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Velocity Effects of Anticipated and Unanticipated Money Growth and Its Variability: Evidence From Morocco
Mina N. BAILIAMOUPH

Momentum Profits Using Spread Midpoint Returns and Trading Volume on the Nigeria Stock Exchange
Tov ASSOGBAVI and John DODGE

The Impact of Selected Factors on Domain Consensus Between the International Monetary Fund (The World Bank) and Developing Countries
Nii O. TACKIE

Economic Instability: A Case Study of the Effect of Structural Rigidity in Selected African Countries
Nkanta Frank EKANEM

Echard SIGGEL, Gerrishon IKIARA, and Benjamin NGANDA
POLICY REFORMS, COMPETITIVENESS AND PROSPECTS OF KENYA'S MANUFACTURING INDUSTRIES: 1984-1997

By ECKHARD SIGGEL, GERRISHON IKIARA, AND BENJAMIN NGANDA*

This paper attempts to answer the question whether trade liberalization and other measures of structural adjustment undertaken in Kenya since the mid-1980s have led to increased competitiveness of the manufacturing sector. It uses a method of analysis that consists of the computation of three unit cost indicators, of domestic and international competitiveness, and of comparative advantage, and their break-down according to the main sources. It distinguishes real sources from nominal ones based on price distortions, including those of factor and product prices, exchange rate misalignment, various trade restrictions, interest rate distortions and subsidies. Using data from two manufacturing sector surveys in Kenya, of 1984 and 1997, the study shows that comparative advantage has increased on average, but industry competitiveness has declined during the 13-year period of structural adjustment and policy reforms, due to higher distortion levels, mainly in the financial cost of credit and exchange rate misalignment, but also through deteriorating infrastructure and public services.

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I. INTRODUCTION

Policy reforms for structural adjustment are supposed to expose economies to more international competition and to strengthen the competitiveness of those industries that have some comparative advantage. Others, which have no comparative advantage, are expected to disappear. The increase in competitiveness is expected to occur through rationalization, increased productivity and declining costs, but also through reduced price distortions that are impeding the ability to compete, such as currency overvaluation. The success of such policy reforms can be observed as growth in exports, import substitution and/or the simple survival rate of formerly highly protected industries. A more rigorous way of gauging the success of such policy reforms is to measure the competitiveness of firms and industries over periods of time in which policy reforms have been implemented.

The present study investigates the international competitiveness of manufacturing industries in Kenya between 1984 and 1997, a period in which various policy changes have taken place. It uses a method of analysis designed by Siggel & Cockburn\(^1\) and applied previously in a study of Mali and Cote d’Ivoire\(^2\), as well as one of India\(^3\). This method is the result of a marriage between incentive measurement of standard trade theory and social cost benefit analysis. It consists of the computation of competitiveness indicators and their decomposition according to the major sources of competitiveness. The analysis is carried out with Kenyan enterprise data of 1984 and 1997. The study compares the competitiveness of 42 firms in 16 industries in 1997 with that of the same or similar firms in 1984. It finds that although comparative advantage in manufacturing seems to have been enhanced, the competitiveness of industries is weakened, due to increased cost distortions.

The first section examines the Kenyan policy environment focusing on policies that have affected the manufacturing sector and their recent changes. In the second section, we explain the method of analysis, as well as the database and assumptions necessary in the analysis. The third section contains the sector-wide and industry-level results of the analysis, starting with the situation in the mid-eighties, then focusing on the changes between 1984 and 1997. In this section we also examine the sources of competitiveness and comparative advantage, which is the specific contribution of this methodology. In the final section we draw conclusions from this analysis.
A. The Manufacturing Sector and Its Policy Environment

Since the mid-1980s Kenya has been under increasing pressure to strengthen its industrial competitiveness. This pressure is attributable to a number of factors including the on-going economic globalization, the country's entry into various regional integration arrangements that require opening of the economy to the regional partners, and the general liberalization of the economy to both domestic and external forces. In addition, the Government of Kenya (GoK) has declared its vision of becoming a newly industrialized country (NIC) by the year 2020. To achieve this goal, it is imperative to radically increase the country's competitiveness and to expand its export markets.

Kenya's industrialization process began at the start of this century under the British colonial rule. The pace of industrialization was quickened after independence in 1963, as the country embraced an import-substitution strategy that was then popular in many developing countries. Since then, a number of incentives have been special schemes such as export compensation, manufacturing under bond (MUB) and export processing zones (EPZ).

The import-substituting industrialization strategy encouraged the establishment of industrial enterprises, which were dependent on heavy protection through tariff and non-tariff measures. Pricing and the allocation of foreign exchange were directly controlled by the government. The result was the creation of an industrial structure with many inefficient and non-competitive industries. The failure of many of the country's industries to be export-oriented was partly due to their lack of competitiveness in the international markets, and partly to the protection provided by the trade regime. Even the more competitive firms were rewarded for catering to the domestic market only. Other factors that contributed to the lack of competitiveness were the weakness of the country's infrastructure, failure to enjoy economies of scale, especially after the collapse of the East African Common Market in 1977, and the high cost of imported inputs. The export promotion schemes mentioned above were introduced to counter this development and to create export-oriented enterprises, to generate employment and to promote the transfer of technology.

B. Trends in Industrial Production

The inward-oriented strategy had served the country well in the first and second post-independence decade. From 1964 to 1973
manufacturing grew at an annual average rate of 9.1% (compared to
6.6% of GDP) and between 1974 and 1979 at 10% (GDP: 5.2%). The
policies resulted in better incentives and a more favourable economic
structure than in most other sub-Saharan (SSA) countries. The sector’s
share in GDP grew from 10% in the 1960s to 12% in the late 1970s and
13% in the mid-1980s. In the second decade the economy had
experienced several major shocks, from the oil price in 1973 and 1979,
a major drought in 1974/75, the coffee boom of 1976/77 and the collapse
of the East African Community (EAC) in 1977. These and other factors
led to an overall economic slowdown with average GDP growth of
4.8% in the 1980s and only 3% up to 1996. Since manufacturing growth
had been fuelled mainly by demand growth (more than two thirds) and
import substitution (slightly over one quarter), according to Sharpley
and Lewis (1988), the slow-down affected the manufacturing sector
not only by declining demand, but also by import substitution coming
to a saturation point. The easy phase of import substitution in light
manufacturing of consumer goods had come to an end, as in food,
beverages, tobacco and textiles and clothing most of the demand was
being satisfied by domestic production. Further import substitution, in
intermediate and capital goods, was possible, but required heavy
investments, new technologies and higher skills. But the 1980s did not
provide the necessary demand growth nor the enabling environment
for such projects. Manufacturing exports had contributed only about
5% of the sector’s total growth, and the partial loss of the Ugandan and
Tanzanian markets in 1977 meant a further decline of this potential
source of growth. The realization of these constraints led the GOK to
adopt the export promotion schemes mentioned earlier, but none of
them was really successful in the circumstances. The sector remained
essentially oriented towards the domestic market, with only a few
industries producing for external and mainly regional markets.

C. Recent Changes in Trade and Industrial Policies

In its Sessional Paper No. 1 of 1986, the GoK proposed an
industrial strategy that was to be driven by the private sector relying
more on a market-based incentive structure. The policy, among others,
emphasized the need to reduce the importance of import licensing as a
protective shield for local manufacturers and to gradually lower tariffs,
in order to expose domestic firms to competition for greater efficiency.
In the 1989-93 National Development Plan, industrial policy continued to emphasize the need to create incentives necessary for the emergence of a successful manufacturing sector, one not based merely on import substitution. The industrial development vision projected in the plan talked of adopting a strategy that would lead to the establishment of iron & steel, tool & die, and a machinery industry, as well as a biotechnology and other high technology industries. Price liberalization, restructuring of the import and tariff regime and the adoption of a realistic exchange rate were seen as crucial for increasing Kenya’s competitiveness in world markets.

The early 1990s saw the beginning of dramatic liberalization of the economy and an even stronger focus on industrialization. In 1997, the government produced a key document on industrial policy, the Sessional Paper No.2 of 1999 on the ‘Industrial Transformation to the Year 2000’. The document highlighted some of the major constraints on industrial expansion and proposed a broad strategy for industrialization. The key elements of the strategy included the promotion of political and social stability, macroeconomic stability to build business confidence, more efficient and diversified primary production as a base for economic growth, increased investment in human resources and rehabilitation of the physical infrastructure. It also included reform and development of financial markets, formulation of trade and investment policies to transform the economy into an outward-looking one, increased cooperation and dialogue between the government and the private sector to foster greater and genuine partnerships, and an increase of the proportion of resources allocated to technology development and management (Republic of Kenya, 1996).

