

INFORMALITY, ETHNICITY AND PRODUCTIVITY: EVIDENCE FROM SMALL MANUFACTURERS IN KENYA[#]

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Abstract: A rapidly increasing share of firms in Kenya consists of not only small but also informal establishments. This paper investigates the role of ethnicity and other factors in the choice of formality status at start-up. Differences in productivity, investment and growth across the formality and ethnicity divide are also investigated. The results show that while African-owned firms are more likely to start informally, enterprises owned by either professionals or persons who are older are less likely to start informally. African informal firms are more efficient than African formal firms are, but both categories are less efficient than Asian-owned formal firms are. We conclude that ethnicity is important in explaining choice of formality status, while the network implications of ethnicity account for the differences in firm productivity, investment and growth prospects. It is possible to mainstream informal enterprises by reducing cost related to business registration. However, additional analysis is needed to unpack the ethnic variable en route to developing policy interventions for improving the performance of small scale manufacturing in Kenya.

Keywords: informal sector, informality, ethnicity, productivity, manufacturing, Kenya

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1. Introduction

The informal sector in most developing economies is not only large but has been growing quickly in recent decades. In 1999 an estimated 68% of the total work force in Kenya outside smallholder agriculture worked within the so-called ‘informal sector’¹ (Kenya, 2000). The share of informal employment in manufacturing was even higher². Understanding why the relative importance of informal employment is increasing is of utmost importance for development policy. How does the performance of informal enterprises compare with that of the formal ones? What accounts for the difference and what are the long-term implications for industry-based economic growth? Can the government permit an increasing share of economic activity in a non-taxable sector?

The purpose of this paper is to explain why an increasing share of small firms in Kenya is informal. We will consider explanatory factors ranging from human capital to economic networks and ethnicity. We will investigate how these factors relate to informal-formal sector differences by concentrating on three main issues: the choice of formality status at start-up; differences in productivity between formal and informal firms; and differences in growth and investment rates of African and Asian firms.

The paper is structured as follows. The next section provides a review of the costs and benefits of informality. Section 3 describes the informal sector in Kenya, which has an indigenous name, the Jua Kali (Swahili for Hot Sun). Econometric analysis of choice of informality and implications for productivity, efficiency and growth is conducted in section 4. A summary of the main findings and a discussion of their policy implications conclude the paper.

¹ According to the definition adopted by the Central Bureau of Statistics, an informal firm is one that is not in the books of the Registrar of Companies.

² Informal manufacturing accounted for 79% of total manufacturing employment in 1997.

2. Why informal?

In his classical article on the dual economy model Lewis (1954) treated the small-scale, traditional sector as a reservoir of surplus labour without growth potential. The sector was seen as a temporary disequilibrium phenomenon, which would shrink as the modern sector absorbed the labour surplus. As the evolution in the subsequent decades showed, however, this prediction was wrong. The industrial structure in Africa has remained dual, with a large number of very small firms and a small number of medium and large-scale firms. These small firms typically work with very limited capital, use simple technologies, and tend to cut costs by evading taxes, ignoring minimum wage laws and so on. The concept of the “informal sector” was coined in the early 1970s to characterise these firms. A lively debate on the definition and potential of the sector ensued. Several studies, for example the influential 1972 ILO report on employment in Kenya argued, contrary to Lewis, that the sector could provide a basis for employment creation and growth even in the longer term.

In this literature, one or more of three criteria is used to define the informal sector (Mead and Morrison, 1996). The first one is size, where the concept of informal is restricted to self-employed and micro-enterprises with less than 10-20 employees. The second criterion concerns legal informality, that is informal enterprises are not registered and do not comply with legal obligations concerning safety, taxes, labour laws etc. The third criterion indicates that the firms should have limited physical and human capital per worker. Sometimes the sector also is referred to as the low wage sector. The common point of all these attempts at defining the informal sector is, of course, that there is a dual structure in the economy, with a formal sector and an informal sector.³

Some still argue that the existence of informal firms is a short-term disequilibrium phenomenon, but the fact that these firms have grown rapidly in number is evidence against this explanation. Transactions costs, information

³ Fontin, Marceau, and Savard (1997) emphasise the three aspects mentioned above and refer to them as scale, evasion, and wage dualism.

asymmetries and market failures may explain their persistence.⁴ Furthermore, management requirements are less exacting in an informal firm. They may find it easier to control labour and have better access to family labour power. There are also government policies and regulations such as labour laws concerning minimum wages, workers safety, working hours etc that need not be adhered to by informal firms. Then there are taxes and fees, which weigh heavily on formal firms but not informal ones, as do various urban planning regulations. There may also be economic and financial regulations, for example price controls, licensing of various sorts, as well as laws pertaining to property rights that the informal firms can avoid. When there are fluctuations in demand it may be easier for informal firms to adjust given their flexible technologies and hence avoid the costs associated with idle capacity. The ease by which an informal firm can vary the employment level may save on wage costs. Limited managerial ability and ability to cope with the requirements of formality may also make entrepreneurs stay in the informal segment of the economy.

The costs of formality that we have discussed above are associated with the entry and operation in compliance with all legal requirements.⁵ An informal firm avoids all these by staying informal. However, there are also costs of informality, such as the continuous risk of being detected and punished by the state for not being formal. Also, informal firms cannot enjoy the services provided by the state, most notably institutions providing jurisdictional services such as policing, contract enforcement and protection against burglars. Unclear legal status also means that they cannot easily get access to financial and banking services and other commercial services. They may, for example, be unable to use formal channels of dispute resolution due to uncertain legal status.

In a contribution to the debate on the character and role of the informal sector, Harris (1990) has suggested a classification of the various views on the sector along two dimensions. First, does the sector have a growth potential or

⁴ For a good discussion of small firms generally see Fafchamps (1994).

⁵ Loayza (1997) provides a useful discussion of the costs and benefits of legal status.

not, and secondly is it autonomous or integrated with the formal sector? Figure 1 illustrates this classification.

	<i>Autonomy</i>	<i>Integration</i>
<i>Growth potential</i> +	Duality	Complementarity
<i>Growth potential</i> -	Marginality	Exploitation

Figure 1. Views on the formal - informal sector interrelationships.

