and Supervision of Banking Business Proclamation No. 84/1994; the Licensing and Supervision of Insurance Business Proclamation No. 86/1994; NBE/INT 2/1994; NBE/INT 3/1994; NBE/INT 4/1994; the Social Security Authority Establishment Proclamation No. 38/1996, the Licensing and Supervision of Micro Financing Institutions Proclamation No. 40/1996; and the Civil Code (amendment) Proclamation No. 65/1997.

20 One argument for setting a floor is to promote financialisation of savings or to prevent banks, given lending rate ceilings, from pushing deposit interest rates too low such that bank deposits become less attractive relative to other domestic assets (including real assets) and foreign assets.

21 Given the dominance of the CBE in the payments system, share in total deposits and loans, and the fact that it is state-owned, despite the budgetary implications of a bailout, it is hard to imagine that the government will let it fail should trouble occurs. And it will be wrong to let it fail under the current circumstances. In other words, there is an implicit deposit insurance. In addition to encouraging excessive risk taking by the CBE (moral hazard), this may encourage existing banks to grow large (and establishment of new large ones) to achieve a too-big-to-fail status/size rather than large number of small banks *ipso facto* undermining development of a competitive banking system. Moreover, that it is state-owned makes the cost of bail-out higher than would have been if it were private since the bank's capital, which is the first line of defense, also belongs to the state. The cost to the public of rescuing failing financial institutions is lowered by making other financial institutions (through persuasion or pressure by monetary authorities) share the costs (i.e. provide the fund required); after all, they are also affected (both financially as well as in terms of the public's loss of confidence in financial institutions in general, and consequent business decline) by such failures. Such cost sharing is, however, possible only if financial institutions with enough resources exist. None of the banks currently in existence has the capacity to participate, hence any cost of bail out is likely to be born entirely by the tax payer, with implication on the budget.

22 Although some concerns are voiced with respect to the composition, independence, performance, etc. of management boards of some state owned enterprises and banks (e.g. see various papers in Tegegne and Molla, 1997).

23 In addition, the state-owned banks made significant pay rises to their employees.

24 Special government bonds of value equal to debts so transferred were issued to creditor banks, and the Ministry of Finance is authorized to collect these debts from the concerned public enterprises and cooperatives.

25 Although a necessary step, re-capitalisation/clean-up may create expectation of bail-outs in the future unless it can be credibly signaled that there will be no repeat of this. A good example is Hungary: it had to recapitalise its large state banks four times since 1991, at large budgetary cost, "because bank management practices and borrower incentives did not change enough to avoid the need for new rounds of re-capitalisation"; re-capitalisations were not accompanied by needed reforms in bank ownership, management, and governance, and have been undermined by lack of fiscal discipline and resistance to privatization and liquidation (Borish, Long and Noel, 1996).

26 With large bad loans, banks may lack incentives to price accurately the risks of new loans while managers may have little benefit from being prudent in lending "relative to a high-risk gamble that could keep them in business". Bad loans also destroy the incentive for the insolvent firms to maximize profit (Fries and Lane, 1994).

27 However, there is still *functional separation* between baking and insurance, and the two groups of financial institutions are subject to different regulatory and supervisory rules banks being subject to stricter rules and standards (i.e. capital, professional, age, character, reporting, etc. requirements are higher).

28 One argument against decentralization of loan decision-making is that it reduces bank's control over loan portfolio quality.

29 According to the banking proclamation, no person who is declared bankrupt or made a composition with creditors in Ethiopia or elsewhere, or is convicted of an offence involving dishonesty or fraud in Ethiopia or elsewhere, or has been a director, manager, or principal officer of or otherwise directly or indirectly concerned in the management of any bank that has been wound up whether in Ethiopia or abroad shall without written approval of the NBE act as a director, manager of principal officer or otherwise be directly or indirectly concerned in the management of any bank in Ethiopia (see also NBE Directive No. SBB/1/94).

30 Financial institutions need to be specially regulated and supervised (differently from other firms) to ensure solvency because bank failure, unlike firm bankruptcy, is likely to have economy wide consequences. Besides, the potential for fraud and other forms of abuse by insiders tends to be greater.

31 ownership by a single shareholder (jointly or severally with spouse and/or with a person who is below the age of 21 and related to him/her consanguinally in the first degree relationship) is limited to a maximum of 20% of the bank's shares. A bank has to be a share company with its shares fully subscribed, their total par value paid up and deposited, and shares should be of one class, registered ordinary and of same par value. However, even the 20% is probably on the high side; it is high enough for a shareholder to have controlling ownership.

32 The need for regulatory limit on ownership *concentration* is based on two costs that are likely to arise when ownership is concentrated, namely non-diversification of core investors and the agency problem it creates which results in expropriation of minority shareholders by large ones. However, some trade-off is involved to the extent that concentrated ownership ensures that there are shareholders with high enough stakes, hence incentives, to monitor managers (i.e. reduce the free-rider problem which occurs among small shareholders), thus reduce the principal-agent problem between management and shareholders (Jensen and Meckling 1976; Fischel 1986; Shleifer and Vishny 1986). For a summary review of the information asymmetry and agency (incentive) problem issues in the area of finance see also Ageba (1998a, chapter 6).

33 The 8% incorporates risk exposures arising from off-balance sheet items like guarantees and loan commitments of banks, in addition to the risk-weighted bank assets.

34 Banks are not allowed to pay dividends or make any transfer from profits (other than a transfer to its Legal Reserve Account) until the minimum capital and reserve requirements are met.

35 In 1988 the Basle Committee on Banking Supervision adopted an international standard for capital adequacy to account for credit risk. The minimum standard, according to the 1988 Basle Accord, is 8% and incorporates, in addition to risk-weighted bank's assets, off-balance sheet exposures/activities such as guarantees and loan commitments of banks. This is also recommended by the Bank for International Settlements (BIS), the Switzerland based international organisation established in 1933 "to promote central bank co-operation and provide additional facilities for international financial operations", i.e. a central bank of central banks.

36 The 8% risk-weighted Basle capital adequacy requirement is, in a sense, arbitrary. For discussion on the arbitrary nature of capital adequacy ratios and an alternative suggestion see Goodhart (1997). For criticism of the inadequacy of the 8% Basle ratio in the context of developing countries see Caprio, Atiyas and Hanson (1993). However, the adoption of an international standard by *legislation* (i.e. as a rule rather than leaving it to the discretion of the central bank) in itself is of some significance; it signals a commitment on the part of the authorities to build a sound and safe banking system.

37 The *absolute* limits on single borrower loans (Br 500,000 and Br 1 million in the case of AIDB and CBE respectively) which were in place during the socialist period were eliminated.