Trade policy is known to be the principal instrument affecting manufacturing industries and their incentive regime. As we have seen already, the strategy of import substitution entailed high and uneven tariff rates with frequent exemptions, quantitative restrictions on imports and import licensing. The liberalization of the trade regime from 1985 onwards had only weak effects in the first years, with frequent episodes of relapse, but it became more effective after 1991. The average un-weighted tariff rate actually increased slightly from 40% in 1985 to 41.3% in 1989, but declined to 34% in 1992. The decline is even more visible for the import-weighted average tariff, which declined from 29.6% in 1988 to 20.4% in 1992. By 1994, the manufacturing sector enjoyed an average tariff of 28.5%, which hides, however the wide
dispersion of rates. Although maximum rates have declined substantially in the manufacturing sector, most of the reduction in the level of protection has occurred largely due to the reduction in the production coverage of quantitative import controls (Swamy, 1994). For example, whereas quantitative controls (Schedule IIIC) covered most manufacturing in 1986, the coverage fell to 79% in 1988, 45% in 1990, and 28% in 1991.

Estimate of effective rates of protection (ERP) by the World Bank indicate that the average rate for manufacturing declined from 107% in 1985 to 47.9% in 1990 and to 44.5% in 1992. Not only did the average rates decline, but also, and more importantly, the dispersion of rates among the industries was significantly reduced. The description of the trade regime would be incomplete without regard of the exchange rate. In inward-oriented trade regimes high protection is often accompanied by an over-valued currency, where the effect of over-valuation is the opposite to that of protection.

Most observers agree that the Kenya shilling was not much over-valued in the 1960s. However, restrictive trade policies were actively applied in the 1970s when the economy started to experience large macro-economic imbalances. Overall, the real exchange rate was fairly stable in the 1967-75 period, but it registered more instability in the period 1977-1982, when the shilling was subjected to a number of discretionary devaluations. Over the period 1983-91, during which the exchange rate was adjusted on a daily basis, the real exchange rate was relatively stable. Since 1991, the government has adopted a more market-based exchange rate regime, resulting in a massive depreciation in 1993, but which did not prevent renewed real appreciation in 1994-95. Several observers have agreed that by 1997, the end of our study period, the shilling was again somewhat over-valued (Ndungu, 1997, Mwega & Ndungu, 1998).

D. Labour and Capital Market Reforms and the Weakness of Infrastructure

The Kenyan labour market has been characterized by relatively low wages, especially among unskilled and semi-skilled workers. Several factors have contributed to this situation. First, the government purposely pursued a policy of low wages aimed at making the country attractive to foreign investors. Second, the trade union movement in
the country has been largely ineffective as an instrument for improving real wages, partly because of the government's close control over the affairs of trade unions, and partly because of high levels of unemployment, which made strikes risky for workers. Third, agriculture tended to subsidize industrial workers through remittances, so that workers were not wholly dependent on their industrial wages (Tostensen, 1991, p. 291).

For most of the last three decades, Kenya has had a highly regulated labour market. The wage guidelines, which were in force since the 1970s, restricted wage awards that trade unions could negotiate with employers. The wage increase allowed by the wage guidelines was restricted below the rise in the cost of living index. As a result of these guidelines, the real wages declined substantially, so that the level of real wages in the early 1990s was below that in the mid-1980s. Through the mechanisms of minimum wages and its wage setting in the large public sector, the government had heavy influence on wage determination in the whole economy.

In the early 1990s, considerable liberalization of the labour market took place, largely as a result of the structural adjustment programme the country was implementing. Some of the reforms that affected the labour market included the relaxation of wage guidelines, which allowed trade unions to negotiate for better wages with employer organizations largely based on labour productivity and performance of the enterprises. The redundancy laws, which made it difficult to declare workers redundant, were also amended, allowing employers now to declare workers redundant without having to obtain approval from the Ministry of Labour and Manpower Development. On the whole, these policy reforms are expected to assist the manufacturing industries in gaining competitiveness.

The financial and capital markets have undergone considerable reforms in the 1990s, including liberalization of interest rates and foreign exchange markets. In spite of the relative depth that the financial sector has reached, it suffered a major banking crisis in 1985-86, in which a number of financial institutions collapsed, with considerable adverse effects on the locally owned and managed banking institutions. In 1991, the two quasi-government institutions have suffered a crisis of failing confidence due to their heavy unsecured loans. In addition, the government has financed deficits by borrowing from the banks. Together, these factors can be taken to explain why lending rates have
remained above 30% until the later part of 1998 and 1999, when most of the banks started to reduce their lending rates. It is worthwhile noting also that, with a relatively stable and high nominal interest rate of above 30% and strongly fluctuating inflation rates of 28.8% in 1994, 1.6% in 1995 and 9.1% in 1996, the real interest rate also fluctuated strongly between 2% and over 30%.

The final point of this review of the policy environment facing the industrial sector is one that is difficult to measure, but has created a lot of aggravation in the business community. Several recent studies, including the present one, show that inadequate and poorly maintained infrastructure has emerged as a major impediment to Kenya’s industrial growth and other economic activities. According to the firms we interviewed during the study, the state of the country’s infrastructure, especially with regard to electricity, water, freight transport, port handling facilities, telephones, waste disposal and security had deteriorated substantially, compared with a few years earlier.

One of the consequences of the governments failure to effectively provide essential infrastructure is that a large proportion of the enterprises have been forced to engage in costly self-provision of various facilities, especially own power generators, private telephone systems, etc. Out of the 219 enterprises in the RPED study, 26% had their own generators, 20% had invested in own water supplies, such as wells or cisterns, 21% were providing own waste disposal, while almost 60% had increased expenses in security (RPED, 1996). This self-provision of essential facilities had raised the firms’ operational costs, thereby reducing their overall competitiveness.

II. THE METHOD OF ANALYSIS AND DATA BASE

The concept of competitiveness is frequently used by economists, politicians and business leaders, but there is little agreement about its precise meaning, and even less about the methods of measuring it. While politicians and some economists tend to use the term in an economy-wide sense, we only use the microeconomic version of the concept, and more particularly the one of cost competitiveness. At the enterprise or industry level, producers are deemed to be competitive if their unit costs of production are inferior or equal to those of their competitors. This can be the case in the domestic as well as in international markets. International competitiveness is of particular importance when markets are open or being opened to international
competition, such as is the case under trade liberalization. For a survey of the literature on competitiveness the reader is referred to a recent symposium on ‘International Competitiveness’ (1996) and a survey paper (Siggel, 1997). Competitiveness in Kenya has been analysed in several studies, in particular (RPED, 1993 to 1995; KEDS, 1993 and 1994; Biggs & Raturi, 1997; and Wignaraja & Ikiara, 1996).

A. An Indicator of Competitiveness and Its Sources

The indicator of competitiveness used in the present study is a unit cost ratio (UC), defined as total cost (TC) divided by the value of output (VO), which in turn equals output quantity times the ex-factory price. For domestic sales, the ex-factory price is the domestic market price (Pd), which is typically higher than the international price of a similar imported product by a margin equal to the nominal rate of protection \(^4\). For export sales, on the other hand, the ex-factory price is equal to the international (fob) price (Pw).

This particular definition of the unit cost ratio serves a double purpose. First, it helps to overcome the differences in product mix and quality that make inter-firm comparisons always problematic. We assume that the output price is usually proportionate to the quality attributes of products. Second, it makes the unit cost indicator independent of the data of an international competitor, whose cost we would otherwise need for comparison. We assume, therefore, that the international price (Pw) corresponds to the unit cost of a typical international best-practice producer. The fact that Pw is measured as the border price (cif) means that the benchmark for international comparison includes the transport cost to the border and therefore a margin of natural (geographic) protection. Our criterion for international competitiveness or export competitive advantage is then

\[
(1) \quad UC_x = TC/(Q \cdot P_w) \leq 1
\]

meaning that a firm is deemed to be competitive if its cost per unit of output is less or equal to the free-trade price of an equivalent import. This concept of cost competitiveness is multilateral, as opposed to a bilateral firm-to-firm or country-to-country comparison, but it allows bilateral comparison as well.

