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**APPROACHES TO THE PROBLEM OF PRODUCTIVITY  
IN THE JAMAICAN ECONOMY: ANALYSIS AND POLICY**

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# **APPROACHES TO THE PROBLEM OF PRODUCTIVITY IN THE JAMAICAN ECONOMY: ANALYSIS AND POLICY**

Donald J. Harris & Ute Schumacher

## **1. Introduction**

The problem of productivity in the Jamaican economy is a critical one in the contemporary context, viewed from the standpoint of both public policy and the economic interest of firms (owners and employees).

It lies at the heart of a wide range of pressing matters concerning, for instance, economic adjustment to the formation of NAFTA, the impact of changes in the LOME agreement on preferential treatment of Jamaica's exports (e.g. bananas), competitiveness of Jamaica's exports generally in the global marketplace, the effect of competition from imported products on local production, and the persistence of low rates of growth in the economy as a whole.

It has been identified as a significant area of focus in the National Industrial Policy which offers a broad policy approach to the problem and some guidelines for action.

This paper seeks to examine further into this problem and to suggest some practical approaches to dealing with it.

## **2. Significance of the Problem**

For many years now, the Jamaican economy has recorded low rates of economic growth. There is an evident need to put the economy on a higher growth path, in order to reduce unemployment and poverty and raise the general income level of the Jamaican people. Growth of productivity is a necessity for achieving these objectives.

Underlying the observed sluggishness in long-term growth of GDP, and a significant cause of it, is the low level and stagnation of productivity of both capital and labor inputs. During the past decade, Jamaica has had high rates of capital investment, judged by historical standards and in comparison with other similarly situated countries. The fact that output growth has remained sluggish despite this record of investment indicates a persistently low level of productivity of capital investment. Correspondingly, simple measures of labor-productivity show lack of sustained improvement in overall labor productivity.

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To compound this effect, comparison of productivity in key industries (as for instance, sugar, bananas, apparel, and bauxite/alumina) with that of Jamaica's major competitors indicates the existence of lower levels of productivity in Jamaica. This *productivity gap* accounts for significant differences in unit costs. These cost differences, in turn, give rise to substantial disadvantage for Jamaica-based producers in market competition with producers in other countries.

At the same time, intensified global competition due to falling trade barriers means that cost differences that were previously protected, under high tariff and non-tariff barriers and preferential trading arrangements, are no longer sustainable.

It is therefore crucial, from the standpoint of improving both the competitive standing of Jamaica-based producers in the global market-place and the growth-performance of the Jamaican economy, that close attention and analysis be given to the problem of productivity and to designing practical measures for dealing with it.

### 3. Size and Scope of the Problem

To begin with, it is useful to identify the actual dimensions of the problem as the basis for further discussion and analysis. For this purpose, an effort is made here to construct various quantitative indices that provide a measure of relevant features of the problem. These are presented in the accompanying tables and figures.

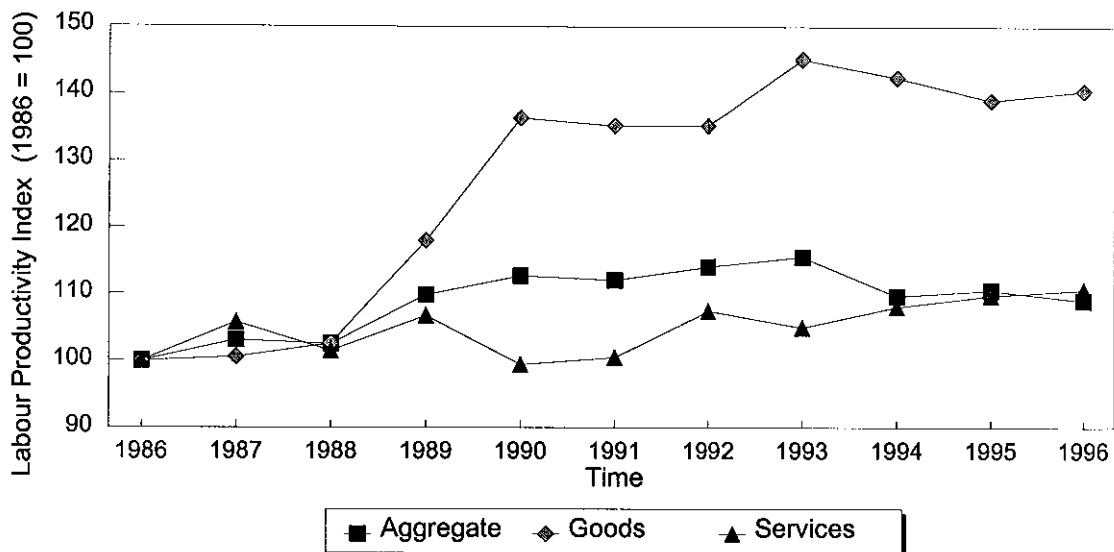
Figures 1 and 2 depict *trends in labour productivity*, for both the aggregate economy and specified sectors, over the ten-year period 1986-1996, using data presented in Table 2. The measure of labor productivity used is a simple one: output divided by total employment (number of employed persons). A striking pattern emerges from these trends.

(a) Aggregate productivity has been virtually stagnant over most of the period after an initial phase of increase at about 3% annually between 1986 and 1990. It has been declining in recent years from the peak level achieved in 1993.

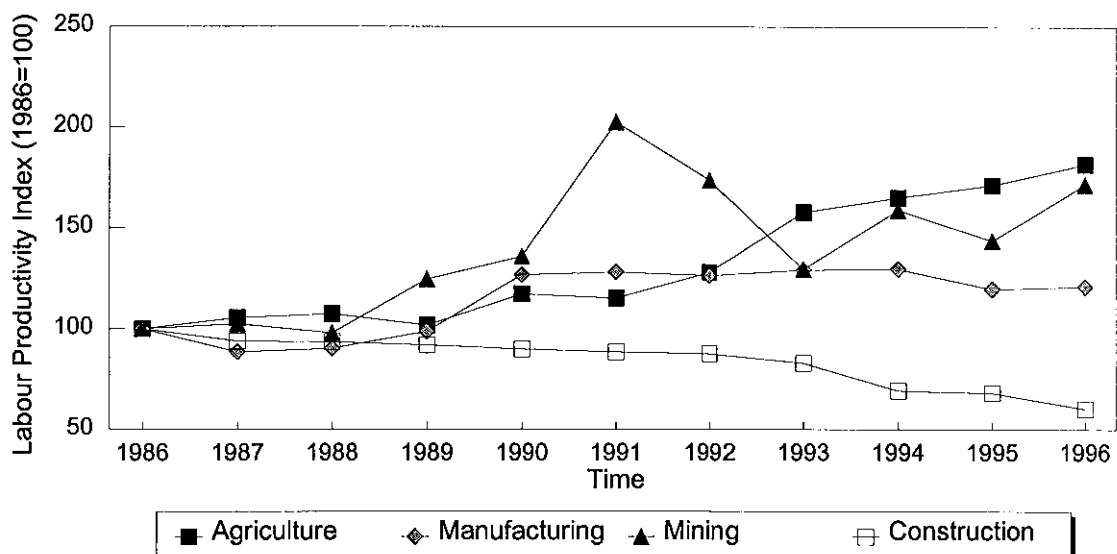
(b) The increase in productivity has been driven by the goods-producing sectors, while the services sectors have shown only marginal improvement.

(c) Among goods-producing sectors, the sector of Agriculture, Forestry and Fishing has had the largest overall productivity increase, sustained at a high positive rate throughout most of the period. More modest productivity gains for the period as a whole are indicated in both Mining and Manufacture. The pattern in Mining is highly uneven over time, owing to sharp changes on the employment side during 1990-1993. In contrast to these sectors, the Construction sector shows a continuous decline in productivity.

**Figure 1: Indices of Labour Productivity, 1986 - 1996**  
 Aggregate, Goods, Services (1986 = 100)



**Figure 2: Indices of Labour Productivity, 1986 - 1996**  
 Agriculture, Manufacturing, Mining, Construction (1986 = 100)



The corresponding *trend in capital productivity* is indicated in Table 1. The measure used here is the incremental capital-output ratio (ICOR), which is the inverse of capital productivity viewed at the margin in terms of current net investment. Capital productivity in this sense has clearly been declining over this period. A rather large and disproportionate decline is indicated between 1990 and 1991. This intriguing feature coincides with the initial phase of the liberalization process and may be connected with portfolio adjustments that shifted investment into short-term, low output-yielding activities.

Table 3 provides useful information on *cross-country differences in labor productivity* as well as in *hourly wages* and *unit labor costs* for a single year 1994. Of these three measures, unit labour cost is the most direct measure of international competitiveness. This measure is itself the product of the other two. The international clothing industry is taken as the specific point of reference in this comparison. This industry may be considered the representative case for general manufacture in each country.

Among the 15 countries included in this Table, Jamaica ranks 10th on the scale of all three measures, with a sizeable *productivity gap* as a key factor in this ranking. On the scale of unit costs, Jamaica ranks on a par with Poland and above Czechoslovakia both of which, despite having a much higher level of wages (by 40% and 20% respectively), compensate for the higher wages with a proportionately higher level of productivity. Jamaica has the same level of wages as Malaysia, but Malaysia ranks lower in unit costs because its productivity level is higher. On the other hand, both Dominican Republic and India have much lower wages than Jamaica, but rank higher in unit costs because their productivity level is lower still. Sri Lanka's wages are the same as Czechoslovakia's, but its unit costs are much higher (even higher than Jamaica's) because its productivity level is much lower.

A similar productivity gap shows up in comparison of *productivity levels in agriculture*. Table 4 presents estimates of yields per hectare for crops grown in Jamaica and average yields for the same crops in developing countries. From these estimates it turns out that developing country yields exceed Jamaica's in almost all cases, by almost two and a half times in the extreme case of carrots and by about 1.6 times on average.