38 One problem with the limit on exposure to a single borrower to 10% of bank's net-worth is that it puts a limit on the ability of small banks, including most of the new private banks, to serve large corporate customers as far as their capital remains small.

39 While it is not clear whether and to what extent economic agents in Ethiopia use inflation hedging, that inflation has been consistently low (in 1995/96 and 1996/97 in particular) may also have reduced the need for inflation hedges, thereby encouraging a switch out of hedge assets into interest-bearing assets.

40 Whereas repatriation of flight capital is, theoretically, another possible source of growth in deposits, to the best of the author's knowledge there is no systematic study showing whether capital flight of any significance took place in Ethiopia during the period of repression and of any capital repatriation following liberalisation.

41 The shrink in the share of the interest-free demand deposits plus the floor on deposit interest rates have implications on banks' cost of funds which, together with the required high provisions on bad and doubtful loans, increases total costs (more so for the state-owned banks given that loans granted before liberalisation but not yet matured earn the low rates of the repression period, and the substantial rise in wages and salaries). This in turn, together with the ceiling on lending rates, has implications on profits, hence viability, of banks, and, consequently, the health of the banking system. While an investigation of this is beyond the scope of this paper, it is certainly an issue that needs to be addressed in future research.

42 The required reserve ratios were 10% of demand deposits and 5% of savings and time deposits until 1986 when a lower and consolidated ratio of 5% of total deposits was introduced by the Credit Regulation - NBE/CR/2 Reserve Requirement in May 1986. Only the CBE was subject to the statutory reserve and liquidity requirements (i.e. liquid assets equal to 20% of its short-term liabilities were required in addition to the reserves of 5% of its total deposits as non-earning deposits with the NBE) until 1994 (Supervisory Regulation - NBE/SU/1 Liquidity Requirement, May 12, 1986); the liquidity ratio has been reduced to 15%. It should be noted though that the excess reserves of the CBE were being on-lent by the central bank, the NBE, to the former AIDB.

43 The reserve requirement for the CBE was increased to 8% effective 19th December 1995. For private banks the reserve and liquidity requirements were lower; 5% and 15% respectively of demand, saving and time deposits and similar liabilities with one month maturity (NBE- SBB/ 5/1995; NBE- SBB/ 6/1995).

44 Short-time liabilities are defined as all liabilities payable in one year including demand, savings and time deposits.

45 In some cases *temporary* high or excess liquidity may be observed which may result from a deliberate decision by a bank facing high non-performing loans (or a requirement by the regulating body) to slowdown new lending until the situation is rectified.

46 Shares in loans and advances disbursed are more appropriate than shares in outstanding credit because the latter, being stocks, include bank loans extended to public enterprises, coops and the central government during the socialist period that are not fully repaid (i.e. partly reflect past credit policy).

47 To engage in long-term insurance business only the capital requirement is Br 4 million while for general insurance it is Br 3 million.

48 Most of the observed decrease in CBE's share in total time deposits resulted from the large time deposits by the Social Security Authority (SSA) with the DBE and CBB which increased the latter's share considerably.

49 Given that reserve requirements are non-interest earning (at least to the extent that the requirement is not met using T-bills), a higher reserve requirement increases the cost of funds to a bank.

50 The main reason for not allowing foreign banks has been the absence of regulatory and supervisory capacity that can cope with foreign banks given their sophisticated technology (a legitimate fear in view of the frequent occurrence of large scale financial scandals and fraud, even in countries with fairly developed regulatory and supervisory capacity, and financial crisis), although, as would be expected, the domestic private banks often put forward the old infant industry protection argument against allowing wholly-owned foreign banks and bank branches, especially into the short-term lending business, while welcoming their participation in partnership with them. Another argument emphasizes the *strategic* nature of the banking industry, hence the need to retain domestic control so as to use financial resources domestically to promote development (whereas foreign banks' credit allocation is guided by their international, as opposed to local, opportunities and strategies) which requires indigenous development of enterprises and institutions (including banks). There are also other arguments for being cautious in allowing foreign banks discussion of which is beyond the scope of this paper. See Stiglitz (1994) for this.

51 Other institutional investors in T-bills include EEPCO (Ethiopian Electricity and Power Corporation), Maritime, and EIC (Ethiopian Insurance Corporation), and Awash International Bank (AIB). Recently, participation by non-bank institutions and private organisations has increased.

52 Since T-bills are among the assets that are accepted by the NBE as liquid assets for the purpose of bank liquidity requirements, they offer banks the opportunity to meet this requirement while at the same time getting a return, albeit small, rather than holding idle cash balances.

53 However, reducing the minimum denomination has both direct and indirect effects of participation which work in opposite directions, and the net effect depends on which of the two dominates; the direct effect (which is positive) is that smaller denomination means that T-bills become within the reach of small savers. The indirect effect arises from the fact that, given the supply of T-bills, which currently depends on the financing needs of the government (rather than as a monetary policy tool), the increase in participation, i.e. higher demand for T-bills, will reduce the yield on T-bills by raising the offer price, (making it less attractive relative to interest-bearing bank deposits) which in turn discourages participation. What incentives do savers have to hold T-bills whose yields are far lower than the return on deposits (even taking safety considerations into account), which involve transaction costs (e.g. bid documentation, including a bid bond equal to 5% of the amount demanded, and redemption process), which are not always available (auctions are held fortnightly), and which are relatively illiquid (T-bills have to be held until the redemption period since there is no secondary market) when they can hold bank deposits with a guaranteed minimum interest of 6%, and which are more convenient (just going to the nearest bank branch) and relatively liquid?

54 Recent empirical evidence, however, indicates that poorly performing firms are not the typical targets of hostile takeovers (see Mayer, 1997).

55 Most of the SACCs are owned by public sector employees partly because the legislation which provided the legal framework during the Derg period, the Co-operative Societies Proclamation No. 138/1978, provides for SACCs to be formed by "individuals working in one undertaking or office" while there were no private enterprises with employees large enough to form SACCs.

56 Considering those registered with the NBE.

57 A quick arithmetic gives us an idea about the potential: with 85% of the 56.4 million Ethiopians living in rural areas, under the conservative and simplistic assumption of an annual average saving of Br 20 per person, close to one billion Br of savings a year could be mobilized. The existence of rural savings which can be mobilized through *appropriate* financial markets has been well documented in the rural finance literature (see Kehnert and Von Pischke 1982; Meyer 1987), which also finds some evidence that the marginal propensity to save in rural areas is higher than usually assumed, even higher than in urban areas (see Alamir 1974; Williamson 1968).

58 These are the Public Service Civilian Pensions Fund, the Public Service Military Pensions Fund and the Pensions Fund for Employees of (government-owned) Undertakings.