In addition to the notion of international competitiveness, we are also interested in domestic competitiveness, which means a cost advantage under protection. In this case the denominator of unit cost is the output value at domestic prices (VO_d = Q \cdot P_d), so that the criterion
of domestic competitive advantage becomes

\[ UCd = TC / (Q Pd) \leq 1. \]

For those firms that export part of their output, \( Pd \) of the exported output equals \( Pw \). This measure of competitiveness reflects the profitability of the firm. Since total cost includes the opportunity cost of capital, it exceeds one if the rate of return is lower than the interest rate, and it is less than one if the rate of return is higher. The most important distinction, however, and the hallmark of our method of analysis, is the one between competitiveness and **comparative advantage**. While competitiveness is understood as a cost advantage based on market prices including various price distortions, subsidies and penalties, comparative advantage corresponds to a cost advantage at equilibrium prices.\(^5\) In order to measure comparative advantage we have to replace all prices, in output as well as all inputs, by shadow prices. A firm or industry has then comparative advantage if

\[ UCs = TCs / (Q Ps) \leq 1, \]

where \( TCs \) is total cost in shadow prices and \( Ps \) is the shadow price of output. The latter is usually equal to the international price (\( Pw \)), but adjusted for any distortion of the exchange rate. \( TCs \) is the sum of all cost components adjusted for all price distortions and subsidies.

It is now evident that our concept of competitive advantage differs from the one of comparative advantage only by including the sum of all price distortions. When \( UCd \) is smaller than \( UCs \), the price distortions act as subsidies; when \( UCd \) exceeds \( UCs \) they act as penalties. Since price distortions exist on the input and output sides, appearing in the numerator and denominator, they have the opposite effect on the input and output sides. A tariff on output lowers unit costs, whereas a tariff on tradable inputs raises it. This shows that in the protected domestic market a producer is more competitive than under free trade, as production tends to be more profitable under protection. But comparative advantage, which is the real core of competitiveness, is not affected by the price distortions. However, under protection and other distortions, input coefficients may be affected as well. In other words, cost-lowering price distortions may lead to lower efficiency.

Finally, total cost is broken down into four components, tradable inputs, non-tradable inputs, labour cost and capital cost, and in each component the distortions are calculated and deducted from the costs at market-prices according to the following scheme:
(4) VITs/VOs (Shadow unit cost of tradable inputs)
+VINs/VOs (Shadow unit cost of non-tradable inputs)
+LCs/VOs (Shadow unit cost of labour inputs)
+KCs/VOs (Shadow unit cost of capital inputs)

=TCs/VOs=UCs (Total unit cost at shadow prices)
+dpj ( Tradable input price distortion)
+dpje (Exchange rate distortion of tradable inputs)

+dw (Wage rate distortion)
+dpk (Capital goods price distortion)
+dr (Interest rate distortion)
+ds (Direct subsidy, negative)

=TCd/VOx=UCx (Total cost per unit of output at international prices)
+dpp (Output price distortion)

=TCd/VOd=UCd (Total unit cost at domestic prices)

In other words, total unit cost in shadow prices (indicator of comparative advantage) plus all cost distortions adds up to unit cost per output value at free-trade prices (indicator of export competitiveness), plus the output price distortion adds up to unit cost in domestic prices (indicator of domestic competitiveness). This accounting framework serves us to identify, with some limitations, the sources of competitiveness. The distortions are all expressed as proportions of unit cost so that the highest proportions indicate the strongest influence on unit costs. For the factors of production, on the other hand, this procedure is not applicable and is replaced by a statistical approach, as explained in section 3. While the cost components of tradable and non-tradable inputs are straightforward, the measurement of the distortions deserves special attention. Besides the distortion categories listed above, we also distinguish sub-categories such as energy cost distortions as part of the tradables, and transport and communications distortions as part of the non-tradables.
B. Data Sources and Coverage

The study is based on two data sets and additional information from various sources. The first set consists of the firm-specific data of 1984, which were collected by two American consultants for a study of protection and efficiency commissioned by the Government of Kenya (Jansen & Selhorst, 1985). The second set consists of 1997 data from Kenyan firms, most of which are also members of the 1984 sample. The latter set was collected by the present authors during the years of 1998 and 1999.

1. The data of 1984

The 1984 data set covers 78 firms in all major manufacturing industries and provides information on all costs and revenues. The product and firm-specific nominal rates of protection of outputs and tradable inputs are all adopted from the Jansen & Selhorst study. New estimates are used here of the equilibrium exchange rate, the opportunity and social opportunity cost of capital, of the shadow wage of unskilled labour, and the treatment of non-tradable inputs was also adjusted.

2.22 The data of 1997

The 1997 sample of firms was to match the earlier sample of 1984, but it was expected to be smaller, due to budget constraints. 33 of the original 78 firms have supplied data, and nine new firms were added that had a similar output mix as the corresponding ones in the 1984 sample. A questionnaire and interviews were used to obtain the detailed cost and revenue data required for the computation of unit cost ratios. The firms were also asked to name what they saw as the main obstacles to competing successfully in the domestic and international markets. Furthermore, they were asked for an evaluation of excess costs of energy, water supply, transport and communication, i.e. costs that may exceed what they would consider as normal, i.e. under normal conditions of operation. The firm-level data are supplemented by tariff data at the industry level as well as by economy-wide data on interest rates and the exchange rate from the IMF (IFS, various years).

2.23 Coverage

The number of firms in our sample (42) is small in comparison with the total number of firms in the manufacturing sector, even the
large ones with more than 50 employees, which the Central Bureau of Statistics estimates as about 630 in 1996 (CBS, Statistical Abstract, 1996, p.146). Since most of the firms in our sample are the largest in each industry, the coverage is substantially higher than the firm number suggests. Covering 16 out of 24 industries (defined at the 3-and 4-digit level of ISIC), we think of the sample as modestly representative of the manufacturing sector. The sample of 78 firms in 1984 was considered representative of the sector by the Ministry of Planning.

2.3 The estimation of shadow prices and distortions

In this study we are dealing with several kinds of distortions. The value of output is affected by the exchange rate distortion and the nominal rate of protection, which, in the absence of quantitative restrictions, is normally equal to the tariff. Price margins stemming from monopoly power are unlikely to be substantial in a trade regime regulated only by the tariff. On the cost or input side, there are a number of distortions, in addition to that of input tariffs and the exchange rate, that need to be discussed, such as interest rate and wage distortions, energy distortions, and transport and communications distortions. The common characteristics of these distortions are that they are either directly policy-induced or they result from a regime that is, in turn, linked to government intervention. Energy, transport and communications fall into the latter category since the distortion results from the activities of state-owned utilities, if not from government spending and taxation directly.

2.3.1 Price distortions of tradable outputs and inputs

The domestic output price of tradable goods is assumed to depend on international prices of equivalent imports, tariff and non-tariff restrictions, and the exchange rate. While import restrictions are considered as distortions, the exchange rate may give rise to a distortion when it is misaligned. The total of all import restrictions is best measured by the implicit nominal rate of protection (NRP), which is the difference between the ex-factory price and the cif border or free-trade price of comparable imports, expressed as a proportion of the border price. In order to capture the output price distortion adequately, the ex-factory prices are compared with those of comparable imports. In praxis, this is a difficult exercise and requires the assistance of the producing firm, which knows best the exact composition of total output as well as the quality characteristics of the products. The 1984 data set provides the
NRPs based on price comparisons, which differed from the nominal tariff rates in many industries. In 1997, however, quantitative restrictions were no longer important, so that the tariff seemed to capture more consistently the existing price distortions than some of the estimates suggested by the firms. The only cases, where the tariff is an insufficient measure of protection, are industries, where either smuggling erodes the protective effect of the tariff, or where dumping brings the import and domestic prices down to a level that is even below the normal international price. In industries where smuggling was reported to be important, we have used NRPs based on price comparisons, in all other industries the NRPs correspond to the tariff. Several firms in our sample have argued that there is dumping, but the term ‘dumping’ is not always used in its technically correct sense. So we are not totally sure about the correctness of dumping charges. In cases like textiles, where a lot of imports are allegedly entering the domestic market without duties and with values that are below the normal free-trade prices of comparable products, the question of dumping should be investigated more thoroughly.