For the pessimists, the sector is either marginalized or exploited. For the optimists, it is either dual or complementary to the formal sector. A recent paper by Ranis and Stewart (1999) extends this discussion and presents a model, where the informal sector is considered to be heterogeneous, so that firms can be either productive and dynamic or stagnant and traditional. The authors go on to analyse the factors that determine the growth of the informal sector, which would have to be based on the dynamic segment of the sector. A key factor is the degree of integration with the formal sector. The higher this is, the higher the growth potential. More rapid growth in the formal sector and more even distribution of income also increase demand for informal sector products and thus promotes its growth.

The division of the informal sector into a progressive dynamic and a stagnant low-income sub sector is not new.⁶ Few would contest that there exist examples of informal production in developing countries that conforms to each of the four perspectives in Figure 1.

Apart from the aspects already discussed, the character of their markets also affects the choice of formality status among small firms in Kenya. Small firms in Kenya have few assets that can be seized in case of contract breaches, and their transactions are so small that the monetary and time costs associated with court actions would not be justified in any case. There is evidence that small firms in Kenya seldom go to court (Kimuyu, 1997, Bigsten et al., 2000). Entrepreneurs instead choose trading practices that minimise the risk for contract breaches. Fafchamps (1999) identifies two types of institutional

⁶ See Ranis and Stewart (1999, footnote 7), King (1996, Chapter 6) and ILO (1995).

responses that aim to reduce transactions costs, the development of relationships and the sharing of information within networks. When the search and verification costs are high it makes sense to try to establish long-term relationships with other market participants to economise on such costs. The most common information sharing mechanism is the referral system, where a customer or supplier approaches an economic agent with a recommendation from a joint acquaintance (Fafchamps, 1999). When businessmen engage in shared social activities, the likelihood of finding common acquaintances increases as does the shared information. Well-connected agents are more likely to trade among themselves, since they can easily find and screen each other. Group membership thus provides network externalities and a competitive edge.

Such network externalities may restrict market entry. Agents that can screen each other on the basis of information from their own community become less willing to spend resources on the screening of individuals from outside the network. They prefer to deal with members of their own network. This may lead to the emergence of different market segments with different network externalities.

3. Jua Kali – Kenya

3.1 Characteristics of the Jua Kali Sector

The Kenyan Jua Kali sector covers a wide variety of activities mainly in urban areas, but also in rural Kenya. Recent figures suggest that that micro and small-scale enterprises' contribution to GDP range from 18% to 30%.⁷ In Kenya, there are 43 micro and small-scale enterprises for every 1000 Kenyans with an average of 1.8 employees (CBS/KREP/ICEG, 1999). MSEs with a single

⁷ In 1994 it was estimated that the micro and small-scale enterprise (MSE) sector contributed some 13% of GDP in 1994 (Daniels, 1999, p. 57).

employee are a minority, only a third are home based, and less than half are women owned.⁸

Jua Kali activities are concentrated in specific parts of the cities, where services are available and markets are nearby. Some operate from fixed locations and others from transitory to obviate government harassment. The majority of informal sector entrepreneurs are tenants, a few are landlords, while others are squatters who neither pay nor own the space they use. Informal food processing, woodworking and metal fabricating enterprises typically operate from make shift shacks. Local authorities often destroy the structures in order to relocate them. Due to the temporary nature of the premises, infrastructural services such as water and electricity are difficult to supply, thereby limiting the technological choices available to the enterprises

Aboage (1986) demonstrates that the average age of the Jua Kali enterprises is less than six years. This age varies according to location and activity. Those in Nairobi and Mombasa are relatively younger than those in the smaller towns. The first two years of a Jua Kali enterprise seem critical for survival. Absence of entry barriers creates severe competition that leads to the demise of the less efficient and poorly managed enterprises.

Most output from the Jua Kali sector satisfies demand for food and other basic needs by the low and middle income rural and urban Kenyans. Prices are lower than for formal sector products, but the quality is also often lower. However, some of the high quality furniture sold in the formal sector is supplied by Jua Kali enterprises providing an important interlinkage between the two sectors. Contracts with Jua Kali enterprises are often more flexible and customer relationships more personal than in the formal sector. The reputation of individual entrepreneurs is therefore important. Unfortunately, most Jua Kali firms do not live long enough to build the necessary reputation with customers and supporting networks.

⁸ Women account for less than a half of the MSE entrepreneurs, 40% of the sector's employment and dominate commercial and textile activities. Women enterprises also start smaller, use less start-up capital, grow slower, show uniquely different credit use patterns and are more likely to operate from homes(Parker and Torres, 1994).

An important part of the informal entrepreneurship involves engaging in both formal sector jobs and informal activities. Some informal entrepreneurs initially learn their skills while working in the formal sector, although training also flows in the opposite direction. In a few cases, formal retail and wholesale stores contract informal enterprises to make specific products by prepaying the informal workshops for procurement of raw materials. Incidences of extension of supplier credit from formal to informal firms also occur although these are limited to firms with long-established trading relationships.

3.2 Changes in government policies towards the Jua Kali sector

The assortment of heterogeneous trade, manufacturing, transportation and service activities that constitute the informal sector and the peculiarities that bind them were first recognised by the East African Royal Commission in the early 1950s. At the time, they were viewed as urban settlements that were important for African commerce and as growth centres that embodied local talent. Twenty year later, an ILO mission synthesised the myriad issues surrounding informal industry and commerce and brought them out for public debate. The mission recommended elimination of official harassment, increased legitimacy, development of informal technology and promotion of linkages between the sector and the rest of the economy.

Subsequently, policy proposals concerning the sector were dominated by the need to address the need for credit and extension services. It was in the second half of the 1980s that the policy needs of the sector become part of Kenya's political agenda as evidenced by repeated visits by the head of state to areas of Nairobi known for the concentration of informal activities. During such visits, construction of shacks shacks, formation of networks, security of tenure of informal premises, sub-contracting and inclusion of informal sector concerns in the country's industrial strategy become part of the policy debate (Kimuyu, 1994). The 1986 Sessional Paper on economic management and growth paid tribute to the virtues of the sector, including its ability to conserve foreign exchange, create jobs, develop skills and promote local entrepreneurship

(Kenya, 1986). The paper also underscored the need to improve the sector's image, which was hitherto poor.