Tables 5 and 6 provide a *detailed sectoral profile of the Jamaican economy* by disaggregating the prevailing levels of productivity in the different sectors and relating these to other sectoral characteristics. It is apparent that there is a wide dispersion of productivity levels across the different sectors. Furthermore, the sectors with the lowest productivity levels have the highest share of employment. These are Agriculture, Forestry & Fishing and Community, Social & Personal Services. Together they represent slightly more than half of the total employed labour force and a

correspondingly smaller output share of about 15 percent in keeping with their low productivity. The highest productivity levels are in Mining and Quarrying (12 times the national average) and Utilities (9 times the national average). The employment share of these sectors is minuscule (slightly more than 1 percent) while their output share is about 12 percent.

Other sectoral indicators presented in Table 6 are useful for assessing various structural and performance characteristics (export shares, wage shares, and output growth-rates) of some of the sectors and sub-sectors. Altogether, these indicators serve to identify the economy-wide significance of the different sectors from the standpoint of their contribution to employment, wage costs, exports and output growth, and hence the potential impact of improvements in sectoral productivity levels.

Tables 7, 8, and 9 provide a further detailed profile of the structure of the Jamaican economy at the firm level, in terms of the *distribution of firms by sector and size*. A notable feature of the pattern displayed here is the predominance of small firms in all sectors (at least 62 percent of firms in the All Jamaica sample have less than 50 employees), with the conspicuous exception of the sectors of Utilities and Mining. The overall distribution of firms shows the highest concentration in Manufacture (37 percent of total firms) followed by Distributive Trade (29 percent). These features point to the special significance of small size of the firm, with manufacture and distribution as its main locus (outside of agriculture), as a factor to be considered in addressing the productivity problem.

#### **4. Analytical Framework: The Sources of Productivity Change**

Viewed in general terms, the problem of productivity is, first and foremost, a matter of the effective organization of the firm (whether private enterprise or government agency, and whether operating in farm or factory or service industry) for production and delivery of the goods and/or services that the firm offers to its customers, consistent with the best available technology (“best practice”). It relates, therefore, to activities that take place within the firm’s orbit of decision making and control: for example, sourcing and use of inputs (raw materials, machinery, labor, land), repair and maintenance, accounting practices, financial control, inventory control, human resource management, labour relations. It concerns the effectiveness of these activities in ensuring delivery of the product at minimum input cost, without unwarranted delay and waste of the firm’s resources.

Second, it concerns the process of innovation and technological change, which alters over time what constitutes best practice. This process itself involves activities that take place within the firm: the search for and adoption of more effective methods of production and delivery of products, improvements in design and quality of products, and the development of new product lines. It

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involves also activities taking place largely outside an individual firm's sphere of influence: at the industry-wide, or economy-wide, or global level, and in a wide range of institutions (the so-called "innovation system") devoted to scientific research, product development, experimentation, testing, as well as education and training. Accordingly, it involves a complex process of diffusion and dissemination of knowledge, information, expertise, and skills, so as to alter existing practices among firms. Typically, this process entails, at the firm level, significant investment in new production capacity as well as organizational changes within the firm. At the wider level, it entails investment in and development of the institutions that constitute the innovation system.

Third, the problem of productivity is a matter of the environment in which the firm operates, which impacts in one way or another on the effectiveness and efficiency of its operation. These environmental factors include market forces of supply, demand, and associated competitive pressures, physical and social infrastructure, government policy, and prevailing social and cultural forces.

Fourth, when viewed from the standpoint of the economy as a whole, productivity is a matter of the allocation of resources between different sectors of the economy or between different firms. A shift of resources from low- to high-productivity uses can evidently give rise to increase in the overall level of productivity. This may involve changes in product mix due to diversification towards higher value-added products, changes in the sectoral composition of output, or the turnover of firms within an industry due to entry and exit. In general, these cases may be said to involve compositional changes in the economy which shift the balance between low and high productivity.

It follows, then, that we may conceive of productivity gains as coming from the following main sources:<sup>1</sup>

- (1) changes in the internal organization of the firm that reduce slack and waste, and move the firm towards "best practice", without necessarily involving significant new investment;
- (2) the process of innovation and technological change;
- (3) changes in the environmental conditions affecting the firm's operation;
- (4) compositional changes in the economy as a whole.

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<sup>1</sup> The analytic distinction between the different sources identified here is discussed further in Appendix A. For further development of the concept of best practice and application to specific industries, see Salter (1966), Pack (1987).



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Experience and knowledge accumulated over many years in many different historical and country settings confirm the strong influence that these factors have on the level and growth rate of productivity.

## 5. Empirical Findings

Empirical evidence shows that many firms do indeed tolerate a considerable amount of slack and waste in their operations and, hence, are capable of substantial productivity improvements when faced with a sufficient motivating force.

For instance, investigations conducted by a number of International Labor Organization (ILO) missions in specific firms and industries in different countries found that the implementation of cost-saving methods led to labour productivity increases that were generally far in excess of 10 percent. The associated unit-cost reductions were frequently in the order of 25 percent or more, both in a technically advanced country such as Israel and in less developed countries (see Table 10). It is important to note that the reported productivity gains did not involve deployment of additional capital equipment nor any increase in depreciation and obsolescence of existing capital. Instead, the factor that stands out as impacting significantly on productivity is some simple reorganizations of the production process (plant-layout, materials handling, waste controls, work methods, and payment by results).

These findings were reported in the seminal analytical contribution of Leibenstein (1966), who conceived of what he called "X-efficiency" to account for the observed situations. X-inefficiency exists when, owing to a variety of influences, the firm operates below existing potential. There is then scope for productivity gains through improving X-efficiency by implementing measures that allow the firm to operate closer to the best-practice frontier. The influences involved are associated with motivational elements affecting the degree of effort on the part of both managers and workers. Hence, X-efficiency gains are attributable to introduction of appropriate inducement mechanisms that overcome resistance and provide an incentive for change. Inducement mechanisms regarded as playing a significant role may operate either within the firm, as for instance performance-based payment schemes, or within the environment at the industry-level or at the macroeconomic level (according to Leibenstein, "both competition and adversity create some pressure for change"). Leibenstein concluded from these and other findings that:

*Clearly there is more to the determination of output than the obviously observable inputs. The nature of the management, the environment in which it operates, and the incentives employed are significant.*

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These early insights, which identified key factors underlying the productivity problem (i.e. management, incentives, and business environment), are supported by some of the best available, more recent and current research, both quantitative and qualitative, carried out in different settings.<sup>2</sup>

For instance, as regards U. S. experience, Nalbantian and Schotter (1997, p. 314) point out that: "More recently ... attention has been turning to the behavioral dimensions of labor productivity, the variations in the quantity and quality of labor inputs that stem from the complex of financial and non-financial inducements that constitute an organization's reward system. It is increasingly recognized in industry that by introducing carefully crafted group incentive compensation systems, it may be possible to induce American workers to work both harder and smarter and to use even existing technologies in new and better ways that enhance their productivity. In the short run at least, and perhaps even longer term, this may be the most effective instrument for raising productivity...".

In a comparison of British and German post-war productivity growth, Crafts (1992) assesses the relative importance of accumulation of factor inputs vis-a-vis efficiency of factor use, and concludes that "institutional factors" affecting the efficiency of factor use play a large part, at least half the total weight. As to the specific institutional factors that determined Germany's leading edge over Britain in the period prior to the 1980's, he points to the role of three key elements: the banking system, the vocational training system, and the structure of industrial relations. Correspondingly, he attributes Britain's recovery in the 1980's to behavioural changes on the side of both management and workers following from a reduction in trade union bargaining power, rapid exit of inefficient firms, and greater competitive pressures on management, as well as "tough" macroeconomic policy.

Abramovitz (1986), in analysis of the "catch-up effect" involved in the closing of the productivity gap between Europe and the US, goes further. While recognizing a role for this effect, he argues that catch-up is not automatic, nor is its potential always fully realized. It depends on what he calls "social capability", which in turn "depends on more than the content of education and the organization of firms ... it is a question of the obstacles to change raised by vested interests, established positions and customary relations among firms and between employers and employees". Olson (1982) has put forward arguments in the same vein.

Another line of reasoning, focused on developing economies, points to the role of government discretionary policy in creating inefficiency by encouraging productive resources to be switched into the quest for economic rents. In this connection, the World Bank (1991) estimates that

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<sup>2</sup> See, for instance, Blinder (1990); Crafts (1992); Nalbantian & Schotter (1997); Ichniowski, Shaw & Prenmushi (1997).

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the return on investment in economies affected by such inefficiency is on average 5 percentage points less than in other cases not so affected. In the case of India, Mohammad and Whalley (1984) and Hamilton, Mohammad & Whalley (1988) find a high cost of such inefficiency, reflected in high overstocking of labour within firms and low capacity utilization co-existing with a high investment rate. The estimated cost amounts to 30-45 percent of GNP in 1980 and a loss of 2 percentage points in annual growth of total factor productivity (TFP) during 1950-1980.

Nehru & Dhareshwar (1994) carry out econometric tests for the statistical association between a wide range of policy and structural variables and cross-country differences in estimated economy-wide TFP growth for a large number of countries (in high-, middle-, and low-income categories) between 1960 and 1987. A strong association is found of TFP growth with initial conditions and political stability. Among the remaining variables, the most robust are growth of imports and exports, confirming the widely held view that, over long periods, openness in trade tends to be associated with economy-wide efficiency improvements. Interestingly, the results also point to a dual role of human capital, as a standard factor of production and as a source of learning and entrepreneurship.

Several studies have found that the reallocation of resources across sectors, associated with broad shifts in the composition of output in the development process, can serve as a source of productivity growth.<sup>3</sup> Recently, Roberts & Tybout (1997) found that the same effect holds also for resource reallocation across firms within the same industry as firms enter and exit and their respective market shares change. This effect can occur where levels and rates of productivity growth differ between sectors or firms. It is evidently facilitated by mobility of factors across sectors and firms. Such mobility depends, in turn, on the flexibility of labour markets in allowing adjustments in employment, conditions of availability of credit, rules and regulations governing company formation and bankruptcy, and the flow of information on technology and markets. Where institutional factors related to any of these conditions inhibit such mobility, the opportunity for achieving productivity gains may be lost.