For tradable inputs the estimation of price distortions is more complicated due to the large number of inputs and their different origins. Rather than estimating the price distortions of individual tradable inputs, we have obtained average input NRPs by dividing the total duty paid on imported inputs by their net value and taken this average rate as the distortion factor.

2.32 Exchange rate misalignment

Currency misalignment is difficult to argue and to estimate when the exchange rate is flexible, as it has been the case in Kenya in recent years. It is known, nevertheless, that central banks can influence the exchange rate by various kinds of intervention that are sometimes referred to as “leaning towards a higher or lower rate”, depending on the nature of interventions. In Kenya, although the rate is market-determined, industry officials have argued that the going rate overstated the value of the Kenyan shilling by an undefined margin. In particular, firms interested in exports argued that they felt penalized by the going exchange rate. We have examined this argument critically by using the purchasing power parity approach, and data on prices in Kenya and the OECD. While the rate had been found to be well-aligned in 1984, we concluded that in 1997 the shilling was overvalued by about 10%. This rate is consistent with the studies by Elbadawi (1998) and Mwega & Ndungu (1998).
The effect of this margin of over-valuation on our unit cost ratios is twofold. On the output side, it raises the shadow value of output above its value at international free-trade prices, and thereby lowers the unit cost ratio UCs. In other words, if the penalty of over-valuation did not exist, competitiveness would be enhanced and closer to comparative advantage. On the input side, the opposite effect occurs for tradable inputs. In the result section 3 the reported exchange rate distortion is the net effect (output and input sides) on unit costs.

2.33 Energy costs
Utilities, consisting of electricity and water, have been treated, together with fuel, as tradables under the heading of energy costs, although at least water has the characteristics of a non-tradable service. Two kinds of distortions can be distinguished, price distortions and distortions in the quality of the service. For electricity and water, firms were asked to state not only the total expenditure and price per unit, but also to estimate by how much their costs exceed the "normal" level. Abnormal costs have often been mentioned in the questionnaires and in interviews, and they usually take the form of service interruption forcing the firms to either rely on own generators or pumps in case of blackout, or to shut down the production process. For some industries the irregular (interrupted) supply of electricity and water are a major cost factor impinging on their competitiveness. The average excess charge across all industries was in the order of 20% of the electricity and water bills. This may under-state the actual excess cost in some industries where shutdowns are especially costly.

2.34 Non-tradables
In the category of non-tradables the study distinguishes six kinds of services purchased by firms: repair, subcontracts, rents, transport, communication and other services. In the categories of transport and communication services major distortions were reported by the firms, who were asked to estimate the excess cost relative to normal operation. For transport services the excess cost is generally attributed to the bad state of the roads, as well as to the unreliability of the rail services. For communications it was frequently reported that firms subscribe to multiple telephone lines in order to have one or two working. Frequently firms also use cellular telephones in order to secure services that are not available from the public telephone system for which they, nevertheless, pay. In these two categories the individual firms' distortions vary according to the respondents' records and
perceptions. In 1997 the average cost distortion reported is 18% in transport and 19% in communications. All other categories of non-tradables are assumed to be free from major distortions.

2.35 Labour cost distortion

The wage and salary component in total cost is generally below 15% of the total, due to the relatively low wages of unskilled workers, and in spite of the high cost of managers, especially expatriate ones. For all skilled occupations we make the simplifying assumption that the paid wages or salaries reflect the social opportunity cost of these services. For unskilled labour, on the other hand, the shadow wage was found to be at least 20% below the market wage, due to the severity of unemployment in this category, which includes casual (temporary) workers. This estimate is based on informal sector wages as well as the marginal product in agriculture. The resulting distortion component of unskilled labour payments represents on average 0.3% and always under 3% of total costs.

2.36 Capital cost distortion

The cost of capital is measured by four components. First, the financial social opportunity cost is taken to equal the shadow interest rate applied to the total value of fixed and non-fixed assets at purchase prices. The shadow interest rate is computed as the mean of two estimates. Both are based on the assumption of strong international mobility of capital. The first is the international rate LIBOR (6.1% in 1997), augmented by an inflation differential between Kenya and the OECD average of 10%, resulting in 16.1%. An alternative approach, based on the international interest parity condition, is to add to the LIBOR the expected rate of depreciation of the Kenya shilling. Using the actual exchange rate of 1998 as the expected one, we obtain an expected rate of depreciation of 2.9% and a shadow interest rate of 9%. We consider the rates of 9% and 16% as lower and upper bound (used in sensitivity analysis) and adopt the median rate of 14% as the shadow rate for our computations of the shadow cost of capital.

In contrast, the market opportunity cost of capital is equal to the capital stock times a market interest rate, which is taken to equal the 1997 average lending rate of 30%, based on IMF statistics (IFS, 1999). The difference between these two interest rates constitutes the main capital cost distortion and is the second component. The third component is the annual depreciation as reported by the firms; it is
treated as undistorted for simplicity. The fourth component is a capital price distortion, due to the payment of import duties on imported capital goods. Only a few firms have reported this distortion, and even where reported, it represents a negligible proportion of total costs. We also do not attach much importance to this distortion, because we focus on present policy distortions. Duties on capital goods represent a policy distortion of the past, i.e. of the time when major investments were made.

The 1984 opportunity cost of capital at market prices was taken to equal the average Kenyan lending rate of 14.4% (cf. IFS, line 60p). The shadow interest rate of 16.6% is based on the 1984 LIBOR of 11.8% plus an expected inflation differential of 4.8% estimated by comparing Kenya’s and the OECD’s consumer price index during the 1983-84 period. The shadow cost of unskilled labour is estimated as 20% below the actually paid wages. This rate is based on the observation of substantial urban unemployment and estimates of the remuneration of unskilled workers in the informal sector. The potential misalignment of the Kenyan shilling (KSh.) was estimated to have been zero in 1984. This is consistent with computations of Elbadawi (1998) and Mwega & Ndung’u (1998). The shadow prices of all tradable products and inputs are therefore equal to the world prices in KSh. at the market exchange rate.

3 Results of the data analysis

Since we are combining two different data sets in the analysis, a word of guidance for the presentation of results is appropriate. We first examine the situation in the mid-1980s based on the data set of 78 firms, in order to use to a maximum the available data. Then, in section 3.2, we use the new data set of 1997 to analyze the changes in competitiveness and comparative advantage between 1984 and 1997. The whole analysis in this section takes a general view of the manufacturing sector, without focusing on specific industries. In section 3.3 industry-level findings are presented. For more specific industry details the reader is referred to the full-length report of the project (Siggel, Ikiara, Nganda, 1999, chapter. 4).

3.1 Competitiveness and comparative advantage in the mid-1980s

Based on the data provided by 78 firms, as well as the assumptions and shadow prices discussed above, the average shadow unit cost (UCs) was computed as 1.166, meaning that total shadow
costs exceeded the respective international prices by 16.6%. This is interpreted as absence of comparative advantage for manufacturing as a whole at that time. When the firm data are aggregated into 24 industries, only five of them have UCs smaller than one, as shown in Table 3.1. They are, starting with lowest UCs (i.e. strongest comparative advantage) plastic goods (0.73), beverages & spirits (0.92), miscellaneous food products (0.93), footwear & leather (0.93) and petrochemicals and rubber (0.97). In five other industries (grain mills, fruit & vegetable canning, wood products, garment industry and meat & dairy products) the UCs is less than 5% above unity, which means that they may be able to realise comparative advantage with a modest amount of adjustment and cost cutting. All three unit cost ratios are shown in Table 3.1.