59 One major recent step is the finalisation of preparations for the conduct of an actuarial study by an international expert. Currently, SSA faces limited opportunities to invest even the limited funds it has (not more than 1 billion) due to absence of long maturity non-deposit financial assets and the reluctance on the part of banks, CBE in particular, given their excess liquidity, to accept large interest-bearing deposits, forcing it to regularly participate in the T-bills market despite the low yields. A large proportion (about 46%) of its total funds are held as time deposits with DBE and CBB, the rest invested in government bonds and T-bills.

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Annex 1. Percent Growth Rate

year	1984/85	1985/86	1986/87	1987/88	1988/89	1989/90	1990/91	1991/92	1992/93	1993/94	1994/95
Narrow Money				9.7	6.7	19.5	22.9	11.6	10.8	10.5	18.5
- currency outs.	5.9	17.2	9.5	9.5	14.3	25.4	39.6	13.0	13.1	5.6	13.1
net demand dep.	21.6	19.1	14.6	10.0	-0.5	13.1	2.7	9.3	11.8	13.7	26.5
Quasi-money	13.8	15.6	8.1	6.6	15.3	12.3	6.3	18.5	18.8	26.2	39.1
- saving dep.	13.3	15.5	12.2	14.7	13.2	15.2	6.5	19	22.9	15.7	28.3
- time dep.	19.9	-4.3	-41.9	-30.0	36.7	-12.5	4.7	10.5	102.2	23.3	61.9
Broad money				8.9	8.9	17.6	18.7	13.2	12.7	14.4	24.2
Tot. dep	19.5	20.1	5.1	7.3	6.6	12.9	9.2	13.6	20.7	19.0	26.6

Source: calculated from NBE Annual Report, and Quarterly Bulletin, various issues.

Annex 2. Percent Distribution of Bank Branches by Location

Bank	Addis Ababa	other Areas
Commercial Bank of Ethiopia (CBE)	19.4% (33)	80.6% (137)
Construction and Business Bank (CBB)	25.0% (5)	75.0% (15)
Development Bank of Ethiopia (DBE)	5.3% (1)	94.7% (18)
Awash International Bank S. C. (AIB)	63.6% (7)	36.4% (4)
Dashen Bank S. C. (DB)	38.5% (5)	61.5% (8)
Bank of Abyssinia	100% (2)	0.0% (0)
Wegagen Bank S. C.	25% (2)	75.0% (6)
Total	**22.6% (55)**	**77.4% (188)**

Source: National Bank of Ethiopia.
▲ figures in parenthesis are number of branches.

Annex 3. Consolidated Public Sector Deficit as Percent of GDP (A) Sub-Saharan Countries

Country	Percent (period)
Burkino Faso	4.0 (1984-89)
Cote d'Ivoire	8.5 (1981-89)
Ethiopia	15.0 (1981-90)
Ghana	1.05 (1981-88)
Kenya	5.6 (1981-90)
Malawi	5.5 (1981-89)
Nigeria	6.0 (1981-90)
Sierra Leone	7.9 (1981-90)
Zaire	3.3 (1981-89)
Zambia	13.9 (1981-90)
Zimbabwe *	12.4 (1981-90)
Average	7.6

Source: Calculated from Easterly, et al (1994), Table A1, pp. 530-531.
* We could not find such data for the other Sub-Saharan African countries.

(B) Low Income countries

Country	Percent (period)
Burkino Faso	4.0 (1984-89)
Ethiopia	15.0 (1981-90)
Ghana	1.05 (1981-88)
Kenya	5.6 (1981-90)
Malawi	5.5 (1981-89)
Nigeria	6.0 (1981-90)
Sierra Leone	7.9 (1981-90)
Zaire	3.3 (1981-89)
Zambia	13.9 (1981-90)
Indonesia	1.93 (1981-90)
Bangladesh	10.0 (1981-90)
Pakistan	6.7 (1981-90)
Sri Lanka	10.34 (1981-90)
Honduras	8.59 (1981-90)
average (only for those with data)	7.13

Source: Calculated from Easterly, et al (1994), Table A1, pp. 530-531.
* We could not find such data for the other low-income countries.

RETURNS TO SCHOOLING IN ETHIOPIA: THE CASE OF THE FORMAL SECTOR

Wolday Amha*

Abstract

The main objective of this study is to examine and estimate the returns to schooling in one state-owned enterprise i.e. Edget Cotton Factory, and one private enterprise i.e. MOENCO, both belonging to the formal sector in Ethiopia. The earning function was employed to estimate the returns to schooling using primary and secondary sources of information. The main findings of the study are: (a) human capital variables (education and experience), as estimated by the standard rate of return, are most important in influencing wages in the two enterprises; (b) the Mincerian rates of return to primary, junior secondary, senior secondary, diploma-certificate, and above diploma levels in Edget Factory are 3.3%, 5.5%, 2.8%, 18.3% and 11.3%, respectively. The Mincerian regression coefficients, associated with primary education, although positive and significant, do not conform with global patterns observed by Psacharopoulos (1994) who estimated highest returns to primary education; (c) a comparison of the wages of males and females in Edget Factory, showed that, for the same level of educational attainment, males had higher average wages than females. Women, though having more experience within the industry, had less experience outside of the industry and occupied lower-status jobs; (e) rates of return estimated using comparative 1985 and 1996 data for Edget Factory reveal that women were paid less in 1996 compared to 1985, suggesting that their situation in the factory has deteriorated over time. But, for both males and females, a one-year increase in education increased wages from about 9% in 1985 to about 56% in 1996.

1. INTRODUCTION

Education is generally assumed to raise productivity by imparting knowledge and skills that can make a worker more efficient, and hence, more valuable in the labor market. While this is generally accepted, some controversies have arisen in recent years about the value of education. Such controversy surrounds "the screening hypothesis" which argues that, although education raises workers' productivity, employers use it as a screening device for valued attitudes, abilities, social and communication skills which are indirectly fostered by education, rather than as a

* East African Development and Training Consultants, P.O. Box 62929, Addis Ababa. The final version of this article was submitted in August 1999.

means of acquiring required skills directly imparted by education. Some critics go further than the "screening hypothesis" and argue that, in developing countries, education has become a "diploma disease" (Woodhall, 1987). The standard rate of return approach used in this study, assumes that education performs a human capital function rather than a screening or credentialist function.