It is now widely recognized that a significant factor contributing to productivity gains is the existence of local and regional networks. The paradigm case of this is the Silicon Valley region in California which, despite having higher input costs, has managed to maintain its competitive edge relative to other similar regions (see Saxenian, 1996). The "industrial districts" in Europe provide other relevant examples (see Schmitz & Musyck, 1994). Such networks, it is argued, because of the close formal and informal linkages that develop among the constituent firms, serve to expand the capability and potential of the individual firm for achieving higher productivity levels by providing

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<sup>3</sup> See, for example, Chenery, Robinson & Syrquin (1986) and Kuznets (1979).

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a supportive synergistic environment for quick dissemination and access to information, for sourcing inputs, for shared services in production and marketing, for connectivity to technological leaders, and for access to finance. In that context, it turns out that small size of the firm is not an inhibiting factor but rather an advantage due to its greater flexibility of operation.

The traditional approach to analysis and policy regarding productivity has placed emphasis on other factors, specifically technological change and investment in physical and human capital. Those factors are undoubtedly significant and have been shown to be so in numerous studies. The research cited above does not deny nor downplay their significance. If anything, it is the behavioural, organizational, and environmental factors discussed here which have tended to be given insufficient weight. There is a clear need to redress the imbalance in analysis by giving due weight to these factors. This approach has significant implications also for the design of policy.

## 6. Explaining Jamaica's Productivity Performance

Very little quantitative analysis has been done on the nature of the productivity problem in the Jamaican economy. Some quantitative studies have been made of aggregate productivity trends. For example, Nehru & Dhareshwar (1994) estimate the trend in total factor productivity (TFP) for Jamaica between 1960 and 1987 based on a modified aggregate production-function approach. They find that there is negative TFP growth over this period at an annual rate ranging from -0.2% to -1.07%, depending on the particular estimation model used. This finding supports the view of a continuing long-term decline in productivity and may be taken to underline the imperative of arresting this trend.

Micro-level descriptive studies, at the firm- or sector-level, are more commonly found.<sup>4</sup> Over the years, numerous studies have been made of the agricultural sector and its special features, including detailed diagnostics at the level of particular crops. More recently, government-sponsored diagnostic sector-studies, covering different areas in agriculture, manufacture, and services, were carried out for the Industrial Policy Project.

These existing studies and reports provide useful qualitative information on aspects of behaviour and performance as related to productivity in the Jamaican economy. Of special interest, from the standpoint of the analytical framework presented here, is that they identify a wide range of conditions which point to the existence of considerable slack throughout the economy, corresponding to X-inefficiency in the sense of Leibenstein. These conditions include:

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<sup>4</sup> See, for example, Ayub (1981), Boodraj (1995), Girvan & Marcelle (1990), AED/USAID (1994).

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- \* underutilized plant, equipment, and factory space;
  - \* lack of proper maintenance and repair of equipment;
  - \* use of aged/obsolete equipment;
  - \* idle land suitable for farming;
  - \* poor performance standards ("shirking"), lack of skills/training, illiteracy, and ill health on the part of workers;
  - \* managerial weaknesses: lack of skills/training, capacity for strategic planning and risk-taking;
  - \* downtime in production associated with industrial action, holidays, electrical outages, water shortage, lack of transportation for workers, or security problems;
  - \* delays in delivery/performance of business services (auditing, financing, legal/court procedures, construction, repair, government services);
  - \* limited adoption of known technologies (products, processes, and practices) that are capable of raising productivity, e.g. computers and information systems; accounting practices; financial controls; flexible specialization; pest management; new animal breeds (goats, hogs), marine products (tilapia) and plant varieties (mini-set yam, transgenic papaya); methods of cultivation (dry farming, micro dams, use of fertilizers).

What accounts for these observed conditions? A large number of factors have been called upon to explain them in existing studies, ranging from cultural norms and values to purely financial considerations. These studies do not allow any precise weighting or ordering of those factors or assessment of their quantitative impact on productivity. It would require further analysis to sort out and assign weights to them. It seems clear, however, that within the set of factors usually identified one may distinguish between them as follows:

(a) motivational factors affecting behaviour on the part of workers and managers and associated with internal organizational features within the firm (performance-linked payment systems, work-place norms and working conditions, mechanisms for worker initiative and participation in management, mechanisms for wage bargaining and conflict resolution);

(b) environmental factors which directly constrain the firm's productive capacity and, thereby, influence its operating costs (cost of and access to finance, quality of physical infrastructure, crime and security, supply and quality of labour, supply of and access to technical and marketing information and R&D facilities, public-sector administrative procedures);

(c) environmental conditions which act as incentives or disincentives to motivate behaviour of workers and managers (macroeconomic instability, competitive pressures linked to market structure, tariff and non-tariff protection, globalisation tendencies).

These distinctions are useful to clarify the scope for and direction of policy interventions, as also the specific measures, which may be undertaken to deal with the productivity problem. Some of the issues involved and the policy implications are discussed in detail in Appendices B and C by focusing on the two key elements: managerial behaviour and worker motivation.

## **7. The Contemporary Situation: Some Case Reports**

The contemporary situation in the Jamaican economy is marked by the effects of far-reaching changes and adjustments in the international economy as well as in the domestic economy on the conditions which Jamaica-based firms face as producers (see Harris, 1997).

On the international front, these changes include: formation of the World Trade Organization, revision of the LOME agreement, establishment of the North American Free Trade Agreement, deepening of the regional integration process within the Americas, intensification of competition for investment and markets, changes in technology and modes of business organization, changing patterns of international aid and technical assistance.

In the domestic economy, the process of structural adjustment begun in the early 1980s is now at an advanced stage. This has brought significant change in certain areas of the economy, through liberalisation of the trade regime (tariff reduction, removal of quotas and licensing, opening of the foreign exchange market), deregulation of domestic markets, privatisation of government-owned enterprises, administrative reform in the state sector, and new measures of fiscal and monetary management. A transition has been taking place in the past year towards a new phase of macroeconomic stability, involving significantly reduced inflation, a relatively stable exchange rate, and lower interest rates.

Faced with this dynamic and fluid situation, some firms and organizations have managed to make significant headway in adapting to the changing circumstances and undertaking significant moves towards productivity improvement. Others have ended in failure and resorted to closure. There are important lessons to be learned from these experiences, as regards the specific factors contributing to both success and failure.

Accordingly, for the purpose of this review, a brief examination was made of a number of interesting cases as reported recently in the press. The case reports are presented in Appendix D. Ten cases were examined, biased towards what appears to be success, and covering different areas of the economy. These are indicated in the following list:

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<b>Manufacture</b> (including minerals/ metals, agro-processing)	Case 1: Jamalpro Case 2: Cigars Case 3: Jamaica Broilers (co-generation plant) Case 4: Downsizing Programmes
<b>Agriculture</b>	Case 5: SNAP Programme; Pineapples Case 6: Bananas Case 7: Coffee Case 8: Middleton Farmers (JAMPRO intervention)
<b>Services</b>	Case 9: Tourism
<b>Training</b>	Case 10: Garmex Programme (HEART/NTA)

It is evident from these cases that productivity enhancing initiatives are underway in widely distributed areas of the economy. As regards the types of initiatives being pursued, the following features stand out:

- \* productivity incentives (up to 25% of pay in awards), team effort, building staff loyalty (Case 1);
- \* staff-management relations ("we are a family of people here"), team work - Cellular Manufacturing Process (Case 2);
- \* staff retrenchment, downsizing (Case 4);
- \* community-based efforts, synergy among different activities, an integrated-systems approach to support by a public agency - JAMPRO (Case 8);
- \* skillful management practices: careful staff recruitment and on-the-job training, concerned attention to staff and their needs (Case 9);
- \* demand-focused training programmes (Case 10);
- \* focus on energy (Cases 1 & 3), fertilizer (Case 5 & 7), infrastructure (Case 8), cost of finance (Case 1), as factors contributing to/constraining productivity increase;
- \* the role of R&D and technology transfer (Case 5);
- \* the role of competitive markets and of adversity as a driving force in efficiency improvements (Cases 4 & 6);
- \* concern for protection of the natural environment (Cases 5 & 7).

## 8. Organizing for Productivity Change: The Case of a Bauxite/Alumina Company

The current experience of a Jamaica-based alumina producer further illustrates some of the distinctive elements underlying the process of change towards greater productivity and competitiveness. It serves as an instructive example of how productivity gains can be achieved through a combination of eliminating X-inefficiency and investment in updated plant and equipment. Of course, this company has the special character of a large multi-national company operating as the subsidiary of a foreign parent-company. Its experience nevertheless represents a model of how the process works and is, in many respects, generalisable to other firms and industries.

Certain key features of the process that stand out clearly from a careful analysis of this specific case and are generalisable to other cases include:

- \* the decisive role of adversity and competitive pressure as a catalyst for change;
- \* the sequential nature of the process of change, i.e. focusing first on eliminating X-inefficiency and achieving best-practice performance as a foundation for subsequent investment in new plant and equipment;
- \* the significant scope that typically exists for efficiency and productivity gains to be realized from restructuring towards best-practice;
- \* certain critical ingredients of a successful change process, most notably the importance of human-resource management practices.