Table 3.1
Competitiveness (Ued and Ucx) and Comparative Advantage (UCs) in Kenya’s Manufacturing Industries in 1984

<table>
<thead>
<tr>
<th>ISIC</th>
<th>Industry</th>
<th>Ued</th>
<th>Ucx</th>
<th>UCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>3111/12</td>
<td>Meat &amp; dairy</td>
<td>1.251</td>
<td>1.051</td>
<td>1.039</td>
</tr>
<tr>
<td>3113/15</td>
<td>Fruit &amp; vegetable processing</td>
<td>1.012</td>
<td>1.066</td>
<td>1.012</td>
</tr>
<tr>
<td>3116/17</td>
<td>Grain mills &amp; bakeries</td>
<td>1.046</td>
<td>1.025</td>
<td>1.015</td>
</tr>
<tr>
<td>3118/19</td>
<td>Sugar &amp; confectionery</td>
<td>1.421</td>
<td>1.842</td>
<td>1.450</td>
</tr>
<tr>
<td>3121/22</td>
<td>Miscellaneous Foods</td>
<td>0.857</td>
<td>0.917</td>
<td>0.927</td>
</tr>
<tr>
<td>3131-34</td>
<td>Beverages &amp; spirits</td>
<td>0.923</td>
<td>1.001</td>
<td>0.916</td>
</tr>
<tr>
<td>3140</td>
<td>Tobacco products</td>
<td>1.213</td>
<td>1.302</td>
<td>1.249</td>
</tr>
<tr>
<td>3110</td>
<td>Cotton ginning</td>
<td>1.131</td>
<td>1.300</td>
<td>1.306</td>
</tr>
<tr>
<td>3111</td>
<td>Spinning, weaving &amp; fin.</td>
<td>1.157</td>
<td>1.670</td>
<td>1.370</td>
</tr>
<tr>
<td>3212/13</td>
<td>Textile products</td>
<td>1.214</td>
<td>1.281</td>
<td>1.167</td>
</tr>
<tr>
<td>3219/20</td>
<td>Garments</td>
<td>1.098</td>
<td>1.600</td>
<td>1.033</td>
</tr>
<tr>
<td>3231/40</td>
<td>Footwear &amp; leather</td>
<td>0.738</td>
<td>0.980</td>
<td>0.934</td>
</tr>
<tr>
<td>3311-20</td>
<td>Wood products</td>
<td>1.152</td>
<td>1.145</td>
<td>1.013</td>
</tr>
<tr>
<td>3411-20</td>
<td>Paper products</td>
<td>1.614</td>
<td>1.429</td>
<td>1.244</td>
</tr>
<tr>
<td>3511-14</td>
<td>Industrial chemicals</td>
<td>1.203</td>
<td>1.192</td>
<td>1.065</td>
</tr>
<tr>
<td>3521</td>
<td>Paints</td>
<td>1.021</td>
<td>1.491</td>
<td>1.248</td>
</tr>
<tr>
<td>3522</td>
<td>Pharmaceuticals</td>
<td>1.018</td>
<td>1.145</td>
<td>1.101</td>
</tr>
<tr>
<td>3560</td>
<td>Plastics</td>
<td>0.848</td>
<td>1.110</td>
<td>0.969</td>
</tr>
<tr>
<td>3620-99</td>
<td>Non-met. minerals</td>
<td>0.705</td>
<td>0.867</td>
<td>0.730</td>
</tr>
<tr>
<td>3700</td>
<td>Basic metals</td>
<td>1.175</td>
<td>1.337</td>
<td>1.575</td>
</tr>
<tr>
<td>3811-19</td>
<td>Metal products</td>
<td>1.319</td>
<td>1.364</td>
<td>1.198</td>
</tr>
<tr>
<td>3843/44</td>
<td>Transport equipment</td>
<td>1.279</td>
<td>1.547</td>
<td>1.326</td>
</tr>
<tr>
<td>3900</td>
<td>Miscellaneous manufactures</td>
<td>1.165</td>
<td>1.675</td>
<td>1.366</td>
</tr>
<tr>
<td>311-390</td>
<td>Average</td>
<td>1.125</td>
<td>1.252</td>
<td>1.166</td>
</tr>
</tbody>
</table>
As to the sources of comparative advantage, it is not possible to attribute low (high) shadow unit cost to a low (high) level of any of the four cost components, tradable and non-tradable inputs, labour and capital. A labour-intensive technique can save capital, and high intermediate input costs may reflect a technique that uses highly transformed inputs as opposed to raw materials. Since our method of analysis excludes the analysis of a production function, the substitution possibilities between different factors are not considered. We also examine the question, however, whether one or the other cost component, tends to be particularly high or low whenever unit costs are low. We interpret a tendency of a factor to be heavily used whenever total costs are low, as evidence of this factor being a source of comparative advantage. Heavy use is taken to mean that the respective input coefficient is higher than average, i.e. the trend line of input coefficients over UCs has a positive intercept.

For the four principal cost components linear trend lines have been estimated against UCs with the following results:

<table>
<thead>
<tr>
<th>Component</th>
<th>Equation</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital costs</td>
<td>$KC_s = -0.31 + 0.49 \text{ UCs}$</td>
<td>0.59</td>
</tr>
<tr>
<td>Labour costs</td>
<td>$LC_s = 0.04 + 0.07 \text{ UCs}$</td>
<td>0.12</td>
</tr>
<tr>
<td>Tradable inputs</td>
<td>$VTs = 0.21 + 0.34 \text{ UCs}$</td>
<td>0.29</td>
</tr>
<tr>
<td>Non-tradable inputs</td>
<td>$VNs = 0.06 + 0.10 \text{ UCs}$</td>
<td>0.10</td>
</tr>
</tbody>
</table>

where $KC_s$, $LC_s$, $VTs$ and $VNs$ are unit cost ratios of the respective cost components at shadow prices, as defined earlier. It appears from these regressions that capital cost is most strongly correlated with UCs. Its negative intercept suggests that low unit costs tend to be accompanied by lower than average capital costs and vice versa. In other words, firms tend to achieve comparative advantage most often when they use the least capital. All other components tend to be higher than average whenever UCs is low. Obviously, all four linear functions add up vertically to the 45°-line, but the intermediate input and labour cost components are less strongly correlated with UCs. The size of the cost coefficients is of course a reflection of both the structure of transformation and the efficiency of factor use. We cannot separate these aspects unless we had numerous firm observations in a single industry with the same structure of transformation. But one can nevertheless infer that highly capital-intensive industries tend to be less likely candidates for comparative advantage than labour- and input-intensive ones.

Turning now to domestic competitiveness, the average unit
cost ratio at domestic market prices (UCd) of the whole sample is 1.125, smaller than average UCs =1.166. This means that, on average the distortions sum up to an implicit subsidy, thereby lowering unit costs by about 4%. In ten out of 24 industries the distortions raised the unit costs, so that their profitability at market prices was lower than that at shadow prices. In fourteen industries UCd was lower than UCs, i.e. domestic competitiveness exceeded comparative advantage. It follows therefore that in the majority of industries (14/24) further liberalization was likely to reduce competitiveness in the short run. In the longer run, they were expected, however, to become more competitive in real terms, by firms cutting costs or exiting the industry.

Finally, export competitiveness, as measured by UCx and shown in Table 3.1, existed in only four out of 24 industries. They are the plastics, miscellaneous foods, footwear and beverages/spirits industries. All of them had also comparative advantage. Interestingly, only one of them (misc. food) exported a significant proportion of output. On the other hand, the three important exporting industries (meat & dairy, cement and fruit & vegetable canning) were not export competitive, according to our data. This observation can be explained by the presence of various distortions such as still existing price controls at that time, export subsidies and the fact that exporting to neighbour countries like Uganda was possible at higher than world market prices.

3.2 Changes since 1984 and Kenya's competitive position in 1997

In light of the policy changes that have occurred in the 13-year period since 1984, we come to the main objective of this study now and examine whether Kenyan firms and industries have become more competitive, and whether comparative advantage has been strengthened as a consequence of more liberal trade policies. The comparison between unit cost ratios of 1984 and 1997 is made here at the firm level, in order to minimize the influence of differences in product mix. In other words, we are comparing the 1984 and 1997 performances of the same firms. However, in 10 out of 42 firms the observations of the two years are not from the same enterprise, because either the firms of the earlier sample have gone out of business or chose not to collaborate in the study. Here we start with the unit cost ratio at domestic market prices (UCd) since this is the indicator that relies only on the cost and revenue data obtained from the firms, plus the average Kenyan lending rate, i.e. it does not rely on assumptions about shadow prices.
3.21 Domestic competitiveness

As explained earlier, the indicator UCd reflects the profitability of firms, but uses a criterion that is hard to meet. Since total costs include the opportunity cost of capital, which is taken to equal the average lending rate times the purchase value of capital stock plus depreciation, a firm may earn a positive rate of return and still show up as non-competitive if its rate of return is lower than the lending rate. Competitiveness in this sense, therefore, implies that competitive firms earn excess profits even after recovering the full replacement cost of their capital stock.