The expansion of formal education in Ethiopia has been viewed as an important instrument for transforming society. Since 1974, the participation rate in the formal education sector has risen substantially and in 1995, the country had nearly one million students in grades 7 to 12. By the end of this decade, the educational sector is expected to pour out a total of nearly 400,000 secondary school graduates in the labour market (Tekeste, 1996). This drastic expansion of formal education in Ethiopia has been at the cost of quality and this is reflected in high pupil-teacher ratios, increasing numbers of teachers with no specialized training, overcrowding of schools, shortage of educational materials and poor educational management.

The curriculum of Ethiopian institutions of learning has also often been criticized as irrelevant to the needs of the country. To the extent that the existing curriculum has imparted knowledge to them, most Ethiopian students know more about Western history and civilization than Ethiopian realities. Thus, the indiscriminate adoption of imported curricula has produced a youth that does not understand its past and is largely incapable of comprehending the dynamics of social, economic and political change in Ethiopia (Tekeste, 1990).

In July 1994, the Transitional Government of Ethiopia (TGE) issued the Ethiopian Education and Training Policy (EETP), which decentralized education policy decisions to newly created regions. Each region (Kilil) had earlier been granted the right to use its own local language of instruction. With the EETP, each region, zone or wereda (sub-district) became responsible for the provision of primary education (from grade 1 to 8) to its communities. One of the objectives of the new education and training policy is to develop human resource, trained in various skills that can effectively manage and utilize available resources. From an economic point of view, the pursuance of this policy is expected to directly link education with economic growth (TGE, 1994) and, to raise the private and social benefits of education.

Labor market assessments of returns to investment in education in Africa, have consistently found rates of return of above 10% and of above 20% occasionally. Available evidence also suggests that the impact of education is largest in developing countries because of its relative scarcity. However, according to the World Bank (1988), the quality of education in Africa has recently declined and if this trend is allowed to continue, new investments in improving education quantitatively may not yield returns commensurate to those obtained in the past.

In Ethiopia, it can be said that, in the Haile Selassie era, there was increased investment in both the quality and quantity of education. A 1972 study indicated that

the private rates of returns to primary, secondary and higher education in Ethiopia were 35%, 22.8% and 27.4% respectively, while the social rates of return (unadjusted) were 20.3%, 18.7% and 9.7% respectively. Thus, the social costs of education were much higher than the private costs, especially at higher or university level (Psacharopoulos *et al.*, 1985).

The central question to be asked about education in present-day Ethiopia is, therefore, "Should education be expanded, given its costs and benefits? and if yes, what level and type of education should be made to grow faster?". In order to answer these questions, the economic returns to education, at various levels, and in different sectors, should be determined so as to provide baseline information for government policy makers to take appropriate decisions regarding educational investments and priorities to be set at different levels.

The purpose of this study is not as ambitious as to seek to answer the questions raised above which would require comprehensive data and detailed analyses of the returns to education in Ethiopia as a whole. The intent here is rather modest and is to shed some light on what the returns to education may be in the modern formal sector in Ethiopia which has not been the subject of much analysis.

To this end, this study examines the determinants of returns to schooling and looks into other individual characteristics of education in connection with two enterprises (a state-owned and a private one) operating in the formal sector in Addis Ababa. Given that the study relies mainly on data from these two specific enterprises, its findings are, of necessity, restricted in scope and coverage and cannot claim to be representative of the whole of the formal, let alone the informal or rural, sectors in Ethiopia. However, although the results reported in this study should be interpreted with caution, they may serve to highlight some important features of the impact of education in the formal sector.

1.1. Data Collection

This study uses primary and secondary information from various sources to estimate returns to schooling. Secondary information on the returns to schooling in the Ethiopian civil service is first reviewed in relation to recent policy developments. The more specific analysis in the paper largely relies on information collected from the following sources:

a) Edget Cotton and Yarn Factory was selected purposively from among a number of state-owned industries in Addis Ababa. Information on occupation, wages, education, sex, age, experience (within and outside of the industry) was collected for the 843 workers of the factory in 1996. In addition, a 1985 data set of 1074 employees of the factory, used earlier by the author for another study (Wolday, 1988), was used to examine changes in the wage determination process (in relation to education) which have occurred in the factory in the last 11 years.

b) One of the oldest private firms in Ethiopia, MOENCO, was also selected for this study. As in the case of Edget, information was collected on the wages, education, experience, age and occupation of the 180 employees of the company in 1996.
c) Informal discussions were also held with key informants in the above mentioned enterprises specifically, and in the formal sector in general.

1.2. Methods of Analysis

The concept of human capital refers to the fact that, human beings invest in themselves by means of education and training, so as to raise their future income and lifetime earnings (Woodhall, 1987). The earning function or the standard human capital model (described below) is used in this study to estimate the returns to different levels of education and to examine other explanatory variables in the two selected enterprises.

At the outset, it should be noted that analytical methods adopted by researchers are often dictated by the nature of available data sets and that the blind application of the earning function method, which has its own strengths and weaknesses, can lead to misleading results, especially where data are lacking or apply to a small sample. As in other studies, the choice of the functional form for the earning function, in the current study, was a matter of flexibility, computational ease, relevance to purpose, and comparability with previous studies. Bearing this in mind, and following Psacharopoulos (Psacharopoulos, 1987, 1993, 1994) (Psacharopoulos *et al.*,1985), it is postulated in this study that estimates of the profitability of investment in education can be arrived at through the earning function method.

The basic human capital model measures only the average effect of additional schooling and work experience on wages. Additional variables such as sex, occupation, marital status, etc., appear in the earning function. The basic earning function involves the fitting of a semi-log ordinary least squares regression, using the natural logarithm of earnings as a dependent variable, and years of schooling, potential years of labor market experience, and the square of the latter, as independent variables (for empirical results on Ethiopia, see Wolday, 1988).

The classical least square equation (with both dummy and continuous regressors) used has the following functional form:

$$LnY_j = b_o + \Sigma b_j X_j + u \qquad [1]$$

where, Y stands for the level of wages
$X_1, X_2, \ldots X_j$ are observable variables (continuous and dummy) explaining Y
b_js are coefficients;
u is a random unobserved disturbance term with zero mean and constant variance.
b_o is a constant

The earning function or standard human capital model assumes that earning variations among individuals arise from differences in the human capital they possess and in their work experience. The model typically equates human capital with education and assumes that earnings are parabolic in the experience, the function being of the form:

$$\ln W = a+bS+cL+dL_2 + u \quad [2]$$

Where, ln W is the logarithm of individual earnings
S is schooling (either dummy or continuous), i.e. a proxy of cognitive skills or other marketable traits acquired with a certain level of education
L is the number of years of individual experience
u is the error term
a is a constant
b, c, d are coefficients

The coefficient of education (b), in the semi-log model, indicates the percentage increase in wage resulting from a unit change in education. If education is considered as a dummy, the coefficient gives the percentage increase in wage for a specified educational level (primary, junior secondary, etc.), compared to the base level (no education). Mincer (1974) being the first to have used the semi-log earning function in his analysis of the returns to formal schooling, the earnings function is sometimes described as the "Mincerian function". Mincerian returns to education per year are usually adjusted for the opportunity cost of attending school by dividing estimated changes in earnings by the number of years spent in each cycle of schooling (6 years in primary; 2 years in junior secondary; 4 years in senior secondary; 2 years in diploma and certificate; and 2 years above diploma, levels).