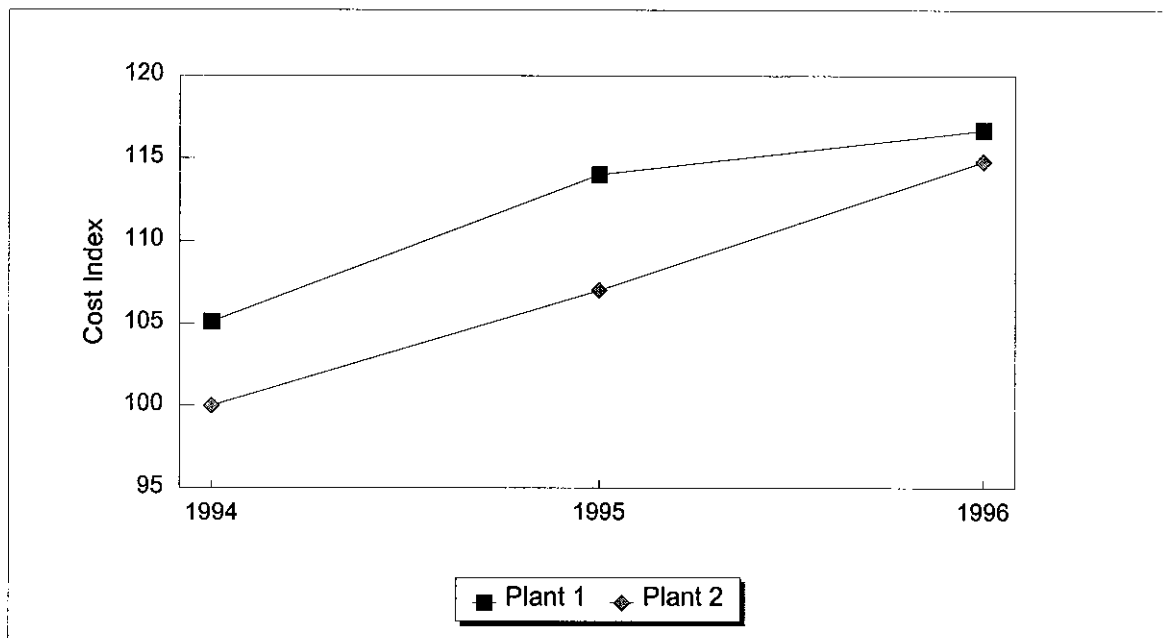
The company in question has been engaged in mining and processing bauxite to produce alumina in Jamaica for a number of decades. It currently employs close to 1,200 persons and operates two alumina plants, a port, and a railway service which connects the processing plants with the port.

In recent years, the company's position in a highly competitive world market for alumina has been threatened by a loss in cost competitiveness. This trend is illustrated in Figure 3 which graphs the index of the total unit cash cost of alumina production (including transportation and capital costs) in Plant 1 and Plant 2 relative to the world average of all alumina producers. In 1994 Plant 1 was on par with the world average. However, by 1996 its cost had risen to approximately 15 percent above the world average. Similarly, the cost competitiveness of Plant 2 deteriorated from 5 percent above world average in 1994 to 17 percent in 1996.

The serious threat that these developments pose to the company's future viability is compounded by the cyclical nature of the alumina industry and the fact that, over the past twenty years, aluminum prices have decreased by an average of one percent per year, putting great pressure on aluminum, and by extension alumina, producers to reduce costs.



**Figure 3: Index of Total Unit Cash Cost of Alumina Production Relative to World Average**



Faced with these adverse developments, the company set out to investigate the reasons underlying its poor record of cost competitiveness. The diagnosis pointed to a combination of two factors: (1) the use of outdated plants, operating at a relatively small scale, and (2) the failure to do the best they could with, and fully utilize, the given equipment, i.e. failure to operate at the best-practice level of performance.

To address these deficiencies, the company designed a two-pronged, time-sequenced strategy. For the first phase, it set itself the target of achieving best-practice as an essential prerequisite for any major capital investment. Realization of this objective is expected to reduce production cost so as to position the company among the second quartile of low-cost producers (an improvement over its current ranking within the third quartile). In the second phase the plan is to build on the realization of the best-practice target with new investment in plant modernization and capacity expansion which are considered vital to ensuring long-term competitiveness and viability.

Table 11 indicates the company's initial production cost conditions and the projected improvements in Phase I and Phase II of the restructuring process. The company projects that its drive towards best-practice (Phase I) coupled with investment in new plant and equipment (Phase II) will reduce per-unit cost of production by more than 40 percent and allow for a 56 percent expansion in production. Cost items that are most significantly affected are Maintenance (55.9 percent reduction by the end of Phase II relative to Base), Human Resources (50 percent reduction) and "Other" (76.8 percent reduction). Costs associated with the raw material inputs Bauxite and Caustic are also to experience sizeable declines (36.4 percent and 29.7 percent respectively).

It is notable that among the lowest projected declines is that of the energy component of cost, which represents also the largest share of total cost. Its share is actually projected to rise sharply from 19.6 percent to 29.1 percent, suggesting that this is one of the more intractable elements of cost from the standpoint of productivity improvement in this industry. The respective shares of flocculent and lime are also projected to increase, but these cost items remain a relatively small part of the total.

What is most striking about the company's projections is the fact that the bulk of the cost savings are to be realized during the first phase of the restructuring process, i.e. as a result of eliminating slack and moving towards best-practice. Of the 41.1 percent reduction in total average cost, three-quarters (30.4 percent) are to be generated during Phase I. During this first phase, significant per-unit cost reductions are expected in the areas of Maintenance (43.6%) and Human Resources (31.1%), which, under initial conditions, rank second and third in terms of their contribution to total average production cost. "Other" cost items are to decline by some 68 percent, reducing their share of total cost from 15.6 percent to 7.2 percent by the end of Phase I.

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Investment in new plant and equipment in Phase II is expected to further enhance the company's competitive position through additional reductions in per-unit cost and expansion of production levels. Total average cost is projected to decrease by an additional 10.7 percent (relative to the base year), with significant savings in average cost associated with Bauxite use (additional 19.1% reduction relative to the base year), followed by Human Resources (18.9 %) and Maintenance (12.3%).

The cost projections depicted in Table 11 clearly illustrate the existing large scope for X-efficiency gains. In order to realize these gains, the company identified a need to implement new methods and strategies at both the technical as well as organizational level. At the technical level, the changes towards best practice focused on redesigning the operational systems pertinent to production, maintenance, procurement, and materials management. These are the areas that were judged to have the greatest potential for short-term, positive impact on operational performance and cost. At the organizational level, new guidelines were recommended and implemented pertaining to issues such as the duplication of jobs, the approximate ratio of managers to other employees, the handling of shift-work, and the number of levels in the organization, with the latter being reduced from six to five.

Those changes were complemented with the implementation of new systems and procedures to simplify work processes, speed up decision-making, and improve productivity. These included an upgraded and broadened use of electronic mail, the introduction of credit cards for the purchase of fast-moving items, and the delivery of all items ordered from the stores to the work site.

With Phase I of the restructuring process now well underway, a number of key elements of the change process have been identified that are considered central to the programme's success to date. All of these elements pertain to the human resource management system and as such underscore the important role of innovative employment practices. They are as follows:

*a clearly defined vision* — which, from the outset, spells out clearly what is to be achieved. The company in question began its restructuring process with assigning a senior management team the task of drafting, defining, and refining vision statements for key business areas.

*involvement of employees at all levels in developing solutions* — so as to ensure that everybody within the organization is committed to change. The company placed considerable emphasis on making its employees feel that they were part of the solution by eliciting their input through workshops at all stages of the restructuring process.

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*a continuous process of open communication* — to guard against the development of mistrust, misunderstanding and apathy in the organization. A weekly newsletter formed part of the company's communications strategy.

*training* — to prepare people for their new roles and responsibilities and enable them to implement the new work methods and sustain the new organisation. Explicitly recognising training as its "most vital change agent", the company has doubled its training budget and implemented measures to ensure that this aspect of the change process receives adequate attention at the highest level.

*taking a team approach* — to devising and implementing the change process as a precursor to entrenching a teamwork culture as an integral characteristic of the new organisation. The company regards this as a major challenge and is prepared to invest the necessary time and effort, including incorporating team-based incentives into its compensation system.

Furthermore, in order to ease the transition to the new leaner organization, the company implemented an innovative strategy based on offering voluntary redundancy to the existing workforce and providing support services to employees leaving the organisation. This support system includes a grant scheme to assist employees with funding viable business projects or furthering their education.

In order to focus the organisation on the need to maximize efficiency and productivity, the company has sought to implement a performance-based pay system as part of its compensation plan. While its attempts have to date been frustrated by union resistance, the company intends to continue to pursue the introduction of a performance-related component in the next contract cycle.

## 9. Policy Implications

A number of important policy implications follow from the preceding analysis.

First, policy must rely on the strength of the motivation and commitment to productivity-improving efforts at the most basic level, i.e. at the level of the firm. It is the active agents (workers, managers, and owners) inside the enterprise who must ultimately accept responsibility for and take charge of those efforts in order to ensure their success.

The incentives that motivate those efforts emanate largely from within the firm, in the specific organizational structures and systems that are put in place. These incentives are only partly financial. They relate also to conditions in the immediate work-environment, the quality of management and of human relations in the workplace.

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Carefully designed and managed performance-based payment schemes do in fact succeed in inducing employees "to work both harder and smarter". There are various alternative payment-by-results schemes from which to choose. They differ in their suitability for different contexts and in their potential to generate productivity gains (see Appendix C). They are also costly to administer.

Such schemes are most effective in combination with other innovative aspects of a firm's human resource management system, such as flexible job design, employee participation in problem-solving teams, training, and open labour-management communication. If used as a substitute for, rather than a complement to improved management, they may actually deter productivity improvements. They must therefore be considered within the context of a holistic approach to the design and structuring of the organization of the firm from top to bottom. The responsibility for undertaking this process falls within the purview of owners and managers, with the active participation of employees.

Worker motivation is an important factor in productivity improvement. Managerial motivation also counts. Inertia in planning, decision-making and action on the part of top management and owners may retard or block implementation of productivity-enhancing measures. Rather than reflect personal perversity, cultural norms, or "class" attitudes, such inertia may be a conditioned response to objective factors operating in the business environment, i.e. lack of competitive pressure and conditions affecting the degree of risk and uncertainty (macroeconomic instability, political instability, crime and violence).

Even with the proper motivation and a supportive environment, management may lack the capability to make decisions and implement productivity-enhancing measures, owing to lack of information and the cost of acquiring it, or simply lack of proper training and appropriate skills on the part of both workers and managers. This is especially likely to be so for small and medium-sized firms.