The comparison between 1984 and 1997 is carried out in table 3.2 (summarizing table 3.2 of the main report), which shows that the average unit cost ratio has increased by twelve percent, from 1.125 to 1.221. The number of firms with increases of this cost ratio (20) is the same as the number of firms with unit cost declines, but the increases have been stronger than the declines. Table 3.2 also shows that the interest rate distortion contributed most strongly to the rise in unit costs, followed by that of the currency misalignment. The effect of protection has been increasingly unit-cost-lowering on account of a stronger reduction of the nominal protection of inputs than that of final output. This effect often occurs under trade liberalization and can be explained by the intention to lower the cost of intermediate inputs and the relative stability of nominal protection at the level of final output.

### Table 3.2

**Unit Cost Ratios (UCd), Main Distortions and their Changes (1984-97)**

<table>
<thead>
<tr>
<th>UCd increase</th>
<th>UCd decrease</th>
<th>Average UCd</th>
</tr>
</thead>
<tbody>
<tr>
<td>(number of firms)</td>
<td>1984</td>
<td>1997</td>
</tr>
<tr>
<td>UCd&lt;sup&gt;1984&lt;/sup&gt; ≤ 1</td>
<td>9 (1)*</td>
<td>1 (8)*</td>
</tr>
<tr>
<td>UCd&lt;sup&gt;1984&lt;/sup&gt; &gt; 1</td>
<td>11 (19)*</td>
<td>19 (12)*</td>
</tr>
<tr>
<td>Protection</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>E-rate dist.</td>
<td>42</td>
<td>0</td>
</tr>
<tr>
<td>Int. rate dist.</td>
<td>40</td>
<td>0</td>
</tr>
</tbody>
</table>

Source: Appendix table A3.2 for detailed results

* numbers in brackets refer to UCd<sup>1997</sup>

The most important loss of domestic competitiveness is caused by the increase of the cost of borrowing. While in 1984 the market lending-rate was three percent below the shadow interest rate, in 1997 it was sixteen percent above its shadow rate. This distortion in the price of credit has, on average, raised unit costs by about 22 percent across industries. The second most important factor is the re-appearance
of currency misalignment. The estimated overvaluation of the Kenya shilling of 10% in 1997 adds on average 7.5% to the unit cost ratio. Tariff protection, on the other hand, has benefited the manufacturers, lowering their unit costs by about eight percent (distortion increasing from −4.7 to −13.3%). This effect comes as a surprise, given the general lowering of trade barriers during the period 1984 to 1997. The reason for this unexpected benefit is that, according to the data provided by firms, the tariff on imported inputs has declined more than the protective tariff on outputs. It is also evident that further cost increases have occurred in the costs of electricity, transport and communications discussed in the next sub-section, but we have no exact data of these costs of 1984 for comparison.

3.22 Export competitiveness

The loss of competitiveness observed in export markets is even more substantial than that in the domestic market. The indicator UCx, it will be remembered, shows the firms’ ability to export, selling at international border prices, while their costs are distorted in the same way as in UCd. This unit cost ratio compares actual costs with the border prices of Mombasa, rather than export prices to neighbour countries, which may be higher, especially if the neighbour countries are land-locked like Uganda. Therefore, it measures the capacity to export internationally rather than within the region.

The comparison over time is shown in the summary table 3.3 (summarizing table 3.3 of the main report). The average unit cost ratio UCx has increased from 1.25 to 1.42, a decline of competitiveness of nearly 14 percent. For twenty-four firms the cost ratio has increased and for only sixteen it has declined. This means that it has become more difficult to export under present conditions than in the mid-eighties.

Table 3.3
Export Competitiveness (UCx) and Distortions in 42 Kenyan Manufacturing Firms; Changes between 1984 and 1997

<table>
<thead>
<tr>
<th>UCx increase</th>
<th>UCx decrease</th>
<th>Average UCx</th>
</tr>
</thead>
<tbody>
<tr>
<td>number of firms</td>
<td></td>
<td>1984</td>
</tr>
<tr>
<td>UCx&lt;sup&gt;1984&lt;/sup&gt; ≤ 1</td>
<td>5 (0)***</td>
<td>0 (0)</td>
</tr>
<tr>
<td>UCx&lt;sup&gt;1984&lt;/sup&gt; &gt; 1</td>
<td>19 (24)</td>
<td>16 (16)</td>
</tr>
<tr>
<td>Tariff on inputs</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>Energy cost</td>
<td>n.a.*</td>
<td>n.a.</td>
</tr>
<tr>
<td>Transport cost</td>
<td>n.a.*</td>
<td>n.a.</td>
</tr>
<tr>
<td>Total input cost dist.**</td>
<td>33</td>
<td>7</td>
</tr>
</tbody>
</table>

* no measurements available in 1984
** incl. interest and E-rate distortion shown in Table 3.2
*** numbers in brackets refer to UCx<sup>1997</sup>
The main cost distortions are the ones already shown in table 3.2, i.e. of the interest rate and the exchange rate, but the protection component excludes the protection on the output side. The sum of all input distortions, i.e. the difference between UCx and UCs, is shown at the bottom of table 3.3. It has increased on average from 8.6% to 35.3%. The cost impact of the tariff on inputs has declined from an average of 8% to 6.2%, which is a benefit from trade liberalization. The main unit cost increases are caused by the interest rate (distortion impact increasing from −2.8% to 19.3%) and the misalignment of the Kenya shilling, which accounts for 7.5% (from zero in 1984). Table 3.3 also shows the unit-cost impact of distortions in energy and transport & communications costs, which account for 1.6% and 1.4%, respectively. Their importance as a proportion of output value is surprisingly low, although their importance is much more substantial, according to the views of firm officials expressed in interviews and on the questionnaire. The highest energy cost distortion is observed in the paper industry, where electricity failure and taxes on fuel amount to over ten percent of output value. Even more constraining are the extra costs reported for transport of inputs and for communications, where firms cope with the deteriorating railway, roads and telephone system by facing increased costs. These costs are likely to reflect less than the total cost including the cost of frustration of the managers and agents directly involved. Since we do not have reliable estimates of these costs in 1984, we could not quantify them for comparison with 1997, but it is clear from the questionnaires that these cost categories are much higher now than in the mid-eighties.

3.23 Comparative advantage and its sources

The unit cost ratio UCs, in which all costs and revenues are based on shadow prices, is taken as an indicator of comparative advantage, which is understood as competitiveness in real terms. Essentially, it reflects efficiency and factor abundance (cheapness), but excludes all price distortions. It is important to remember that since the indicator UCs compares manufacturing costs with the shadow prices of comparable importable products, the criterion UCs ≤1 is a very demanding criterion. The shadow price of a comparable importable product is the cif free-trade price after adjusting for exchange rate misalignment. In other words, it reflects the costs of international best-practice suppliers, augmented only by the transport cost to the national port of entry.
Table 3.4
Shadow Unit Cost Ratios (UCs), Their Components and Changes 1984-1997

<table>
<thead>
<tr>
<th></th>
<th>UCs decrease</th>
<th>UCs increase</th>
<th>Average UCs</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Number of firms)</td>
<td>1984</td>
<td>1997</td>
<td></td>
</tr>
<tr>
<td>UCs (^{1984} \leq 1)</td>
<td>1 (12)*</td>
<td>8 (2)</td>
<td>1.166</td>
</tr>
<tr>
<td>UCs (^{1984} &gt; 1)</td>
<td>21 (10)</td>
<td>10 (16)</td>
<td>0.673</td>
</tr>
<tr>
<td>Tradable inputs</td>
<td>17</td>
<td>23</td>
<td>0.086</td>
</tr>
<tr>
<td>Labour</td>
<td>20</td>
<td>20</td>
<td>0.278</td>
</tr>
<tr>
<td>Capital</td>
<td>25</td>
<td>15</td>
<td>0.278</td>
</tr>
</tbody>
</table>

Note: * numbers in brackets refer to UCs \(^{1997}\)

The sample averages of UCs for 1984 and 1997 are shown in columns 4 and 5 of the summary table 3.4. The unit cost ratios of the main cost components, tradable inputs, labour and capital, are also shown with their changes over time. The decline of the average UCs from 1.166 to 1.063 is taken as evidence of increased comparative advantage, or more accurately, as reduced comparative disadvantage. This finding is of great importance, as it is the expected outcome under trade liberalization. For Kenya, it means that in spite of increasing disincentives to manufacturers, and declining competitiveness at market prices, resources have flown towards activities with comparative advantage. The number of firms having gained comparative advantage or diminished their disadvantage is 22, compared with 18 firms experiencing the opposite development. As to the cost components, which can be interpreted as the sources of comparative advantage, one must remember that without a cost function analysis we cannot derive definite conclusions. Only changes in the average can be observed. The most notable change is the reduction of the share of capital costs from 27.8 to 22.2% of the output value. It is important to stress that this reduction is not due to the shadow interest rate, which was nearly the same in 1997 (14%) as in 1984 (14.4%). Rather, it reflects an improvement in the utilisation rate of capital, which has been reported by the responding firms. The change in the average share of tradable inputs from 67.3 to 59.1% is evidence of rationalization in the use of inputs. The share of non-tradable inputs, however, has increased from 12.9 to 14.9%, reflecting increases in the costs of transport and communications. Labour costs have increased from 8.6 to 10.2%.