Using the above model specification, the returns to different educational levels are estimated in this study for Edget Factory and MOENCO in Ethiopia. A number of variables i.e., education, experience within and outside the industry, occupation, sex, sector, location, change of jobs, union power, etc. are assumed to influence the level of earnings. The explanatory variables which are qualitative in nature are treated as dummies. Given our interest in education, two functional forms, i.e., linear and semi-log, have been used to alternatively compute the education variable in its continuous and dummy forms.

As indicated earlier, the semi-log earnings function is used to estimate the returns to schooling, and the Ordinary Least Squares (OLS) method is used to estimate the earnings function, with monthly wage as dependent variable and the variables specified below as independent variables.

As is apparent from the table below, the sub-categories excluded from the estimation are: for sex, male; for education, illiterate; for occupation, sales workers; and for department services.

Sex	1 if female	0 otherwise
Experience within the industry	Continuous	
Experience outside the industry	Continuous	
Education	Continuous	
Education	Dummy	
Primary (1-6)	1 if primary	0 otherwise
Junior secondary (7-8)	1 if junior secondary	0 otherwise
Senior secondary (9-12)	1 if senior secondary	0 otherwise
Diploma and certificate (13-14)	1 if diploma and certificate	0 otherwise
Above diploma (> 14)	1 if diploma and above	0 otherwise
Occupation	Dummy	
Professional and technical	1 if professional	0 otherwise
Production and related	1 if production	0 otherwise
Administrative and related	1 if administration	0 otherwise
Clerical and related	1 if clerical	0 otherwise
Service workers	1 if service	0 otherwise
Department	Dummy	
Production	1 if production	0 otherwise
Technical	1 if technical	0 otherwise
Administrative	1 if administration	0 otherwise

In addition to the above, descriptive statistics like percentages, means, standard deviations and correlation coefficients, are used to highlight some of the important characteristics of the enterprises studied. A standard statistical package, SPSS, was used to analyze much of the primary and secondary data, and to derive cross-tabulations and multivariate regression results.

2. RETURNS TO SCHOOLING IN A STATE-OWNED INDUSTRY, EDGET COTTON FACTORY

Table 1 presents regression results estimated for Edget Cotton and Yarn Factory in 1996, using the methods described in Section 1.4. As can be seen from the table, the coefficients of human capital, i.e., experience (within and outside the industry) and continuous education, are positive and statistically significant at the 1% level. In contrast, the coefficient of the sex variable is negative and statistically significant at the 5% level.

As shown in Table 1, where education is included as a continuous variable, the return from a one year increase in education in Edget Factory is about 5% and is statistically significant at the 1% level. The returns to different levels of education in the Factory are also presented in Table 2, where education has been treated as a dummy variable. Table 2 reveals that the estimated coefficients of schooling for the binary variables representing primary, junior secondary, senior secondary, diploma-certificate, and above diploma levels of education, are 19.5%, 30.5%, 40.9%, 77.4% and 100%, respectively.

Table 1. Regression Results of the Earning Function (education continuous) for Edget Cotton Factory, 1996

Variables	Semi-log model	
	Coefficient	Standard error
Sex	-0.04460**	0.02130
Experience (within)	0.00934*	0.00130
Experience (outside)	0.01725*	0.00300
Education	0.05281*	0.00250
Professional	0.46550*	0.08500
Production	-0.00920	0.05733
Administrative	0.17690	0.07797
Clerical	-0.11089	0.04833
Service	-0.12470**	0.05763
Department 1 (Production)	0.00219	0.03849
Department 2 (Technical)	0.04687	0.04307
Department 3 (Administrative)	-0.00499	0.04927
Constant	5.33710	0.07180
R^2	0.65000	
F value	131.18000	
N	843.00000	

* Significant at 1% level. ** Significant at 5% level. **Source:** Own computations based on 1996 data for Edget Factory.

As indicated earlier in Section 1.4, in order to obtain the Mincerian returns to education at each level, these coefficients need to be adjusted for the opportunity cost of time spent in school. By dividing the coefficients by factors of 6 for primary, 4 for senior secondary, and 2 for other levels, the Mincerian rates of return to primary, junior secondary, senior secondary, diploma-certificate, and above diploma education, in Edget Factory, are estimated to be 3.25%, 5.5%, 2.8%, 18.25% and 11.3% respectively. As is apparent from these coefficients, the highest return is derived from higher i.e. above diploma level education and the lowest returns for junior secondary and primary education.

Table 2 also shows that the return to a year's experience within the industry is about 1%, while the return to experience outside of the industry is much higher and close to 2%. The coefficients of the dummies for professional and administrative occupational categories are also positive and statistically significant at the 1% and 10% levels, respectively. Thus, if a worker belongs to the professional group in Edget Factory, his/her wage would increase by about 37.7%. Similarly, if a worker is in the administrative category, his/her wage would increase by about 13%. Unlike these two occupations, the other occupational and departmental categories considered (e.g. production, clerical) do not seem to affect the level of wages in Edget factory to any significant degree.

Table 2. Regression Results of the Earning Functions (education dummy) of Edget Cotton Factory, 1996

Variables	Semi –log	
	Coefficient	Standard error
Sex	-0.07519*	0.02165
Experience(within)	0.00856*	0.00129
Experience (outside)	0.01740*	0.00305
Elementary	0.19522*	0.03553
Junior Secondary	0.30490*	0.04483
Senior Secondary	0.40902*	0.03528
Diploma and Certificate	0.77427*	0.03753
Above Diploma	1.00311*	0.09512
Professional	0.37696*	0.09040
Production	-0.02459	0.05730
Administrative	0.12994**	0.07824
Clerical	-0.07398	0.04864
Service	-0.16440	0.05781
Department 1 (Production)	-0.00450	0.39060
Department 2 (Technical)	-0.04690	0.04332
Department 3 (Administrative)	0.02832	0.04995
Constant	5.4058*	0.07146
R^2	0.61	
F Value		
N	843	

* Significant at 1% level ** Significant at 10% level **Source:** Own computations based on 1996 data for Edget Cotton Factory

In both Tables 1 and 2, the estimated coefficients of the sex variable are negative and statistically significant at the 5% and 1% levels respectively, suggesting a negative relationship between earnings and being a female. Indeed, women are less paid than men in Edget Factory, their average income being 7.5% lower than men's. The results of the fitted standard human capital model, using education and experience as explanatory variables, are reported below for male and female workers of Edget Factory.