Issues touched on in the sessional paper were picked up by the 1989-93 development plan (Kenya, 1989). The government had put together what was referred to as the Centre Project in 1987, which in turn led to the Small Enterprise Development Project of 1989, the precursor to a Sessional paper on small scale and Jua Kali enterprises, a blue print for the future development of the sector.

The general policy orientation towards the informal sector in recent years embraces the overall privatisation and liberalisation thrust of structural adjustment in which the small business sector is encouraged to meet its own needs. The government's role is limited to the creation of an enabling environment through the development of infrastructure, provision of technical information, facilitation of linkages between large and small enterprises, promotion of networking and development of appropriate laws and regulations (McCormick, 1999).

3.3. The Ethnic Dimension

Networks in Kenya have an important ethnic dimension. The Indian community in Kenya emerged when the English colonial power at the end of the 19th century brought in Indian workers to help build the railway to Lake Victoria. In 1902 they numbered as many as 32,000. Most of them eventually went home, but about 6,500 remained. The majority of those set up small stores and started trading, while others took up intermediate positions in private industry or the public sector. A three-tier society along racial lines was established in colonial Kenya, with the Asians in an intermediate position.⁹ African traders and businessmen were also making some progress, but during the whole colonial period trade and business continued to be dominated by Europeans and Asians. The coming of independence in 1963 implied a change

⁹ See Bigsten (1986) for an analysis of the distributional implications.

in the interracial distribution of both political power and income. New avenues were opened up for African entrepreneurs, but they still suffered from the effects of long-lasting discrimination. The ethnic dimension will therefore be emphasized in the analysis below.

4. Empirical analysis

Our empirical analysis considers data from Kenyan manufacturing, collected in the first half of the 1990s. We will investigate mean differences of key variables related to production, human capital and networks between informal and formal small firms, and, given the strong ethnic patterns in Kenyan manufacturing, also between firms managed by Kenyans of African origin and those of Asian origin. The criterion used to define the informal sector in this study is whether the firms comply with the legal requirement of registration, but all the firms included in the sample are also small and have limited capital, which are used to define informality in some studies.

In the following sub-section we present the data set, and discuss the informality-formality distinction and the ethnic pattern. In subsequent sub-sections we will discuss the factors influencing the choice of formality status at start-up, differences in the levels of productivity, and differences in investment and growth rates.

4.1 Data

The data analysed in this paper consists of a sample of small firms in four Kenyan manufacturing sectors. The data are drawn from the Regional Programme for Enterprise Development (RPED) survey, initiated by the World Bank in the early 1990s, on manufacturing industries in seven Sub-Saharan countries. The surveys comprise informal and formal firms of various sizes and aimed to find explanations for the sluggish supply response to the structural adjustment programmes implemented in the region. The Kenyan survey was conducted for three consecutive years (1993-95). The sampling for formal firms was done on the basis of the government's register of formal sector firms with the Registrar of Companies. The sampling of the informal firms was made with

the help of the Central Bureau of Statistics, which listed all informal firms in the major informal sector areas of Nairobi, Mombasa, Nakuru, and Eldoret. From these list we randomly selected firms in proportion to the shares of the respective sub-sectors and towns in informal employment.

The unbalanced panel comprises a total of 658 observations of 276 firms in the food, wood, textile and metal industries. Since the total data set contains firms with up to 4000 workers, we have restricted our attention to a sub-sample of small firms with 12 workers or less, which comprises 71 informal and 40 formal firms observed 266 times.¹⁰ We coda a firm as informal if it is not in the Registrar of Companies. This the classification used by the Central Bureau of Statistics (Economic Survey, 1998). The balance of formal and informal establishments in our sub-sample is by no means representative of the population since the survey was strongly stratified, giving much larger weight to formal than to informal firms. Based on official statistics, there are about 75 informal firms to every formal one in the 1-5 worker segment, and around 15 in the 6-20 worker category.¹¹ Still, very small formal firms do exist. Out of the 40 formal establishments, 16 had five workers or less.

In addition to the distinction of formal and informal entrepreneurs, there exists a marked difference between Kenyans of African and of Asian origin (hereafter we refer to these two categories as ‘Africans’ and ‘Asians’, respectively). Ethnicity is a politically sensitive issue in Kenyan political life and is potentially of great importance in the analysis because these groups have access to distinct sets of economic networks. Only two informal firms in our sample are run by Asians compared to 69 managed by Africans. The 40 formal firms are more equally distributed as can be seen in Table 1. Hence, in the

¹⁰ The number refers to the mean number of workers per firms during the sample period, rounded down to the nearest integer, and was set in order to include all informal firms except two abnormally large ones.

¹¹ These approximations, drawn from Bigsten and Kimuyu, are not very precise and vary substantially across sectors. As the distribution of informal firms was not available between the 1-5 and 6-20 worker categories in the population was not available, this was assumed the same as in the sample.

descriptive analyses that follow, we will restrict our attention to only three categories, excluding the cell with Asian-managed informal firms.

Table 1. The sample distribution of formal and informal firms by ethnicity. The number of observations given within parentheses.

	<i>Formal</i>	<i>Informal</i>	<i>All</i>
<i>African</i>	16 (43)	69 (166)	85 (209)
<i>Asian</i>	24 (53)	2 (4)	26 (57)
<i>All</i>	40 (96)	71 (170)	111 (266)

Within the sub-sample, the four categories of companies vary in size. Formal Asian-managed firms have on average 7.6 workers, compared to 6.0 for African-managed formal firms and 4.2 for African-owned informal establishments.