What role, then, is there for public policy?

Given the complex of underlying circumstances and causes governing behaviour of the relevant actors in the firm, public policy addressed to the productivity problem must be sharply focused on dealing with the specific factors that can be reasonably expected to have a significant impact. There must also be an understanding of the feasible scope for policy intervention.

There is little scope for policy to directly affect the goals that owners, managers and workers set for themselves and the cultural norms and attitudes they bring to the workplace. Public awareness campaigns ("moral suasion") are one available means for attempting this, but are

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questionable in terms of their cost effectiveness. Well structured curricula in the educational institutions at all levels and targeted training programmes may be more effective in the long run.

Incentives and disincentives have an identifiable and significant motivational effect. Public policy must therefore concentrate on supporting and reinforcing the incentives that stimulate effort and removing the disincentives that discourage effort and produce inertia. The incentives/disincentives that matter are both localised within the firm and associated with macro-environmental factors.

The capabilities for undertaking productivity improvement at the level of the firm, at the industry level, and in the "innovation system" as a whole play an essential role. Public policy must focus on creating the conditions that enhance those capabilities.

It is necessary to emphasize the need for an integrated approach in policy design and implementation. No single policy component/intervention taken by itself can be regarded as sufficient to improve performance. The intended effect may be diluted or defeated if other components are not in place.

There is a definite time dimension involved in making adjustments for productivity improvement. Some adjustments can be made in a short time frame, without substantial investment in new productive capacity and physical infrastructure, and have a potential for getting early results. These are the adjustments directed at increasing X-efficiency by reducing slack and eliminating waste. Accordingly, this is the proper focus of short-term policy.

Other adjustments require large amounts of finance and other resources to get going and take a longer time for implementation and to get results. Investment in plant and equipment and in physical infrastructure is typically of this character, as also are programmes for expanding education and technical skills through schooling at early and intermediate levels. These fall within the orbit of long-term policy.

Policy has to be designed so as to provide for the appropriate sequencing of adjustments, taking into account the expected time required for implementation and for achieving results. At any given time, the optimal overall policy will have a mixture of short-term and long-term features and should identify clearly the priorities among them.

Operating within these broad guidelines, it is possible to structure policy according to a more specific identification of the factors which influence performance and the relevant policy interventions which may be used to address them. A scheme for aiding the design of policy in this way is presented in the accompanying Policy Matrix.

**POLICY FOR ENHANCING PRODUCTIVITY**  
**Policy Matrix**

<b>Classification Level</b>	<b>Factors Influencing Performance</b>	<b>Policy Interventions</b>
Micro/Internal	<b>A. Incentives/Disincentives</b>	
	1. Performance-based payment schemes	Fiscal incentives for effective schemes; public awards
	2. Work process & organization	Productivity centres; resource centres; best-practice study tours by managers & workers
	3. Human relations	Labour legislation; sensitizing firms and unions; industrial relations tribunal
	4. Competitive pressures	Competition policy; company laws; trade liberalization; market reforms
	5. Factor mobility	Labour market reforms; transportation policy; child care facilities
	6. Quality of physical infrastructure	Energy, roads, transport, water
	7. Quality of public sector services	Public sector reform
	8. Macroeconomic stability	Macroeconomic policy (inflation, wages, exchange rates, interest rates)
Macro/Environmental	9. Social stability	Poverty reduction; regional location of employment; security systems; justice system
		.../continued

**POLICY FOR ENHANCING PRODUCTIVITY**  
**Policy Matrix (continued)**

Classification Level	Factors Influencing Performance	Policy Interventions
Production/Innovation System	<b>B. System Capabilities</b>	
	1. Technology:	
	(a) Technical information (knowledge & applications)	Information services; technical support services; productivity centres; resource centres
	(b) Hardware (plant & equipment, land)	Finance, cost & access; matching grants for retooling; capital depreciation allowances; tax policy
	(c) R&D infrastructure	Science & technology policy; fiscal incentives
	2. Human resources/skills	Education and training
	3. Energy	Energy policy
Culture and Society	4. Telecommunications & informatics	Telecommunications & informatics policy
	5. Input sourcing	Subcontracting & supplier networks; elimination of tariffs on inputs; trade policy
	6. Networks	Industrial parks; industry consortia; networking by public sector agencies
	<b>C. Goals, Values, Attitudes</b>	Public awareness campaigns; educational curriculum design; targeted training programmes



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**APPENDIX A**

**DISTINGUISHING SOURCES OF  
PRODUCTIVITY CHANGE**

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### Distinguishing Sources of Productivity Change

For analytical purposes, and in order to get a better handle on the policy issues involved, it is useful to distinguish clearly the various sources of productivity gains. This is done here by reference to a simple model of the production process at the level of the individual firm.

Consider the case of a firm that employs two inputs, or factors of production, labour ( $L$ ) and capital ( $K$ ) to produce output ( $Q$ ). The firm's production function  $Q = f(L, K)$  formalises the relationship between inputs and outputs and indicates what is technologically efficient -- the maximum output the firm can produce from any given combination of labour and capital inputs when employing the best available production technique.

Graphically this relationship between inputs and output can be modelled via *isoquants* which identify all the combinations of inputs that, when used in a technologically efficient way, will produce a certain level of output. For instance, in Figure A1, isoquant  $IQ_{100}$  shows the capital-labour combinations that will produce a *maximum* output level of  $Q = 100$  units. We may, therefore, call it the "*best practice production frontier*" for this level of output.<sup>1</sup>

Isoquants lying farther to the northeast depict greater levels of output. For instance, relative to point  $A$  on  $IQ_{100}$ , point  $B$  represents a larger quantity of both labour and capital inputs and hence should yield an output level of  $Q > 100$ , assuming again that inputs are productive and are being deployed in a technologically efficient manner. Similarly, a point such as  $C$ , which compared with point  $A$  identifies lower levels of labour and capital, would be consistent with an output level of  $Q < 100$ . Given the present level of technology, it would not be possible to produce  $Q = 100$  with the input mix as at point  $C$ .

This simple framework may be used to model two primary types of productivity gains: (a) improvements in *X-efficiency* which are primarily, though not exclusively, the result of restructuring efforts internal to the firm, and provide the greatest scope for change in the short- to medium term; and (b) *technological change*, which occurs over the medium- to long-term, and is governed by factors that are, to a certain extent, outside an individual firm's sphere of influence.

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<sup>1</sup> Underlying the isoquant concept is the economic assumption that a specified output level can be produced in a variety of different ways, i.e. by using different combinations of inputs. An automobile, for example, can be custom-built in a local garage with very little equipment and a great deal of labour, or produced in a factory with a large quantity of specialised equipment and far less labour. While every input combination located along an isoquant is technologically efficient, the choice of the optimal, or least costly, input mix depends critically on the relative factor (input) prices.

### **X-efficiency Gains**

Suppose, for instance, that we observe a firm which departs from the best practice production frontier  $IQ_{100}$  by producing an output level of  $Q = 100$  units with the input mix identified at point  $B$  in Figure A1. Clearly there is scope for this firm to improve upon the *X-efficiency* of its operations and the productivity of its inputs by implementing measures that allow it to operate closer to the best practice frontier.

In this case, the productivity effect is a static, once-for-all effect on the *level* of productivity, associated with adoption of specific measures (e.g. a profit-sharing plan). This effect must be distinguished from long-run changes in productivity *growth*.

### **Technological Change**

In contrast to X-efficiency gains which are thought of as a movement towards the best-practice frontier, *technological change* advances international best practice over time and allows for the production of a specified level of output with lesser inputs. Within our model, such productivity improvements would be reflected in an inward shift of the best practice frontier from  $IQ_{100}$  to  $IQ'_{100}$ .

### **Firm-turnover/Product Composition Effects**

A third source of productivity improvements arises from intra-industry turnover of firms and compositional changes in product mix. These effects are not easily modeled within the isoquant approach. From an analytical and empirical standpoint, use of the Input-Output framework would be more instructive and relevant.

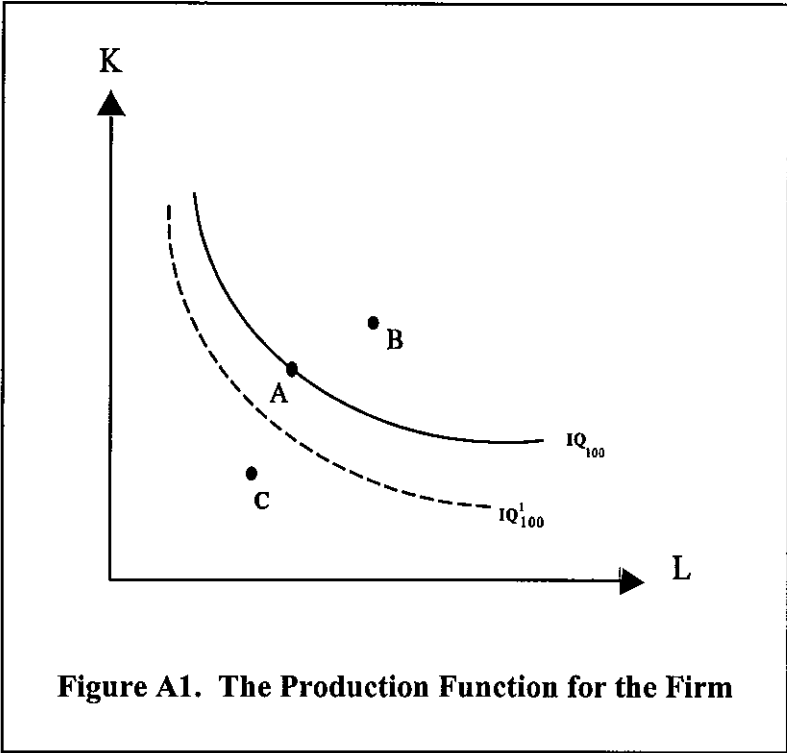


Figure A1. The Production Function for the Firm



**APPENDIX B**

**MANAGERIAL AND OWNER  
BEHAVIOUR**

### Managerial and Owner Behaviour

By focussing on the behaviour of company owners and managers, various ways emerge to account for the productivity problem, i.e. the failure on the part of many firms to operate on the best practice frontier and to engage in the process of innovation and technological change that pushes that frontier out over time.