Results for Male Workers

$$\text{Wage} = \underset{(16.320)}{186.14^*} + \underset{(0.75)}{18.83\,\text{Edu}^*} + \underset{(1.77)}{3.23\,\text{Exp}^*} - \underset{(-0.046)}{0.038\,\text{Exp}^2}$$

$R^2 = 0.55$ N=542

Results for Female Workers

$$\text{Wage} = \underset{(36.07)}{263.37^*} + \underset{(0.178)}{25.60\,\text{Edu}^*} - \underset{(4.747)}{11.009\,\text{Exp}^*} + \underset{(0.169)}{0.493\,\text{Exp}^{2*}}$$

$R^2 = 0.44$ N = 295

Values in parentheses are standard errors of estimates. * Significant at the 1% level.

As is apparent from the above human capital model, education and experience are important variables explaining the variation in wages for both males and females in Edget Factory. While the coefficient of education is significant and positive for both males and females, it is of higher magnitude for females (25.6) compared to males

(18.8). Unlike education, experience appears to be negatively related to the wages of female workers, but positively related to the wages of male workers.

Part of the explanation for these differences between male and female workers in Edget Factory can be found in Table 3, which provides information on the average wages, age, education and experience of Edget Factory workers, disaggregated by sex. As can be seen from Table 3, female workers in Edget Factory are about 3 years younger than men, much less educated (slightly above grade 1) and have less experience outside of the factory (less than one year) than their male counterparts. On average, a male worker in Edget Factory is more than four times educated than a female worker (having reached above grade 6) and earns over 1.5 times the salary of female workers, in spite of the fact that female workers have over 2 years more experience in the industry than males. These figures suggest that women in Edget occupy lower level positions and have a tendency to stick to these positions, probably because of their poor educational background and limited exposure/experience outside of the industry.

Table 3. Gender Differences in Average Wages, Age, Education and Experience in Edget Cotton Factory, 1996

Variables	Male	Female	Both
Salary (in birr)	389.00	256.00	303
Education (grade)	6.165	1.436	3.106
Experience (within), years	14.160	6.70	15.800
Experience (out of the industry), years	1.750	0.72	0.760
Age	44	40.70	42.800
Job grade	5.76	3.81	4.500

Source: Own computations based on 1996 data for Edget Factory

The Chow test (Gujarati, 1988) was also used to test the differences between the regression results for male and female workers of Edget Factory. The results of the test showed that the computed F values were significant, meaning that the regression coefficients in the male and female models were significantly different.

The regression results of the earning function are summarized in Table 4 (male workers) and in Table 5 (female workers). As might be expected, for both males and females, the coefficients of the human capital variables (experience and education) are found to be positive and significant. In contrast, occupation and department do not seem to affect the earnings of female workers, but have a significant influence on the earnings of male workers (the coefficients for professional and administrative occupations were significant at the 5% and 1% levels, respectively). Furthermore, the R^2s derived in the male and female models were 73% and 53%, respectively, indicating that the regression for male workers had a higher explanatory power than the one for females.

Table 4. Regression Results of the Earning Function for Male Workers in Edget Cotton Factory, 1996

Variables	Semi-log	
	Coefficient	Standard Error
Experience (within)	0.00680*	0.00870
Experience (outside)	0.02454*	0.00533
Primary	0.14570*	0.03030
Junior Secondary	0.10934*	0.04290
Senior Secondary	0.41290*	0.04350
Diploma and Certificate	0.82460*	0.04210
Above Diploma	1.08970*	0.10640
Professional	0.18490**	0.10820
Production	0.00930	0.03720
Administrative	0.26510*	0.07180
Clerical	-0.04530	0.03020
Service	-0.07850**	0.03960
Department 1 (Production)	0.17330**	0.73640
Department 2 (Technical)	0.20780**	0.09590
Department 3 (Administration)	0.15890**	0.07390
Constant	5.15090	
R^2	0.73	
F	96.629	
N	542	

* Significant at 1% level, ** Significant at 5% level.
Source: Own computations based on 1996 data from Edget Factory.

Table 5. Regression Results of the Earning Function for Female Workers in Edget Cotton Factory, 1996.

Variables	Semi-log Model	
	Coefficient	Standard Error
Experience (within)	0.01231 *	0.0033
Experience (outside)	0.01820 *	0.0050
Primary education	0.24660 *	0.0702
Junior secondary	0.42280 *	0.0844
Senior Secondary	0.42550 *	0.0619
Diploma and Certificate	0.79030 *	0.0689
Above diploma	0.98200 *	0.1697
Professional and technical	0.32460	0.2162
Production and related	-0.08320	0.2043
Administrative and related	-0.23400	0.2009
Clerical and related	-0.36110	0.2035
Service workers	-0.00310	0.1839
Department 1 (Production)	0.02970	0.0647
Department 3 (Administrative)	-0.13690	0.0682
Constant	5.39570 *	
R^2	0.53000	
F	23.14600	
N	295	

* Significant at 1% level.
Source: Own computations based on 1996 data from Edget Factory.

The estimates of the Mincerian returns to schooling, presented in Table 6, provide further insights on gender differences in Edget Factory. While primary and junior secondary schooling have an important influence on female wages, yielding rates of 4.1% and 8.8%, respectively, they have a lesser or even a negative influence on the wages of male workers (rates of 2.4% and -1.8%, respectively). These results reinforce the suggestion made earlier that women, in Edget factory, are employed in lower level jobs, requiring little if any educational qualification, while men usually hold better paying positions requiring some secondary or higher level education. Indeed, the returns to schooling are much higher for males at senior secondary (7.6%), diploma (20.6%) and above diploma (13.3%) levels.

It is also striking that, while returns to education, in the factory as a whole, are highest for diploma-certificate (18.31%) and above diploma (11.3%) education levels, they are consistently lower for female relative to male workers. Thus, the estimated return to diploma and certificate level averaged 20.6% for males and 18.2% for females, while the equivalent rates for males and females at above diploma level stood at 13.3% and 9.6% respectively. Given that these differences occur between male and female workers with the same educational attainment, they imply that educated women in Edget Factory are discriminated against and that this bias increases as women advance from diploma/certificate to above diploma level.