4.2. Start-up

Why do some firms start up as informal whereas others begin as formal establishments? The background of the entrepreneur is presented in table 2 and may provide some clues. Human capital appears to play some role. Owner/managers¹² of formal firms are older, have more experience of life in the city and have higher rates of professional and university education at the start-up point than do informal ones. Due to a large number of missing values, it is dubious to draw any strong conclusions about ethnic differences among formal firms. Nevertheless, the data suggest that Asian managers are somewhat younger, have some more years of experience of the city and do not hold a professional diploma as often as do the African entrepreneurs. The father's occupation also differs between the groups. It is much more common for the fathers of Asian managers to have manufacturing background than it is for African managers. Likewise, fathers of the African managers tend to a larger extent to come from farming activities. The start-up capital appears to come mainly from own savings for formal and informal, Asian and African firms,

¹² Although not always evident in the data, these persons are usually the same person. From here on, that is assumed, and the acronyms 'manager' and 'owner' are used interchangeably.

alike. Hence, the suggestion that the Asian community is more supportive in terms of start-up credit is not confirmed in the data.

Ethnicity may have an influence on the choice of formality status when the firm is born. Kenyans of Asian origin have often a longer history of urban business activities than Kenyans of African origin. Kinship and community ties among Asians seem to be tighter and more supportive, and there is weak integration of the Asian and African business spheres. These factors may reduce the barriers for entering the formal sector for Asians and hence partly explain why hardly any Asian-managed firms are informal. The educational differences between African and Asian entrepreneurs are relatively insignificant.

Table 2. Variables on owner/manager's background

Category (N)	Formal (40)		Informal (71)
	Asian (24)	African (16)	African (69)
<i>Highest education level for owner/manager:</i>			
Secondary School	(30%)	31%	34%
Professional Diploma	(30%)	46%	18%
University Diploma	(10%)	8%	3%
Owner's father had manufacturing firm	(40%)	8%	20%
Owner's father was a farmer:	(20%)	38%	38%
<i>% of start-up capital financed by:</i>			
Own savings	(93%)	68%	81%
Borrowings from relatives & friends	(0)	9%	9%
Age of owner at start-up	(31)	35	29
Years in town by owner at start-up	(15)	12	8

NOTE: The statistics are computed using mean values for the periods in which the firm is observed. Cell statistics with more than 50% missing values are in parentheses.

To separate the effects of these variations in the data on the formality-informality decision, a simple binary choice model was estimated modelling the choice of formality status (IS=1 for informal, IS=0 for formal firms) as a function of some of the variables in table 2. Probit estimates are presented in Table 3.

As expected the parameter estimate for the African owner dummy is positive and significant. A discrete change in this dummy from 0 to 1 increases the

probability of choosing informal status by a massive 0.825 given the mean of the other explanatory variables. We cannot very definitely say that this is due to the network factor presented in Section 2, but it could be one plausible explanation. Africans are also less likely to attract attention when they start informally, while Asians are more prone to harassment from the authorities.

A professional diploma and higher age of the entrepreneur significantly reduces the probability of being informal. Hence, human capital seems to matter in the decision. A professional degree seems to stimulate the owner to register the enterprise. His age does the same, which could be explained by greater experience, a preference for being official and ‘secure’, or better relationships with the authorities that may have taken time to establish. Although other variables are insignificant, these results are robust to alternative specifications.¹³

Table 3. Probit estimates of the choice of formality status at start-up.

<i>Variable</i>	Model parameters		Marginal effects	
	<i>Coef.</i>	<i>S. E.</i>	<i>DF/dx</i>	<i>S. E.</i>
Constant	-1.27	(0.99)		
Wood sector\$	0.50	(0.56)	0.14	(0.15)
Textile sector\$	0.07	(0.57)	0.02	(0.17)
Metal sector\$	0.50	(0.62)	0.14	(0.15)
African owner\$	2.81*	(0.53)	0.825*	(0.065)
Owner holds a secondary school certificate\$	0.54	(0.43)	0.15	(0.11)
Owner holds a professional degree\$	-0.90*	(0.39)	-0.31*	(0.14)
Log(owner’s age at start-up)	-0.029#	(0.017)	-0.0089#	(0.0050)
Owner’s father had manufacturing firm\$	0.74	(0.58)	0.19	(0.11)
Owner’s father was a farmer\$	0.22	(0.40)	0.06	(0.12)
No of observations	76			
Log Likelihood	-28.71			
Pseudo R-square	0.37			

NOTE: The dependent variable is given by IS=1 for informal and IS=0 for formal firms. Robust standard errors (S. E.) reported in parentheses. *) and #) denote significant difference of means at the 5% and 10%-levels. \$ denotes dummy variables for which the marginal effects refers to a discrete change from 0 to 1.

¹³ The linear probability (OLS, with and without robust standard errors) and logit models produce qualitatively the same results. Adding some of the other variables in the tables 1 and 3 gives insignificant estimates and does not alter the basic findings presented above.

Since registration involves costs both pecuniary and time related, these costs form part of the motivation for starting informally. Africans are less likely to attract official attention when they avoid such registration, while Asians are either more prone to harassment from the authorities or simply perceive themselves as such. Considering that Asians are an immigrant minority and the political leadership in Kenya is predominantly African, misdeeds by African businesspersons are likely to be more tolerated than those by their Asian counterparts, who are often objects of mistrust.

4.3 Production

Once the choice of formality status is made, one would expect the firms to behave and to be treated differently with respect to a number of aspects. This and the two following subsections briefly investigate some of these differences, including variables relating to wages, taxes and finance.

The notion expressed in the literature that wages are lower in the informal sector is not univocally supported by the data in Table 4. Wages vary more by ethnicity than formality status. Wages in Asian-managed firms are higher than those in African-managed firms, while wages in the latter are basically the same in the formal and informal sectors. This outcome suggests that Asian firms are more inclined to show regard to minimum wage legislation, which tends to generate wage rates that are higher than the market clearing wage rates due to the labour surplus nature of the Kenyan economy. Asian firms are also more capital intensive as well as more productive than African firms. Capital intensity as well as the capital productivity is higher in Asian- compared to African-managed formal firms. African firms do not seem to choose to be informal because of lower direct wage costs, although the higher flexibility in labour contracts may be cost saving. There is a large difference between capital intensity in formal and informal African-managed firms, where the former are about five times more capital intensive. The incidence of tax payments conforms better to the presumed relationships: more than half of the formal companies pay company tax, and almost a third pay value-added tax. A negligible number of informal establishments pay any of these taxes.

Table 4. Production and financial variables.