At the most basic level, this failure may be explained by company owners and managers seeking above all a placid, comfortable existence as suggested by Hicks in his quip, "The best of monopoly profits is a quiet life."<sup>1</sup> In the Caribbean it is not uncommon to go even further and suggest that this complacency is the outgrowth of a certain level of incompetence of the entrepreneurial class.

Yet, rather than reflect complacency or incompetence on the part of entrepreneurs, some degree of inertia may very well be a rational response to risk and uncertainty (Harris, 1996). Recent advances in the literature on investment under uncertainty attribute the "benevolent tyranny of the status quo"<sup>2</sup> to the prevalence of three factors which combine to yield an optimal level of inertia in planning and decision-making on investment and other productivity-enhancing measures:<sup>3</sup> (1) the irreversibility of the investment decision given the associated sunk costs; (2) the uncertainty of the environment in which the decision-maker operates and the gradual nature with which information becomes available over time; and (3) the fact that the opportunity for action tends to remain even if the decision is not taken immediately (it can be postponed).

Given these conditions, the decision problem is one not just of *whether* to take action but also *when*. The fact that waiting has a positive value as it allows for more information to become available implies that firms have an incentive to delay action, especially in a highly uncertain and unstable environment.

Another way of accounting for observed X-inefficiencies rests on the observation that top management frequently lists "long-term corporate survival" rather than short-term profit-maximization as their prime objective.<sup>4</sup> It is reasonable to assume that this survival goal pertains

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<sup>1</sup> Hicks (1935), p.8.

<sup>2</sup> Dixit (1992), p. 109.

<sup>3</sup> See, for instance, Pindyck (1991) and Dixit (1992).

<sup>4</sup> Donaldson & Lorsch (1983).

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not just to the company itself but also to the manager's own tenure with the firm. Especially in the face of uncertainty and an asymmetric reward structure, management's rational pursuit of this objective may give rise to slack and inertia that are in conflict with profit maximization.

The argument goes as follows: when risky decisions lead to unfavourable outcomes, managers are likely to lose their jobs; on the other hand, favourable outturns are rarely rewarded to a degree commensurate with the resulting profit gains for stockholders. This asymmetry gives managers an incentive to sacrifice higher, more widely fluctuating expected profits for lower risk and greater stability. One way to achieve this greater stability is to smooth reported earnings by accumulating "organizational slack" in the form of inessential resources that can be cut when operating profits come under pressure.<sup>5</sup>

The validity of the central argument that X-inefficiencies are associated with efforts to smooth reported earnings does not rest critically on the assumed separation between ownership and control of enterprises. Owner-managers may have similar preferences for relatively stable profits, even if for different underlying reasons.

A related line of reasoning explicitly recognises that owners and managers derive utility (satisfaction) from personal prestige and power which are more closely related to their company's sales volume, employment or assets and to their own emoluments rather than profitability. In support of this hypothesis, Williamson (1964) cites a number of cases where firms were able to reduce expense in a manner inconsistent with the assumption that they had previously been maximizing profits.

### **Policy Implications**

To suggest that X-inefficiency is directly tied to the preference and goal structure of company owners and managers poses certain problems for policy formulation because it implies that policies to deal with this aspect of low productivity would have to target and attempt to alter behaviour. Yet there is little scope for policy to directly affect what goals owners and managers set for themselves (moral suasion is one available means for this.) Public policy must therefore take a more indirect approach and focus on creating the conditions that provide both the incentive as well as capacity to restrict the degree of inertia and slack and to move firm operations towards the best practice frontier.

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<sup>5</sup> This type of behaviour is confirmed by a study of the divisional budgets of large corporations which estimates these inessential resources to average between 20 to 25 percent of operating expenses. See Schiff & Lewin (1970).

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What motivates managers (and workers) to change their behaviour and strive to maximize company profits by cutting X-inefficiency and slack? According to Leibenstein "[b]oth competition and adversity create some pressure for change."<sup>6</sup> And the empirical literature provides ample support for the thesis that it is in particular the lack of competitive pressure which prevents firms from aggressively cutting cost, actively searching for new information and adopting best-practice processes.<sup>7</sup>

Import competition stands out as an important force creating pressure for change even in a highly concentrated domestic product market. In the United States, for example, the steel and automobile industries were forced to run a tighter ship with the advent of significant import competition in the late 1960s and 1980s respectively. Similarly, a highly competitive world market environment has prompted Jamaican bauxite firms to pursue a sustained drive for cost efficiency and productivity improvements with striking results.

The way to reduce the degree of inefficiency that can be tolerated by a firm is thus to expose it to competitive market forces. From a policy standpoint, this means adopting a strategy to intensify domestic product market competition. Fostering import competition through trade liberalisation is a key element of such a strategy within a small island economy such as Jamaica.

Furthermore, as the recent literature on investment under uncertainty argues, the optimal level of inertia in planning and decision-making is critically dependent on the riskiness and uncertainty of the environment in which decisions are taken. The implication for economic policy is that, as Pindyck puts it: "if the goal is to stimulate investment, stability and credibility could be much more important than tax incentives or interest rates."<sup>8</sup>

However, even with the proper motivation and stable environment, management may lack the capacity to make optimal decisions and implement best-practice techniques because of imperfect information on available options. The cost of obtaining the information needed to arrive at (socially) optimal decisions may be too high from the individual firm's point of view to justify the effort. This is especially true for small and medium-sized firms. The fact that information may be regarded as a public good gives the public sector a decisive and important role in setting up institutions and mechanisms that are aimed at expanding the managerial information set.

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<sup>6</sup> Leibenstein (1966), p. 271.

<sup>7</sup> The enactment of new anti-trust legislation in Britain during the 1950s and 1960s, for instance, introduced significant price competition into previously heavily cartelized industries, wiping out comfortable profit margins and forcing firms to search for ways to cut costs. A case in point is the glass bottle industry which found it possible "to produce with 750 to 900 employees the same output that had previously occupied 1,400 workers." (Scherer & Ross, 1990, p. 668) Similarly, the per unit cost of electricity generation in U.S. cities was found to be on average 11 percent lower in cities with two competing electric power companies than in cities where the municipal electrical utilities enjoyed a monopoly position (Primeaux, 1977)

<sup>8</sup> Pindyck (1991), pp. 1110-1.

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One interesting proposal targeted at enhancing firms' exposure to international best practice involves the co-financing of "productivity study tours" of plants in other countries which use best-practice technologies.<sup>9</sup> The entrepreneurs, engineers, supervisors, and labour leaders who participate in these tours would later contribute to disseminating information by sharing what they have learned with other firms in their countries. Similar programmes were part of the technical assistance component of the Marshall Plan which was critical to Europe's post-World-War II reconstruction process. In the case of Europe, productivity increases, estimated at 25 to 50 percent, were realized with little or no additional investment and at low cost.<sup>10</sup>

Public policy may further be directed at building local networks and institutions that track and raise awareness of best-practice developments, assist firms in gaining access to and processing the relevant information, and advance the formation of strategic alliances between firms. These information networks are of particular benefit to small- and medium-sized firms that have no affiliation with international corporations and as a result lack direct access to foreign technology and know-how.

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<sup>9</sup> Such a policy has been advocated by ECLAC for the Latin American region, based on a proposal by Carl Dahlman of the World Bank for the restructuring of the production sector of the former Soviet Union. See Ramos (1994) and Peres (1994).

<sup>10</sup> Productivity gains of similar if not greater magnitude could be expected for the Latin American and Caribbean region since the existing productivity differentials between firms in the region and the best-practice plants in the developed world are likely to be greater than the differentials that prevailed between Europe and the United States in the late 1940s.

**APPENDIX C**

**WORKER MOTIVATION AND EFFORT**

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## Worker Motivation & Effort

An organization's efficiency and productivity depends critically on the effectiveness of its labour inputs. One can think of many ways to raise this effectiveness, chief among them training designed to improve workforce quality. However, within the context of X-efficiency, the focus rests on the contention that work orientation and productive behaviour are a function of one's level of motivation.

The issue of motivation thus takes center stage within the debate of how to boost an organization's efficiency and productivity. It is a particularly critical aspect of the productivity problem in the Jamaican environment where poor work attitudes and hostile workplace relations are said to prevail and to constitute a major source of low labour productivity and slow economic progress.

These linkages are explored in great detail in a recent study based on attitudinal surveys of workers employed at all levels in the major sectors of the Jamaican economy.<sup>1</sup> The study tells a revealing story about the motivational status of the Jamaican workforce and the underlying perceptions and on-the-job experiences that emerge as the determining factors of this motivational state. The following discussion highlights the study's major findings.