Another result of this study as indicated in Table 6 is that, in the factory as a whole, the returns to primary education (3.3%) are lower relative to higher educational levels. This result is similar to that of Appleton (Appleton *et al.*, 1994) for Ethiopia, Uganda and Cote d'Ivoire, and of Tesfayi and Krishnan (Tesfayi et al., 1997) for Ethiopia. But, the result conflicts with the widely accepted finding of Psacharopoulos (Psacharopoulos, 1994) who estimated highest returns to schooling for primary education, at global level. This conflicting finding may partially be explained by the small sample size in this study, which has mainly relied on cross-sectional data for two enterprises in Addis Ababa. Nevertheless, the finding may serve to point to the need for adopting a differentiated policy approach in attempting to promote education in the modern, largely urban-based, formal sector in Ethiopia.

Table 6. Mincerian Returns to Schooling in Edget Cotton Factory, 1996

Level of Education	Returns for Males (%)	Returns for Females (%)	Both Sexes (%)
Primary	2.4	4.1	3.30
Junior secondary	-1.8	8.8	5.50
Senior Secondary	7.6	0.0	2.80
Diploma and Certificate	20.6	18.2	18.31
Above Diploma	13.3	9.6	11.30

Source: Own computations based on 1996 data from Edget Factory.

3. THE RETURNS TO SCHOOLING IN EDGET FACTORY: A COMPARATIVE ANALYSIS

This section attempts to compare the returns to education estimated above for Edget Factory in 1996 with those estimated in 1985, on the basis of earlier work done by the author (Wolday, 1988). For consistency, all workers who were reported as working in the Edget factory in 1985 and 1996 were included in the estimation of the earning function from which rates of return to schooling were computed. Tables 7 and 8 report summary regression results for Edget Factory in 1985 and 1996, first treating education and experience as continuous variables (Table 7), and second treating these variables as dummies (Table 8).

In both 1985 and 1996 (Table 7), the experience variable is found to be positive and significant at the 1% level in absolute terms, though in relative terms, the returns to experience appear to have substantially declined between 1985 and 1996. Professional and administrative occupation variables have become significant in 1996. In both 1985 and 1996, the coefficient of the education variable was also positive and statistically significant at the 1% level. A one-year increase in education level is estimated to have increased wages from about 9% in 1985 to 56% in 1996, implying that the returns to education have risen substantially during the past decade. Much of this increase could be due to the wage restructuring process that took place in Edget Factory in 1995. Under the new structure all activities in the factory are categorized by job grades for which corresponding wage rates were determined. An attempt at relating the new job grades to the education level of workers yields the following regression results:

$$\text{Job grade} = 3.347^{*} + 0.372\ \text{Education}$$
$$(0.699) \quad (0.0115)$$
$$R^2 = 0.55 \quad N = 843 \quad \text{(values in bracket are standard errors)}$$

The above regression results indicates that the coefficient of the education variable is positive and significant at the 1% level, and education explains 55% of the variation in job grades in the factory.

The Ordinary Least Squares (OLS) estimates of the determinants of earning are given in Table 8. Judged by the adjusted R^2 (70% in 1985 and 63% in 1996) and F statistics in Table 8, the models used appear to have produced relatively good results. While the returns to education were negative and mostly significant at the 1% level in 1985, they are found to be positive and significant at the 1% level, for all levels of education, in 1996. In 1996, the returns to education increased gradually from lower to higher education levels, reaching an all time high of over 100% at tertiary level. Similarly, the returns to experience were generally positive and significant at the 1% level in 1985, they turn out to be negative (though not very significant) in the 1996 earning function. In contrast to 1985, the variable sex is also negative and significant at the 1% level in 1996, implying a deterioration in the wage

situation of females in the factory, probably resulting from their poor education and literacy status.

Table 7. Regression Results with Education and Experience as Continuous Variables using comparative 1985 and 1996 data for Edget Cotton Factory

Variables	Semi-log model			
	1985		1996	
Education	0.08760*	(0.0033)	0.5641*	(0.0022)
Sex	0.02250	(0.0208)	0.0608*	(0.0192)
Experience	0.02100*	(0.0017)	0.0087*	(0.0013)
Marital status	-0.09190*	(0.0235)		
Professional	-0.00300	(0.1355)	0.4389*	(0.0843)
Production	0.40540*	(0.1346)	0.0033	(0.05469)
Administrative	0.04010	(0.1408)	0.2152*	(0.0777)
Clerical	-0.24610**	(0.1479)	-0.1311*	(0.0489)
Service	0.24560***	(0.1837)	-0.0999***	(0.0576)
Constant	4.54020		5.3514	(0.0623)
R^2	0.65170		0.6385	
F ratio	146.102		186.015	
N	1061		238	

* Significant at the 1% level; **Significant at the 5% level; ***Significant at the 10% level.
Note: Values in parentheses are standard errors.
Source: Own computations based on 1996 data from Edget factory and Wolday (1988).

Table 8. Regression Results with Education and Experience as Dummy Variables using Comparative 1985 and 1996 Data for Edget Cotton Factory

Variables	Semi-log model			
	1985		1996	
Read and write	-1.4589*	(0.1974)	0.21320*	(0.03590)
Primary	-1.5933*	(0.2018)	0.31870*	(0.04677)
Junior secondary	-1.2478	(0.2107)	0.44320*	(0.03570)
Secondary certificate diploma	-0.7615*	(0.1961)	0.80480*	(0.03490)
Degree and above	-0.1608	(0.1994)	1.07060*	(0.08530)
Sex	0.3095	(0.2764)	-0.34000*	
Exp 1-3 years	-0.0148	(0.0197)	-0.09429	(0.02007)
Exp 4-8 years	0.0761*	(0.0283)	-0.00009	(0.00061)
Exp 9-14 years	0.1026*	(0.0273)	-0.13440*	(0.04723)
Exp 15-22 years	0.3309*	(0.0431)	-0.06636**	(0.03470)
Exp 15-22 years	0.3648*	(0.0431)	-0.05285	(0.33796)
Exp 26-28 years	0.4443*	(0.0492)	0.02128	(0.45300)
Marital status	-0.0750*	(0.0218)	-0.34000*	
Prof. and technical	0.0256	(0.1266)	0.28670*	(0.08930)
Production	-0.3597	(0.1256)	-0.05399	(0.05510)
Adm. and Management	0.0347	(0.1317)	0.11600	(0.07850)
Clerical	-0.2188***	(0.1383)	-0.11920*	(0.04955)
Service	0.2526***	(0.1756)	-0.1659	(0.05810)
Constant	6.0989		5.6449	(0.06460)
R^2	0.6980		0.63234	
F ratio	123.638		91.616	
N	1062		842	

* Significant at 1% level, ** Significant at 5% level, *** Significant at 10% level.
Note: Values in parentheses are standard errors.
Source: Own computations based on 1996 data from Edget factory and Wolday (1988).