Category (N)	Formal (40)		Informal (71)
	Asian (24)	African (16)	African (69)
Capital/Labour /a	151	83	18
Output/Capital /b	1.7	0.5	8.0
Skilled annual wage rate /c	31	27	27
Unskilled annual wage rate /c	27	21	22
Pays company tax	62%	50%	2%
Pays VAT	39%	10%	3%
Has overdraft facility at a bank	43%	23%	6%
Rates lack of credit as the no 1 problem	13%	29%	42%
Owes money to suppliers	50%	25%	11%
Latest major investment financed by:			
Company retained earnings	70%	77%	48%
Personal savings	2%	10%	34%
Bank loans	7%	13%	4%

NOTE: The statistics are computed using mean values for the periods in which the firm is observed. Cell statistics with more than 50% missing values are in parentheses.

/a Median values in thousands of 1992 Kenyan Shillings.

/b Median values in 1992 Kenyan Shillings.

/c Median values of mean individual rates per firm in thousands of Kenyan Shillings.

Although informal producers benefited from the ability to avoid paying tax, they are less fortunate in terms of the various finance variables. There are significant formal-informal differences in terms of possession of overdraft facilities, rating credit as the most serious problem, and being trusted by suppliers of intermediate inputs to delay payments. In essence, this picture is consistent with the literature. Similar significant differences are also evident between Asian- and African-managed enterprises, where the problems of the latter category closely resemble those of the informal companies.

The sources of financing for the latest major investment also differs significantly across sectors: formal firms are more often able to utilise retained earnings for these activities, whereas informal firms to a considerable degree must rely on personal savings. This may indicate that the overall earnings of informal firms generally are lower. Also notable is that bank loans is an uncommon source of finance for both formal and informal small firms.

Nevertheless, it is evident that while the financial markets generally discriminate against small manufacturers, this discrimination is more acute for the small informal firms. The network effect of the ethnic factor comes into play in the access and use of credit. Since Asian businesspersons network more intensively, they enjoy a greater network effect in this regard.

Assuming that formal and informal firms produce more or less the same products¹⁴, it is possible to compare the two sectors in terms of how well they transform inputs into outputs using production function models. Indeed, much of the debate on the informal sector reviewed in section 2 has been on the relative performance of informal production. To contribute empirically to that debate, we present the results of one average response production function models (OLS), and one stochastic frontier production function model (SFA), in Table 5. A common Cobb-Douglas technology with capital and labour is assumed¹⁵ augmented with intercept shifts for the various sectors and survey waves.

Although the capital elasticity is rather low relative to that of labour, constant returns to scale cannot be rejected, which is in accordance to other studies based on the RPED data. The central message of the OLS-model, however, is the weakly positive and insignificant estimate of the informal dummy variable together with the much stronger negative and significant impact of the African dummy. The coefficient suggests that output is less than half in an African-managed firm, which is a suspiciously high effect.

Among the control variables, it is striking that the coefficient for owner's age is negative and significant, indicating a reduction of output with more than 3% per year, whereas firm age has virtually no effect. This suggests that learning is not a major factor for these firms, and that rising age of the manager

¹⁴ Listings of the most important outputs by firms does not indicate that formal and informal goods are not substitutes. Neither do they suggest that informal firms are more diversified.

¹⁵ Intermediate inputs was not included in the production function because of poor accuracy. Omitting this variable still produces the correct input elasticities provided that intermediate inputs is proportional to output, which is a hypothesis we maintain in the OLS and SFA models.

reduces his ability to maintain productivity. Access to an overdraft facility is associated with significantly higher productivity, but again is the estimate implausibly high, indicating that it may proxy ability or viability of the firm. These results, including the magnitudes of the parameter estimates of overdraft and African ownership, are robust to alternative specifications.¹⁶

The networks for Asians and Africans in Kenya are different, and since they often move in different circles, go to different clubs, don't intermarry etc. their integration has been limited. The Asian community did get a head start relative to the African community in manufacturing, and the Asian minority has also been under pressure from the rest of the Kenyan society, which has increased internal cohesion. For Asian in business, this cohesion expresses itself in extensive Asian-Asian trade credit, preferential treatment in input supply and in financial assistance. The implication is that while business experience accumulated through generations of involvement in business account for most of the productivity differences, network effects are also important.

¹⁶ Panel data models are rejected at the 5%-level as shown in the table. Nevertheless, they produce very similar results. Separate models per sectors and years produce approximately the same results, but most coefficients are insignificant and sometimes very unstable. The translog specification of the technology was rejected in all estimations.

Table 5 Parameter estimates of OLS and stochastic frontier production function models.

<i>Variable</i>	OLS		SFA	
	<i>Coefficient</i>	<i>Std error</i>	<i>Coefficient</i>	<i>Std error</i>
Constant	13.04*	(0.80)	11.69*	(0.59)
log(Capital)	0.085	(0.061)	0.106*	(0.048)
log(Workers)	0.80*	(0.13)	0.91*	(0.13)
Wood sector	-0.36	(0.27)	-0.60*	(0.28)
Textile sector	-0.51*	(0.25)	-0.40	(0.28)
Metal sector	-0.17	(0.27)	-0.34	(0.28)
Wave 2	-0.12	(0.18)	-0.15	(0.17)
Wave 3	-0.33#	(0.18)	-0.26	(0.17)
Informal sector	-0.04	(0.24)		
African owner	-0.87*	(0.21)		
Overdraft facility	0.44*	(0.20)		
Owner holds a professional degree	0.11	(0.16)		
firm age	0.0090	(0.0060)		
age of owner	-0.0319*	(0.0090)		
Number of firms		91		107
Number of observations		224		251
R-square		0.50		
log-likelihood		-325.17		-404.30
Breusch and Pagan test for random effects (a)		chi2(1) = 2.52 Prob>chi2 = 0.112		
Hausman test of fixed effects (b)		chi2(6) = 10.79 Prob>chi2 = 0.095		
Likelihood ratio test for inefficiency effects (c)				LR-stat(1) = 10.31 Prob>LR-stat = (< 5%)

- (a) This is the Breusch and Pagan multiplier test of the null that the firm-specific errors are zero ($v_i = 0$).
- (b) This is the Hausman specification test of the null that the firm-specific errors are uncorrelated with the explanatory variables.
- (c) This is the test for the inefficiency effects in the Battese and Coelli (1992) model, which has approximately a mixed chi-square distribution. For critical values, see Kodde and Palm (1986).