### Motivational Profile

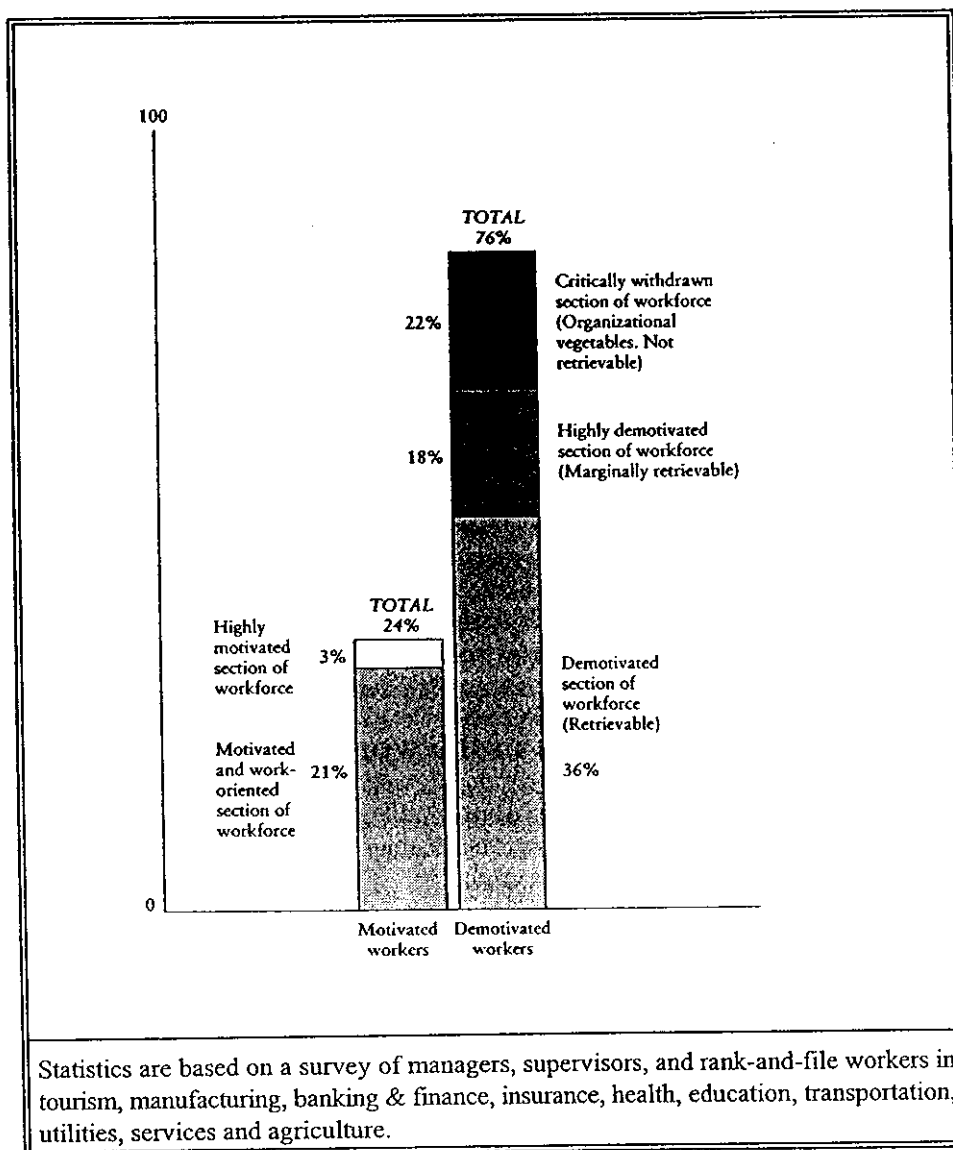
Based on individual responses to a series of questions administered to workers, an index was constructed that allows for individuals to be scored and characterised according to whether they are highly motivated, motivated, demotivated, highly demotivated, or critically withdrawn. The resulting motivational profile of the Jamaican workforce indicates that a mere 24 percent of respondents could be described as motivated or highly motivated. The vast majority (76 percent) is demotivated to varying degrees, with 22 percent "critically withdrawn" and unretrievable (see Exhibit C.1).

This lack of motivation manifests itself in a variety of ways. The symptoms range from workers showing little enthusiasm and commitment to productive effort, deliberately producing well below potential, engaging in absenteeism and tardiness, lacking in initiative and inventiveness, to disruptive and retaliatory behaviour and outright sabotage. Selected attitude statements reproduced in Exhibit C.2 illustrate some of those symptoms. They are a clear indication that worker apathy and hostility represent a major source of the productivity problem in the Jamaican economy.

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<sup>1</sup> Kenneth L. Carter (1997), *Why Workers Won't Work. The worker in a developing economy. A case study of Jamaica*. The study is based on questionnaires and direct interviews administered to 8,046 rank-and-file workers, 1,812 supervisors, 553 middle managers, 360 union delegates, and 106 senior managers in the tourism, manufacturing, banking & finance, health, education, transportation, utilities, services, and agriculture sectors.

**Exhibit C.1: National motivational profile of the Jamaican workforce (managers, supervisors, workers)**



Source: Carter (1997), Table 2.1.



**Exhibit C.2 Thematic Manifestations of Workers' Demotivation  
Selected Attitude Responses**

**Question** *Considering all things, how do you feel about the treatment in your organisation?*

**Selected Responses**

Lack interest, motivation, just doing a job. Not feeling part of the institution. Just plain frustration. I am selling my services and that's all: just dying to leave the damn place as soon as I go to work in the mornings. (female teacher)

How I feel about my treatment? I don't have to feel. That is for weaklings. I mad dem with tactics. I am the original terrorist. I get my revenge and with a little brawta (profit). That's the Jamaican way. Management a squeeze wi but a dem a feel de pain. Yu understand weh I a sey? Go back a di University and figure dah one deh, then go tell de Minister, de Jamaica Manufacturers Association and the Chamber a Commerce to wise up before it too late. (senior union delegate, employee in public utility company)

So far everything alright, man. The hustling good and right now the work is just mi base.

A pure slowism a rule di country now you know. No body a work fi nothing now. Di more yu work is di less yu get, but everyday yu go to di shop everyting raise. If we not getting justice we just have to slow up things. No production. Dat is two-way justice. (carpenter in a leading organisation)

*Source:* Excerpts from Carter (1997).

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## Primary Determinants of Motivational Status

What are the underlying reasons for the observed lack of motivation and the high degree of dissatisfaction in the Jamaican workforce? The following factors emerge as key determinants of workers' deplorable motivational status:

### *Lack of rapport, empathy and mutual trust between management and workers*

Workers perceive management as severely lacking in understanding of, interest in, and respect for workers as human beings. Aside from having a detrimental effect on motivation, this perception also emerges as the root cause of industrial conflict in the Jamaican economy.<sup>2</sup> Carter's study advances a variety of experimental and anecdotal evidence that validates this perception and confirms the severe breakdown in communication between the groups (see Exhibits C.3 and C.4).

A related demotivating factor is the perceived lack of participation in decision-making on the part of workers. With the exception of the utilities sector, where two-thirds of respondents felt that decisions in their organisations were made in a consultative manner, the majority of the workforce viewed the decision-making process as authoritative, soliciting no input from workers.<sup>3</sup>

### *Low levels of psychic job satisfaction*

The Jamaican work environment appears to provide only a minority of the workforce with feelings of self-worth, recognition, appreciation, achievement and participation, as a mere 23 percent of workers indicate that they are satisfied or very satisfied with these aspects of their jobs. The study suggests that there is no difference in the motivational status of unionised and non-unionised workers because unionisation is said to affect primarily incentive factors (wages, fringes, work conditions etc) as opposed to motivational job elements.

Factors that were identified as most responsible for the apparent lack of "psychic job satisfaction" in the Jamaican workforce are:

- \* under-utilisation of skills and education
- \* perceived irrelevance of job to general organisation objectives
- \* rank-and-file workers' perceptions that their jobs are boring; and
- \* demotivated supervisors.

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<sup>2</sup> This point is discussed in greater detail in Appendix ... : Industrial Relations.

<sup>3</sup> Of the general workforce, 70.5 percent view the decision process as authoritative (management decides unilaterally); 18.6 percent experience it as consultative and 10.7 percent as participatory. Employees in the Banking & Finance sector feel even less involved in decision-making with 82.3 percent perceiving the process as authoritative, 11.9 percent as consultative, and 5.7 percent as participatory. See Carter (1997), Table 2.10.

### Exhibit C.3 Experiment Validating Perceived Problems in Communication and Rapport between Management & Workers

Supervisors and middle managers were given a list of ten "morale factors" and asked to:

- \* rank these factors according to their own personal preferences (see column (1) below)
- \* rank these factors according to how they thought those under their direct supervision would rank them (2)
- \* have those they supervise rank these factors according to their preferences (3).

The following rankings were obtained:

**Comparative Ranking of Morale Factors**

	Managers' ranking of own preferences (1)	Managers' ranking of rank-&-file workers' preferences (2)	Rank-&-file workers' ranking of own preferences (3)
1 Tactful discipline	10	4	10
2 Work that keeps you interested	4	5	6
3 Full recognition/appreciation of work done	1	10	1
4 Personal loyalty to worker	6	6	5
5 Sympathetic help on personal problems	5	9	4
6 Good working conditions	7	3	8
7 "Feeling in on things"	2	8	2
8 Promotion & growth in company	3	7	3
9 Job security	8	2	7
10 Good wages	9	1	9

The results of this exercise indicate a severe breakdown in understanding and communication between managers and workers. In terms of their own preferences, Jamaican supervisors and middle managers assign primary importance to psychological factors such as appreciation & recognition as an equal human being, growth & development and "feeling in on things". While the same holds generally true for rank-and-file workers according to their own preference rankings, supervisors and middle managers perceive their workers to have very different priorities and to attach importance primarily to such factors as wages, job security and good working conditions.

Source: Excerpts from Carter (1997).

### *Benefits and working conditions*

In addition to deriving little “psychic satisfaction” from their jobs, Jamaican workers also express dissatisfaction with job elements such as fringe benefits and work conditions. Rank-and-file workers in particular are discontent with the physical conditions under which they are required to perform their jobs, with excessive heat, inadequate lunch-room facilities, and inadequate and/or unkept toilet facilities representing major issues of contention. To the extent that such complaints are well-founded in reality, they are further evidence of the disrespectful treatment that is a driving force behind the demotivated state of a large portion of the workforce (see Exhibit C.4).

#### **Exhibit C.4 Case Report on Work Conditions & Management Attitudes**

“We were retained by a multinational company (now locally owned) to undertake the introduction of a job evaluation and merit rating system for its employees. During the job analysis phase of the exercise, we noticed that a section in a department of the factory was extremely hot, yet workers were required to go from that section to another which was quite cold. This variation in temperature resulted in respiratory illnesses for many of the workers in that department. As a departure from our terms of reference, we recommended to the Jamaican factory manager that management air-condition the rest of the department, as the movement from one heated section to the other cold section was causing great distress to the staff. We were comprehensively rebuffed. We were told by the factory manager, who did not even convey our recommendation to the expatriate general manager, that the factory could not possibly afford such an extravagant expenditure, and that our recommendations ‘betrayed certain ideological predispositions’. The recommendation, therefore, was discarded.