4. RETURNS TO SCHOOLING IN A PRIVATE FORMAL SECTOR ENTERPRISE (MOENCO)

The 1974 nationalization of private firms in Ethiopia seriously damaged development prospects for an emerging private sector. Today, Ethiopia is almost starting from scratch to create an entrepreneurial class, equipped with energy, national commitment, a competitive spirit, ethics, skills and the necessary capital to run private business. One of the few private firms that managed to survive in the formal sector under the former Derg regime, and is still operative today, is MOENCO, for which the earnings function and returns to education are estimated in this section. Apart from being one of the oldest private companies in Ethiopia, MOENCO was selected for this study because of its modern organizational structure and relatively large workforce.

As in the case of Edget Factory in previous sections, models using both continuous and dummy regressors are estimated by Ordinary Least Square (OLS) method for the entire staff of MOENCO. Table 9 summarizes the regression results of the earning function where education is treated as a continuous variable. As shown in Table 9, the variables included in the semi-log model explain about 63% of the wage variation in MOENCO. Among the variables, education and experience are the only ones that are positive and significant (at the 1% level). Since it is possible to interpret these variables as percentage wage effects (given that the dependent variable in the semi-log model is in natural logarithmic (ln) form), it appears that each year of experience in MOENCO increases wages by 4.9% on average. Similarly, each year of additional schooling results in an 8% increase in wages. The other variables in the model, including sex and occupation, are found to be insignificant.

Table 9. Regression Results of the Earning function (education continuous) in MOENCO, 1996

Variable	Semi-log model	
	Coefficient	Standard error
Sex	0.06525	0.08358
Experience	0.04862*	0.00330
Education	0.07958*	0.00800
Professional	0.05493	0.27820
Production	-0.04042	0.10899
Administrative	-0.86729	0.27710
Clerical	-0.08644	0.12917
Service	-0.14599	0.11462
Constant	4.958	0.15490
R^2	0.63	
F Value	36.77	
N	170	

* Significant at 1% level.

Source: Own computations based on data got from MOENCO

Table 10 shows that the variables in the model explain about 64% of the variation in wages in MOENCO. Wages in the company increase with experience, an additional year of experience resulting in a wage increase of 5.1%. Among education

categories, post-diploma education has a positive and significant influence, yielding a return of about 20%. Among educational categories, primary and junior secondary levels are significant at the 1% and 5% levels, other variables in the model being negative and insignificant.

Table 10. Regression Results of the Earning Functions (education dummy), MOENCO 1996

Variables	Semi-log model	
	Coefficient	Standard error
Sex	0.042380	0.08305
Experience	0.051475*	0.00330
Primary Education	-0.656400*	0.17828
Junior Secondary Education	-0.416300**	0.18790
Senior Secondary Education	-0.234660	0.17000
Diploma and Certificate	0.165590	0.17090
Above Diploma	0.177200*	0.30420
Professional	-0.008700	0.27550
Production	0.028890	0.10996
Administrative	-0.725100	0.27666
Clerical	-0.008216	0.13074
Service	-0.065010	0.11535
Constant	5.859390	0.19839
R^2	0.64	
F value	26.102	
N	170	

Note: * Significant at 1% level. ** Significant at 5% level.
Source: Own computations based on data from MOENCO.

An attempt to estimate the relationship between job grading and education in MOENCO yielded the following results:

$$\text{Job grade} = 2.2163^{*} + 0.2029^{*}\ \text{Education}$$
$$(0.379)\quad (0.0340)$$
$$R^2 = 0.1735$$

(Values in bracket are standard errors.)

Table 10 reveals that education is positive and significant at the 1% level, and explains about 17% of the variation in job grading in MOENCO. This is rather low, especially when compared to the 55% variation in job grading explained by education in Edget Cotton Factory. This is probably due to the fact that the workers in the private firm (MOENCO) are much more privileged than workers with the same qualifications and experience, in Edget Cotton Factory. This is reflected in the fact that the average 1996 wage in Edget Cotton Factory was ETB 303 while it was ETB 697 in MOENCO. However, as illustrated in Table 11, the educational background of employees of MOENCO is relatively better than that of Edget Cotton Factory where almost 71% of employees have no education. Thus, while the return to a unit increase in schooling in MOENCO was about 8%, it was only 5% in Edget Cotton Factory.

Table 11. Level of Education of Employees in MOENCO and Edget Factory, 1996 (%)

Level of Education	Edget Cotton Factory %	MOENCO %
No education	70.8	0.5
Primary	6.0	21.1
Junior secondary	3.6	11.7
Secondary	9.2	24.6
Certificate and diploma	9.1	40.9
Above diploma	1.3	1.2

Source: Own computations based on data got from MOENCO.

5. CONCLUSIONS AND POLICY IMPLICATIONS

The main focus of this study has been on assessing the economic returns to education in the formal sector in Ethiopia by using the Mincerian earning function. An attempt was made to estimate the private returns to education in two enterprises in Addis Ababa, one state-owned (Edget Cotton Factory) and the other private (MOENCO). In both enterprises, the human capital variables, i.e. education and experience, estimated using the earning function, were found to be very important in explaining wages. The Mincerian rates of returns to primary, junior secondary, senior secondary, diploma and certificate, and above diploma levels of education in the state-owned Edget Factory, were estimated to be 3.3%, 5.5%, 2.8%, 18.3% and 11.3%, respectively.

The estimated Mincerian regression coefficients associated with primary education, although positive and significant, did not conform with estimates obtained at global level by Psacharopoulos (Psacharopoulos, 1994) who found that returns to education were highest at primary level. In both Edget factory and MOENCO, the estimated returns to post secondary schooling were relatively higher than for primary and secondary education. These results would seem to imply that returns to different levels of schooling estimated may vary significantly between the largely urban-based, modern sector and other larger, dominant sectors like the rural sector. In as far as one can draw policy implications from this, this suggests a differentiated approach to improving education in the urban and rural sectors.

A comparison of the wages of male and female workers of Edget factory in 1996 also showed that, for the same level of educational attainments, men have higher average wages than women. Although having more experience than men within the industry, women were found to be less educated and to have less experience outside of the industry than men. The OLS estimates of the earning function in the factory indicate that the returns to primary and junior secondary education were higher for women than men. In terms of higher education, the return to schooling was higher for male than female workers. A further comparison of the returns to schooling in Edget Factory reveals that women were paid less in 1996 compared to 1985. Overall, it appears that women in Edget factory occupy lower status and lower paying jobs, and

that their situation with regard to wages has deteriorated in the past decade. Even where they had attained higher educational levels, women were paid less than men.

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OR

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