*) and #) denote significance at the 5% and 10%-levels.

Robust standard errors reported for the OLS-model.

Table 5 also presents the results of a stochastic frontier model, which is specified as a special case of the model proposed by Battese and Coelli

(1992).¹⁷ This model predicts technical efficiencies (TE) for each of the sample firms, defined as, $TE = \exp(-u_i)$, where u_i is a non-negative error term associated with *inefficiency* for the i 'th firm. These predictions belong to the [0.1]-interval in which the right end corresponds to full technical efficiency (TE = 1.0).

With respect to the common variables, the SFA model reports parameter estimates similar to the OLS model. The predicted firm-level technical efficiencies are summarised in Table 6, which gives the same general picture as above: Productivity and efficiency vary both with ethnicity and formality status. African-managed formal units perform worse than not only Asian-managed formal companies, but also relative to informal African controlled enterprises. This is a striking result, which provides further support for our hypothesis that African entrepreneurs have better access to an efficiency enhancing economic network within the informal sector than in the formal sector and vice versa for Asian entrepreneurs.

Table 6 Mean predicted technical efficiencies.

	<i>Formal</i>	<i>Informal</i>	<i>All</i>
<i>African</i>	0.43	0.50	0.49
<i>Asian</i>	0.61	0.50	0.60
<i>All</i>	0.54	0.50	0.52

We should note, however, that there is a large variation around these average measures of performance. Particularly the informal enterprises display a large variation in efficiency, and all categories overlap each other.

4.4 Firm growth

Do differences in productivity and technical efficiency affect growth rates of firms? The widely cited Jovanovic (1982) model assumes this implicitly. The model predicts that firm growth is a decreasing function of size and age, and

¹⁷ The model estimated is identical to the Battese and Coelli (1992) model with the efficiency time trend parameter, η , and the parameter for the mean of the truncated distribution of the error term, μ , which is associated with technical inefficiency in production, restricted to zero. See the original source and Coelli (1994) for details. The model was estimated using FRONTIER 4.1b.

this has gained empirical support (McPherson 1997). Another prediction is that efficient firms grow over time and therefore are comparably large, while less efficient stay small or exit, which has received some empirical backing in Kenyan and Ethiopian manufacturing industries (Lundvall and Battese, 1998, Mengistae 1996). Table 7 appears to support the Jovanovic theory; the smaller informal firms are younger, grow faster and invest more often than do formal firms, irrespective of the ethnicity of the manager. The investment-to-capital rate is significantly higher for informal firms, whereas the investment-to-output rate is about the same as for the two formal categories of establishments.

Turning to ethnic patterns, we again discover significant differences. African-managed formal companies display negative growth rates, but despite that they invest as often and at higher rates than Asian-managed companies. Together with the evidence from the previous section, this may indicate that African-owned enterprises during the survey years were involved in substitution of capital for labour, a process that incurred some costs in terms of forgone output and thereby lowered productivity and efficiency. This possibility is plausible since the survey was conducted during a period of rapid implementation of reforms.

Table 7. Firm growth.

<i>Variable:</i>	Formal (40)		Informal (71)
	Asian (24)	African (16)	African (69)
Average labour growth rate /a	0%	-5%	8%
Firm age	29	18	10
Proportion investing firms	33%	34%	48%
Investment/Capital /b	4%	10%	24%
Investment/Output /b	4%	8%	5%

NOTE:

/a The growth rate is in logarithmic form and defined as, $\text{growth} = \log(L_t/L_{t-1})$, where L and t denote the number of workers and the measurement period.

/b The ratios are computed for investing firms only.

These findings hold when analysed for separate years, with the exception of the last year of the survey. Nevertheless, factors other than ethnicity and formality status may lie behind these relationships, including firm age and size. In order to control for these, a model of firm growth was estimated, including

variables for age and size on the right-hand side of the equation. In order to avoid spurious correlation between the size variable and the dependent growth variable, this variable was entered with a lag of one year, as suggested by Teal (1998) and Parker (1996). The results are reported in Table 8. Model 2 is the same as model 1 except for the inclusion of squares and interactions of size and age, and three additional control variables. Both models neutralise the tentative conclusion from Table 7 that informality by itself would be associated with higher growth rates. Instead, this relationship is only a function of firm size, which, in accordance with the literature, is negative. The African dummy exhibits a weak tendency of being negatively associated with growth in Model 1, but this effect disappears as more variables are included in Model 2. All other variables appear insignificant, both individually and jointly, as indicated in the table.¹⁸

¹⁸ Some caution is appropriate in the interpretation of these results given that the firms that dropped out from the survey between the years are ignored in the analysis. Nevertheless, the dropout rates are approximately the same for each of the four categories of firms (22 firms dropped out in waves 2 and 3, including 7 formal and 15 informal, or, 6 Asian- and 16 African-managed). Unfortunately, we do not have a complete picture of which firms closed, moved or were acquired by other enterprises. If all informal firms that left the sample closed, while all the formal firms simply shifted to another location, our informal growth estimates are biased upwards. However, we would argue that there is no a priori reason to believe that is so. Although the literature suggests higher death rates among informal firms, they also change location more often. Hence, given that the firm has dropped out, there is no immediate reason to suspect that the probability of default is higher for informal compared to formal firms.

Table 8. Ordinary least-squares parameter estimates of firm growth model. The dependent variable is defined as $\log(L_t/L_{t-1})$.