As to the sources of comparative advantage from a more general point of view, we saw in the analysis of 1984 that there was a bias...
against capital-intensive industries. Firms were more likely to be non-competitive (UCs>1), when their capital cost was particularly high. In the 1997 sample of firms, the bias is less significant. The highest correlation ($R^2=0.44$) exists again between UCs and capital, which has a negative intercept, implying that high capital intensity is still a source of disadvantage. The firms with lowest unit costs tend to use the least capital. The equations of the trend lines of all four factors are as follows:

$$\begin{align*}
\text{VITs} &= 0.106 + 0.475 \text{ CUs} \\
\text{VINs} &= 0.183 - 0.048 \text{ CUs} \\
\text{LCs} &= 0.154 - 0.034 \text{ CUs} \\
\text{KCs} &= -0.443 + 0.607 \text{ UCs}
\end{align*}$$

where VITs, VINs, LCs and KCs are the unit cost ratios of traded and non-traded inputs, total labour and total capital, respectively. While in 1984 the bias could be attributed to low capacity utilisation, in 1997 it is attributable to the high price of capital, since capacity utilization rates were generally higher. The analysis also shows that the relatively strongest bias is the one in favour of traded inputs. In other words, firms may be able to achieve lower unit costs by using more transformed tradable inputs, a phenomenon well known as specialization or outsourcing, especially in more industrialized countries.

### 3.3 Industry-level analysis of the 1997 data

The aggregation of data from 42 firms to 15 industries, defined at the four-digit level of the International Standard Industrial Classification (ISIC), makes the presentation of results easier and hides firm-specific details in the interest of confidentiality, but it precludes some conclusions that are available at the firm level. The aggregated data do not permit to infer to what extent firm-specific factors influence the industries' unit costs. When firm-level data are being used, one can find industries with a wide range of performance. It is then interesting to investigate the reasons for different performance, separating market and policy-induced factors from firm-specific ones, such as managerial efficiency or inefficiency. Since in the present context we focus on policy-induced effects rather than intra-firm characteristics, it is useful to move to the aggregate results.

### 3.3.1 Competitiveness and comparative advantage

Comparing the unit cost ratios of industries (defined at the four-digit ISIC level) of 1997 with those of 1984, table 3.5 shows that they have increased for export competitiveness, but declined for
comparative advantage. UCx has increased in 11 and decreased in only 4 industries, while UCs has increased in 4 and decreased in 11 industries, whereas for UCd the number of increases (8) and decreases (7) is nearly the same. The industry averages tell the same story. This means that manufacturing industries have gained in terms of comparative advantage over the 13-year period, increasing their number from 2 to 5, but most industries have lost in terms of competitive advantage, due to larger cost-increasing distortions.

Table 3.5

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat &amp; dairy prod.</td>
<td>1.251</td>
<td>1.096</td>
<td>1.051</td>
<td>1.224</td>
<td>1.039</td>
<td>1.008</td>
</tr>
<tr>
<td>Fruit/fish processing</td>
<td>1.012</td>
<td>1.080</td>
<td>1.066</td>
<td>1.080</td>
<td>1.012</td>
<td>0.886</td>
</tr>
<tr>
<td>Grain mills &amp; bakeries</td>
<td>1.046</td>
<td>1.161</td>
<td>1.025</td>
<td>1.310</td>
<td>1.015</td>
<td>1.053</td>
</tr>
<tr>
<td>Sugar &amp; confectionary</td>
<td>1.421</td>
<td>1.160</td>
<td>1.842</td>
<td>1.437</td>
<td>1.450</td>
<td>1.170</td>
</tr>
<tr>
<td>Beverages &amp; tobacco</td>
<td>1.068</td>
<td>0.990</td>
<td>1.152</td>
<td>1.215</td>
<td>1.083</td>
<td>0.982</td>
</tr>
<tr>
<td>Textiles &amp; clothing</td>
<td>1.150</td>
<td>1.408</td>
<td>1.463</td>
<td>1.660</td>
<td>1.219</td>
<td>1.199</td>
</tr>
<tr>
<td>Footwear &amp; leather</td>
<td>0.738</td>
<td>1.054</td>
<td>0.980</td>
<td>1.341</td>
<td>0.934</td>
<td>1.050</td>
</tr>
<tr>
<td>Wood/paper</td>
<td>1.383</td>
<td>1.738</td>
<td>1.287</td>
<td>2.005</td>
<td>1.129</td>
<td>1.276</td>
</tr>
<tr>
<td>Chemicals: paint</td>
<td>1.021</td>
<td>0.992</td>
<td>1.491</td>
<td>1.236</td>
<td>1.248</td>
<td>1.039</td>
</tr>
<tr>
<td>Industr. chemicals</td>
<td>1.203</td>
<td>1.178</td>
<td>1.192</td>
<td>1.347</td>
<td>1.065</td>
<td>0.998</td>
</tr>
<tr>
<td>Pharmaceut industry</td>
<td>1.018</td>
<td>1.538</td>
<td>1.145</td>
<td>1.824</td>
<td>1.101</td>
<td>1.458</td>
</tr>
<tr>
<td>Petrol., plastic, rubber</td>
<td>0.777</td>
<td>0.879</td>
<td>0.989</td>
<td>1.095</td>
<td>0.850</td>
<td>0.828</td>
</tr>
<tr>
<td>Non-met. minerals</td>
<td>1.175</td>
<td>1.721</td>
<td>1.337</td>
<td>1.936</td>
<td>1.575</td>
<td>1.139</td>
</tr>
<tr>
<td>Metal &amp; metal prod.</td>
<td>1.299</td>
<td>1.099</td>
<td>1.456</td>
<td>1.326</td>
<td>1.326</td>
<td>1.063</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>1.165</td>
<td>0.985</td>
<td>1.675</td>
<td>1.171</td>
<td>1.366</td>
<td>0.963</td>
</tr>
</tbody>
</table>

This finding is important, because it suggests that trade liberalization alone is not sufficient to strengthen the competitiveness of industries. Other policies, in particular financial liberalization, exchange rate policy avoiding misalignment and the maintenance of efficient public services and utilities need to go hand in hand with liberalizing trade and industrial policies.

3.32 Distortion analysis

The impact of the main distortions on unit costs are shown in table 3.6 for 1984 and 1997. While in 1984 the strongest distortion, irrespective of its sign, came from tariff and non-tariff protection, an
average of minus 4.6%, the main distortion in 1997 was that of the cost of borrowing. Protection was generally cost-decreasing with a few exceptions, it became even more so in 1997, due to a stronger decline on the input side. The exchange rate distortion did not exist in 1984, but was cost-increasing in 1997 (7.5% on average) due to overvaluation. The interest rate distortion, which had favoured competitiveness in 1984 (when the market lending rate was slightly below the shadow interest rate), became the major cost-increasing distortion in 1997.