Variable (parameter label)	Model 1		Model 2	
	Coefficient	Std error	Coefficient	Std error
Constant	(β_0) 0.76*	(0.17)	1.00	(0.69)
$\log(L_{t-1})$	(β_1) -0.296*	(0.047)	-0.44*	(0.17)
$[\log(L_{t-1})]^2$	(β_2)		0.032	(0.054)
$\log(\text{firm age})$	(β_3) -0.049	(0.038)	-0.05	(0.18)
$[\log(\text{firm age})]^2$	(β_4)		-0.004	(0.038)
$[\log(L_{t-1})] \times [\log(\text{firm age})]$	(β_5)		0.009	(0.055)
Wood sector	(β_6) -0.135	(0.086)	-0.153	(0.097)
Textile sector	(β_7) -0.142#	(0.084)	-0.193*	(0.092)
Metal sector	(β_8) -0.115	(0.099)	-0.15	(0.11)
Wave 2	(β_9) 0.135*	(0.068)	0.135*	(0.068)
Wave 3	(β_{10}) 0.031	(0.066)	0.075	(0.069)
Informal sector	(β_{11}) -0.059	(0.086)	-0.08	(0.12)
African owner	(β_{12}) -0.132#	(0.076)	-0.096	(0.092)
Overdraft facility	(β_{13})		0.088	(0.074)
Owner has prof degree	(β_{14})		-0.014	(0.087)
$\log(\text{age of owner})$	(β_{15})		-0.03	(0.16)
Number of firms	96		93	
Number of observations	228		217	
R-square	0.21		0.24	
<i>Wald tests:</i>				
$H_0: \beta_{11} = \beta_{12} = 0$	$F(2, 218) = 2.69$ Prob > F = 0.07		$F(2, 201) = 1.56$ Prob > F = 0.21	
$H_0: \beta_{13} = \beta_{14} = \beta_{15} = 0$			$F(3, 201) = 0.50$ Prob > F = 0.69	
$H_0: \beta_2 = \beta_4 = \beta_5 = 0$			$F(3, 201) = 0.16$ Prob > F = 0.93	

NOTE: *) and #) denote significance at the 5% and 10%-levels with robust standard errors.

5. Conclusions

We have tried to answer the question of why firms choose to become informal and which firms choose to become informal. Although the small firm segment is dominated by informal enterprises, formal units of very small size exist, and their characteristics and the environment they operate in are not the same. Compared to formal companies, informal firms are almost never owned by Kenyans of Asian origin, live under more restricted financial conditions, and have less educated managers. These findings are not surprising, but the fact that informal investment and growth rates are higher is. Informal African firms are less efficient than Asian managed formal firms, but more efficient than those

managed by Africans. This suggests that African entrepreneur may have an advantage in the form of an economic network within the informal sector, while the Asian entrepreneurs have a corresponding advantage in the formal sector. This would partially explain why it seems natural for Asian entrepreneurs to enter the formal sector, while it is more advantageous for most African entrepreneurs to enter the informal sector. But it is also true that the political system in Kenya shows more understanding when African businesses fail to register. On the other hand and perhaps on account of feeling insecure, Asian business persons network more intensively, partly accounting for the relatively higher productivity of Asian businesses.

If these interpretation hold, the scope for a policy to lift African entrepreneurs out of the informal into the formal sector may be hard to define. Better credit arrangements and more education may not be sufficient to achieve the desired end. Given the existing set of constraints and networks, it seems as if the African entrepreneurs choice of informality is, individually, optimal. It may, however, lead to a socially suboptimal allocation of investment, although both the Asian and the African investors invest in the sector where their investment pays best given their access to network externalities. This pattern of investment would thus be a drag on growth as well as on the government tax base.

There is thus a need for government intervention, but perhaps it has to take other forms than normally envisaged. One could for example introduce measures helping African entrepreneurs overcome information asymmetries. This might include institutions that provide information about the credit-worthiness of economic agents, trade journals etc. One could also envisage systematic attempts at linking the informal sector to the formal one to achieve a dynamic link. This could help integrate the different business networks. More effective and cheaper commercial courts could also make it more attractive to enter the formal sector and reduce the negative external costs of being poorly connected. The longer-term implications of this might be that African entrepreneurs will find it in their interest to become formal, and this is certainly desirable from the government's point of view. Tax revenues would be

enhanced, and these could in turn be used, among other things, to provide infrastructure for further firm growth.

There are of course also more traditional measures that could be used to shift the cost-benefit balance in favour of formal firms. This could include simplification of registration and licensing procedures, tax-breaks, and the provision of a better infrastructure for small formal firms, and the extension of institutions providing credit to small firms.

We must note, though, that the informal African firms have expanded at a very rapid rate in Kenya, indicating that they have been able to deal with the recent economic turbulence. This seems to suggest that one should avoid rash measures to formalise the informal firms, which at present provides a livelihood for a very large part of the Kenyan population. The sector is also an avenue through which unskilled persons that move from rural to urban areas acquire skills that enable them to survive in a more challenging urban environment. Urban informal employment also results from the limited formal sector employment opportunities and the presence of young graduates from vocational training institutions, whose curriculum is conventional and offers little specialised skills and therefore limited opportunity for penetrating the formal labour market. The graduates end up picking up apprenticeships in the Jua Kali sector to develop specific skills necessary for direct employment in the sector. The sector is also attractive for skilled persons who either lose formal sector jobs or are newcomers into self-employment, taking advantage of the failures of the formal sector to offer some goods and services on competitive terms.¹⁹

It does not seem very likely, though, that this form of organisation can be the basis for a long-term sustainable growth and for a functioning public sector. The search for policy packages that can help shift firms out of informality is therefore not futile, but policy interventions need to take account of the fact that the different ethnic groups in Kenya have access to different economic networks.

¹⁹ Detailed analysis of the garments sector revealed that while making extensive use of casual workers, the Jua Kali sector employs skilled workers for direct deployment in production (Ongile and McCormick, 1996).

References

- Aboagye A.A., 1986, *Informal Sector Employment in Kenya: A Survey of Informal Sector Activities in Nairobi, Kisumu and Mombasa*. International Labour Office, Jobs and Skills Programme for Africa, Addis Ababa.
- Battese, G., and Coelli, T., 1992, "Frontier production functions, technical efficiency and panel data: With application to paddy farmers in India", *The Journal of Productivity Analysis* 3, 153-169.
- Bigsten, A. 1986, "Welfare and Economic Growth in Kenya 1914-1976", *World Development*, 14(9).
- Bigsten, A., Collier, P., Dercon, S., Fafchamps, M., Gauthier, B., Gunning, J.W., Isaksson, S., Oduro, A., Oostendorp, R., Patillo, C., Söderbom, M., Teal, F., Zeufack, A., 2000, "Contract Flexibility and Conflict Resolution: Evidence from African Manufacturing", *Journal of Development Studies* 36(4).
- Bigsten, A., and Kimuyu, P. 1998, *Structure and performances of manufacturing in Kenya*, forthcoming, World Bank, Washington.
- CBS/KREP/ICEG, 1999. *National Micro and Small Enterprise Baseline Survey*. Nairobi.
- Caves, R.E., 1998, Industrial Organization and New Findings on the Turnover and Mobility of Firms, *Journal of Economic Literature* 36(4): 1947-1982.
- Coelli, T., 1994, *A guide to FRONTIER version 4.1: A computer program for stochastic frontier production and cost function estimation*, Department of Econometrics, University of New England, Armidale.
- Fafchamps, M. 1994, "Industrial Structure and Microenterprises in Africa", *Journal of Developing Areas* 29(1): 1-30.
- Fafchamps, M. (1999), "Networks, Communities, and Markets in Sub-Saharan Africa: Implications for Firm Growth and Investment", Working Paper 99-24, Centre for the Study of African Economies, Oxford University.
- Fortin, B., Marceau, N., Savard, L. (1997), "Taxation, wage controls and the informal sector", *Journal of Public Economics* 66: 293-312.
- Harriss, J., 1990, "Linkages between formal and informal sectors in developing countries: a review", ILO, WEP 2-19/WP.50, Geneva.
- International Labour Organisation (ILO), 1972, *Kenya: Employment, Income and Inequality*. ILO, Geneva.
- International Labour Organisation (ILO), 1995, *World Employment 1995: An ILO report*, ILO, Geneva.
- Jovanovic, B., 1982, "Selection and evolution of industries", *Econometrica* 50: 649-670.
- Kenya, 1986, *Sessional Paper No. 1 on Economic Management for Renewed Growth*, Government Printers, Nairobi.
- Kenya, 1989, *Development Plan 1988-1994*, Government Printers, Nairobi.
- Kenya, 1998, *Economic Survey 1998*, Government Printers, Nairobi.
- Kenya, 2000, *Economic Survey, 2000*. Government Printer, Nairobi.

- Kimuyu, P, 1997, *Enterprise Attributes and Corporate Disputes in Kenya*. Discussion paper number DP/001/1997. Institute of Policy Analysis and Research, Nairobi..
- Kimuyu, P., 1994, *Kenya's Informal Sector: A Review. Sectoral Review Paper*, Regional Programme for Enterprise Development. Nairobi.
- King K. (1996). 'Re-ordering Kenya's Jua Kali Economy in the 1990s: External and Internal Policy Agenda' in McCormick D, and Pedersen P.O (eds) *Small Enterprises: Flexibility and Networking in an African Context*, Nairobi, Longhorn Kenya.
- King, K., 1996, *Jua Kali Kenya: change and development in an informal economy, 1970-95*. East African Educational Publishers, Nairobi.
- Kodde, D. A., and Palm, F. C., 1986, "Wald criteria for jointly testing equality and inequality restrictions", *Econometrica* 54, 1243-1248
- Lewis, W.A., 1954, "Economic Development with Unlimited Supplies of Labour", *Manchester School of Economic and Social Studies* 22.
- Liedholm, C., and Mead, D., 1999, *Small enterprises and economic development: the dynamics of micro and small enterprises*, Routledge. New York.
- Little, I. M. D., 1987, "Small manufacturing enterprises in developing countries", *World Bank Economic Review* 1 no 2, 203-235
- Loayza, N.A., 1997, "The Economics of the Informal Sector. A Simple Model and Some Empirical Evidence from Latin America", *Policy Research Working Paper* no 1727, World Bank, Washington DC.
- Lundvall, K. and Battese, G.E. 1998, (LB), "Firm Size, Age and Efficiency: Evidence From Kenyan Manufacturing Firms", *CEPA Working Papers, No. 7/98*, Department of Econometrics, University of New England, Armidale
- McPherson, M. A. (1996), "Growth of micro and small enterprises in southern Africa", *Journal of Development Economics* 48, 253-277.
- McCormick, D. 'Policies Affecting Kenyan Industrialisation: 1994-1994' in Ng'ethe, N, and Owino, W.(eds) *Towards Indigenizing the Policy Debate*, Nairobi, Institute of Policy Analysis and Research.
- Mead, D.C., Morrison, C. (1996), "The Informal Sector Elephant", *World Development* 24 no 10, 1611-1619.
- Mengistae, T. (1996), "Age-size effects in productive efficiency: A second test of the passive learning model", *Working Paper WPS/96-2*, Centre for the Study of African Economies, University of Oxford
- Morrison, C., 1995, "What Institutional Framework For the Informal Sector?", *Policy Brief No. 10*, OECD Development Centre, Paris.
- Parker, J., and Torres, T., 1994, "Micro- and small-scale enterprises in Kenya: Results of a 1993 national baseline survey", *GEMINI Technical report* No. 75, March.
- Parker, J., 1995, *Patterns of business growth: Micro and small enterprises in Kenya*, PhD dissertation, Department for Agricultural Economics, Michigan State University
- Peattie, L., 1986, "An idea in good currency and how it grew: the informal sector", *World Development* 15, no 7

- Ongile, G., McCormick, D. 1996. "Barriers to Small Enterprise 'Growth: Evidence from Nairobi's Garment Industry" in McCormick D. and P. O. Pederson (eds) *Small Enterprise: Flexibility and Networking in an African Context*. Nairobi, Longhorn.
- Ranis, G., Stewart, F., 1999, "V-Goods and the Role of the Urban Informal Sector in Development", *Economic Development and Cultural Change* 47(2):259-288.
- Söderbom., M., 1998, "Investment Behaviour", in Bigsten and Kimuyu (eds.)
- Teal, F., 1998, "The Ghanaian Manufacturing Sector 1991-1995: Firm Growth, Productivity and Convergence", Centre for the Study of African Economies *Working Paper Series/98-17*, Oxford University, Oxford.