Table 3.6

<table>
<thead>
<tr>
<th>Industry</th>
<th>Tariff protection</th>
<th>Exchange rate</th>
<th>Interest rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat &amp; dairy prod.</td>
<td>0.258</td>
<td>-0.101</td>
<td>0.065</td>
</tr>
<tr>
<td>Fruit/fish processing</td>
<td>0.010</td>
<td>0.043</td>
<td>0.040</td>
</tr>
<tr>
<td>Grain mills &amp; bakeries</td>
<td>0.008</td>
<td>-0.064</td>
<td>0.050</td>
</tr>
<tr>
<td>Sugar &amp; confect.</td>
<td>-0.104</td>
<td>-0.23</td>
<td>0.049</td>
</tr>
<tr>
<td>Beverages/Tobacco</td>
<td>-0.056</td>
<td>-0.185</td>
<td>0.077</td>
</tr>
<tr>
<td>Textile &amp; clothing</td>
<td>-0.106</td>
<td>-0.184</td>
<td>0.097</td>
</tr>
<tr>
<td>Footwear &amp; leather</td>
<td>-0.185</td>
<td>-0.178</td>
<td>0.074</td>
</tr>
<tr>
<td>Wood/paper</td>
<td>0.133</td>
<td>-0.190</td>
<td>0.126</td>
</tr>
<tr>
<td>Chemicals: paint</td>
<td>-0.239</td>
<td>-0.192</td>
<td>0.054</td>
</tr>
<tr>
<td>Industrial chemicals</td>
<td>0.077</td>
<td>-0.112</td>
<td>0.075</td>
</tr>
<tr>
<td>Pharmaceutical industry</td>
<td>-0.096</td>
<td>-0.207</td>
<td>0.106</td>
</tr>
<tr>
<td>Petrol., plastic, rubber</td>
<td>-0.112</td>
<td>-0.121</td>
<td>0.060</td>
</tr>
<tr>
<td>Non-metallic minerals</td>
<td>-0.110</td>
<td>-0.164</td>
<td>0.142</td>
</tr>
<tr>
<td>Metal &amp; metal prod.</td>
<td>-0.043</td>
<td>-0.149</td>
<td>0.045</td>
</tr>
<tr>
<td>Transport equipment</td>
<td>-0.160</td>
<td>-0.115</td>
<td>0.041</td>
</tr>
<tr>
<td>Average</td>
<td>-0.046</td>
<td>-0.133</td>
<td>0.075</td>
</tr>
</tbody>
</table>

Although the three main distortions examined so far account for most of the unit cost difference between UCd and UCs, they seem to be less irritative to the management of many companies than the distortions in the costs of transportation, information, energy and other utilities. As mentioned at the firm-level, nearly all firms of the sample reported that the business environment has deteriorated significantly in recent years and that the most cost-increasing factors are roads in a state of disrepair, unreliable railways and other communication systems, energy blackouts and government red tape and corruption. One may argue that these factors are not really price distortions. This is not of
substantial importance here, however, since we view them in the present approach as distortions from normal costs, and most of them are policy-induced like the price distortions reported above. The industries most strongly affected by transport, communication and energy cost distortions are the cement, wood & paper and chemical industries.

3.4 Sensitivity analysis for the indicators at the firm level

The sensitivity of our findings to changes in some of the key variables is being explored by simulating the indicators. We examine how the indicators are affected by different assumptions about the shadow prices. This approach attempts to overcome the uncertainty about finding and using the most accurate estimates of true scarcity prices. It leads us to determine maxima and minima of UCs that determine the ranges of greater certainty and possible error in our evaluation. Obviously, the values of UCs are affected, but not those of UCd and UCx.

As we have shown in the preceding section, the price distortion with the strongest impact on unit costs is that of the interest rate. One can argue that the scarcity price of capital in a country like Uganda must include certain real costs that are due to the underdeveloped state of the financial sector and to low savings. Unfortunately we do not possess reliable data on these factors. On the other hand, we also see the average lending rate as a rate that includes elements, which we would clearly label as distortions, such as the impact of insufficient enforcement of banking regulations. The sensitivity of the unit cost ratios to variations in the shadow interest rate (rs) is therefore examined by calculating a lower and an upper bound of it. An alternative rate based on the interest rate parity condition can be computed as LIBOR plus the expected rate of currency depreciation. Taking the actual exchange rate of t+1, one obtains as expected rate of depreciation in Kenya's case 3%, implying a shadow interest rate of 9%. Under purchasing power parity this rate should be the same as the one based on the inflation differential. The fact that it is lower suggests that investors may have expected some appreciation of the Kenya shilling in real terms. This is unlikely, however, given the weakness of foreign capital inflows. If one takes the total rate of overvaluation as expected rate of depreciation (i.e. 10%) one obtains an interest rate of 16.6%, which we consider as upper bound, while the rate of 9% is taken as lower bound, and the median rate of 14% is used in the computations as most likely value.
As to the misalignment of the exchange rate, we had argued earlier that by 1997 the Kenya shilling had appreciated in real terms and we estimated the rate of overvaluation as 10%. For simulation purposes we are using a lower bound of zero and an upper bound of 20%. The latter rate is a conservative estimate, based on the fact that the shilling had depreciated very strongly in 1993, which one could consider as a year of equilibrium (with possibly some degree of over-shooting) and that the real exchange rate vis-à-vis the US$ appreciated by at least 20% between 1993 and 1997.

Based on these estimates of upper and lower bounds of the shadow interest rate (rs) and exchange rate overvaluation (Reo), the following table shows the unit cost ratios at shadow prices of the total sample of firms (weighted average).

**Table 3.7**

*Comparative Advantage (UCs) under Varying Assumptions about the Shadow Interest Rate (rs) and Currency Overvaluation (Reo)*

<table>
<thead>
<tr>
<th>Reo (in %)</th>
<th>9.0</th>
<th>14.0</th>
<th>16.6</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.044</td>
<td>1.111</td>
<td>1.145</td>
</tr>
<tr>
<td>10</td>
<td>1.003</td>
<td>1.063</td>
<td>1.095</td>
</tr>
<tr>
<td>20</td>
<td>0.97</td>
<td>1.025</td>
<td>1.054</td>
</tr>
</tbody>
</table>

The analysis suggests that for our sample of industries, the unit cost ratio at shadow prices may vary between a minimum of 0.97 and a maximum of 1.15, depending on what values of rs and Reo we assume to be most realistic. Since the interest rate and the exchange rate are related, and since the maximum of one is not compatible with the minimum of the other, the median value of each appears to be the safest estimate. A unit cost ratio of 1.06, taken as sector average, means comparative disadvantage vis-à-vis the rest of the world, but a slight comparative advantage vis-à-vis Ugandan manufacturing, where the comparable rate was computed as 1.12. We have concluded in the detailed industry analysis only presented in the full-length report of the project (Siggel, Ikiara, Nganda, 1999), that there are several industries in which Ugandan firms may become suppliers of Kenyan demand or, at least, Kenyan exporters may lose their competitive advantage relative to Ugandan producers under further regional integration and adjustments by the firms.
III. CONCLUSIONS

The analysis reveals that in the Kenyan manufacturing sector only very few industries had comparative advantage and equally few were internationally competitive in the mid-1980s. This situation has not improved, but seems to have deteriorated, in spite of over ten years of structural adjustment and trade policy changes. If this was only true for profitability and as a consequence of decreased protection, one could consider this outcome as normal for a transition period. But since protection has declined only marginally, the declining competitiveness must be attributed to increased costs, and we have substantial evidence of this. Competitiveness in export markets is also weakened due to these cost increases. Comparative advantage, on the other hand, has been strengthened in various industries and in the manufacturing sector as a whole. This means that the increasingly open economy has forced enterprises to either exit or cut costs.

Although some price distortions have diminished, new kinds of cost distortions have been added. Generally speaking, they are distortions of public service deficiencies, such as the extra cost resulting from the deterioration of infrastructure, especially transport and communication, but also energy and water supply. The biggest additional cost, however, is caused by the inefficiency of the financial sector, which makes borrowing for investment prohibitive. Finally, the exchange rate also contributes to competitive weakness by showing signs of overvaluation.

Judging from the responses of the participating firms and from the quantitative analysis of their data, we conclude that in order to accelerate industrialization, the Government of Kenya must make fundamental policy changes. It is not sufficient to expose a still adolescent industrial sector to partially or even fully liberated international trade, hoping that the invisible hand will do the rest. What is needed is an industrial strategy in which the government plays an active role in creating the enabling environment. It would appear that in Kenya the environment for business has been rather disabled than enabled in recent years, in spite of the existence of very well-intentioned policy documents. If the present downward trend is not drastically reversed, the goal of industrial maturity in the year 2020 would appear to be unrealistic.
ENDNOTES


4 see section for 2.31 for the analysis of these prices.

5 This proposition is demonstrated in Siggel (1993) and originally established in Dornbusch, Fisher, Samuelson (1979)


7 Based on consumer price indices of Kenya (12%) and industrial countries (2%), IFS Yearbook, 1999.

8 Available on the EAGER website or from the authors.

9This is also reflected by a slight increase in effective protection from 42 to 43%.

REFERENCES