About two months thereafter, while investigating the ‘Responsibility’ factor in the job evaluation process, we noticed that the company had just acquired and installed a new piece of very delicate and expensive machinery. Seeing the correlate need for consistency in temperature for the machine as well as for the workers, we once again invited management’s approval for air-conditioning of the machine. Our technological sensitivity was immediately applauded, and the department was completely air-conditioned in less than two weeks.

Management could not air-condition the department for the workers, thus facilitating their health, but air-conditioned it for the machine. But such are the consequences of technocratic organization structures and the cognitive systems from which they are derived. Under these conditions, desperate requests for increased production and pious injunctions about strikes, etc., do not work. “

*Source:* Carter (1997), pp. 77-8.

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***Perceived weak relationship (if any) between performance and outcome/compensation***

Of the workers representing the various rank-and-file and supervisory groups in Jamaica, only 16 percent agreed with the notion that they will stand to benefit from producing more through higher wages and better fringe benefits. Conversely, 84 percent do not believe that better performance and production on their part will translate into financial gains to them. Instead pay increases are perceived to be more closely linked to factors such as "your willingness and ability to carry news"; "whether or not your supervisor likes you"; how much influence your boss has with top management"; "what department you are in"; " your willingness to mix business with sex".

***Relative importance of job factors***

The main determinants of high level of job dissatisfaction and frustration exhibited by the Jamaican workforce are reflected in their responses to questions such as "*What one thing do you need most to make you more productive and satisfied on the job?*" or "*If you had the power to change just one thing about your job, what one thing would you change?*" The response featured most prominently is the call for "*more recognition & appreciation*". Conversely, "*more pay*" ranks relatively low on the list of workers' demands (see Exhibit C.5).<sup>4</sup>

A further breakdown of wage versus non-wage demands according to motivational status reveals an inverse relationship between the level of motivation and the demand for more pay (see Exhibit C.6). Among the highly motivated workers, only 20.8 percent identify "more pay" as the one thing that they would want most in their jobs. In this category, the majority of employees (45.6 percent) would request "more training", followed by 28.2 percent seeking more recognition, appreciation or participation. Interestingly highly motivated workers are the only ones that express any interest in better supervision.

Among the demotivated category, 54 percent would demand more pay while 44 percent would seek first and foremost more recognition, appreciation or participation, and 2 percent more training. Demands for greater financial rewards increase with the level of demotivation. Of the "critically withdrawn" workers, the vast majority (86 percent) would request more pay. The remaining 14 percent would demand more recognition, appreciation and participation.

Evidently, the better the worker's motivational status, the less importance s/he ascribes to monetary rewards. To the extent that pay involves a distinct compensatory component to offset "psychic dissatisfaction", wage demands and resulting cost-push inflation could be attenuated by addressing issues that impact directly on workers' motivation.

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<sup>4</sup> The exception here is the tourism sector where "more pay" is the thing that workers seek most.

**Exhibit C.5 Relative Importance of Job Factors**

	General Profile %	Tourism %	Utilities %	Nurses %	Insurance %
<i>Question What one thing do you need most to make you more productive and satisfied on the job?</i>					
More training	44.0	19.7	16.0	23.0	29.6
More pay	11.0	54.2	15.0	17.4	16.0
More recognition & appreciation	27.5	16.0	58.1	46.0	37.6
Better supervision	0.9	1.6	2.6	3.5	3.5
More worker participation in decision-making & ownership	16.5	8.4	8.2	10.0	13.1
<i>Question If you had the power to change just one thing about your job, what one thing would you change?</i>					
More pay	14.0	38.7	18.2	9.9	n.a.
More recognition & appreciation	38.4	20.8	49.6	52.9	n.a.
Acceptance as equal human beings	13.4	16.8	0.0	5.1	n.a.
Better physical accommodation	16.2	14.2	5.0	25.4	n.a.
Improve personnel & industrial relations department	17.8	9.4	17.1	1.6	n.a.

Source: Carter (1997), Tables 4.7 and 4.8.

**Exhibit C.6 Motivation Levels and Wage/Non-Wage Demands**

*Question: Suppose you had the power to wave a magic wand and get any one thing you want in your job, which one thing would you seek? (Do not select more than one job factor.)*

Motivation Levels	Wage Demands	Non-wage Demands			
	More Pay %	More training %	More recognition, appreciation, participation %	Better supervision %	TOTAL Non-wage demands %
Highly motivated	20.8	45.6	28.2	5.2	79.0
Motivated	31.6	26.0	42.0	0.0	68.0
Demotivated	54.0	2.0	44.0	0.0	46.0
Highly demotivated	73.0	0.0	27.0	0.0	27.0
Critically withdrawn	86.0	0.0	14.0	0.0	14.0

Source: Carter (1997), Table 2.19.

## Conclusion

Two key insights emerge from Carter's study of the motivational status of the Jamaican workforce: one, worker apathy and a confrontational industrial relations climate are manifestations of widespread demotivation and important contributing factors to the productivity problem in the Jamaican economy. Two, the conditions underlying this state of demotivation are not so much financial in nature but primarily a function of the quality of human relations at the workplace.

Jamaican workers are frustrated with the perceived lack of understanding, appreciation and respect that they receive from management. These are the perceptions that condition workers' behaviour. Altering the circumstances that give rise to these perceptions and experiences must be the focus of any intervention strategy designed to generate productivity improvements by modifying the productive behaviour of the workforce.

The study's results further underscore the importance of complementarities and interaction effects among human resource management (HRM) policies that have been identified in recent research on incentive contracts. This research contends that incentive pay systems, for instance, are most effective when coupled with other innovative HRM practices such as flexible job design, employee participation in problem-solving teams, training, and open labour-management communication.<sup>5</sup> The motivational deficiencies that characterise the Jamaican workforce have implications for the effectiveness of performance-based compensation systems in generating the desired productivity effects within the Jamaican environment.

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<sup>5</sup> See Ichniowsky et al. (1997).



**APPENDIX D**

**PERFORMANCE-BASED COMPENSATION SYSTEMS**

### Performance-Based Compensation Systems

Both economists and psychologists advance that people react to incentives and that rewarding desirable behavior is likely to elicit more such behaviour. From that follows logically the proposition that labour's effort and productivity can be improved by explicitly linking compensation to performance rather than simply paying for time spent on the job. A labour payment system that establishes such a link thus emerges as an important mechanism through which workers may be motivated to step up their effort levels.

A growing body of empirical evidence confirms that carefully designed and managed performance-based pay schemes do in fact succeed in inducing employees "to work both harder and smarter and to use even existing technologies in new and better ways that enhance their productivity."<sup>1</sup> Recent incentive contract theory contends that incentive pay systems are most effective if viewed as complementary to other innovative aspects of a firm's human resource management system, such as flexible job design, employee participation in problem-solving teams, training, and open labour-management communication.<sup>2</sup> In this regard, evidence on the deplorable motivational status of the Jamaican workforce reviewed in Appendix C implies that, within many Jamaican enterprises, performance-based pay systems are not likely to be very effective unless coupled with measures specifically designed to redress motivational deficiencies.

A recurring theme throughout the literature on performance-based compensation systems is that worker motivation and productivity are a function not only of the financial inducements that such schemes offer but also, and maybe more importantly, of how they impact upon the nature of workplace relationships. Depending on the specific circumstances, these effects may reinforce or offset each other in their impact on individual worker morale and effort. Moreover, alternative pay systems have wider implications for overall organisational structure and efficiency and must therefore be considered within the context of a holistic approach to enterprise development and restructuring.

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<sup>1</sup> Nalbantian & Schotter (1997), p. 314. For a detailed review of the empirical evidence on the performance effect of various alternative payment systems see Blinder (1990).

<sup>2</sup> The likely positive productivity effects of a *system* of innovative human resource management (HRM) practices including, but not limited to, performance-based-pay schemes, is documented in a recent analysis of employment practices in Steel Finishing Lines. The study's findings confirm the existence of important complementarities and interaction effects among HRM policies. Thus productivity gains were found to be largest when firms adopt a complement of practices including incentive compensation plans, work teams, employment security, flexible job assignments, skills training, and labour-management communication. See Ichniowsky et al. (1997).

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In the following we review various payments-by-results schemes and their potential to generate productivity gains. We distinguish between three types: (a) simple incentive plans which link pay to performance for individual workers or small groups; (b) profit or gain sharing plans which cover entire plants or firms;<sup>3</sup> and (c) employee ownership plans. A schematic review of the distinctive plan features and their effects on performance is provided in the accompanying matrix (see Exhibit D.1).

### Simple Incentive Plans

Common variants of simple incentive plans are piece rate systems, which make compensation proportional to output, or commissions which base pay on a value measure such as sales. By establishing a clear and direct link between compensation and the performance of an individual employee or a small group of employees, simple incentive plans should succeed in motivating workers to be more productive, thereby making it "possible to give the workman what he most wants -- high wages -- and the employer what he wants -- a low labor cost."<sup>4</sup>

In fact, a number of studies find simple incentive plans to have positive effects on workers' wages, productivity and firm profits. The experience of a US autoglass company which, after the introduction of new management, gradually changed the compensation method for its work force, moving from hourly wages to a piece rate schedule, serves as a prime example.<sup>5</sup> As a result of the new pay scheme, the average worker's productivity was found to have increased by 36% in one year after the piece-rate-pay system was adopted. Part of this gain may reflect a possible change in the composition of the work force over the course of the implementation of the new pay scheme. Controlling for this effect, the productivity increase of a *given* worker is estimated at 20%.<sup>6</sup>

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<sup>3</sup> Gain-sharing typically refers to a group incentive pay system targeting productivity or cost reductions as opposed to profitability. Most gain-sharing plans contain explicit mechanisms for worker participation in decision-making. (Weitzman & Kruse, 1990)

<sup>4</sup> Taylor (1911), quoted in Mitchell et al. (1990), p. 30.

<sup>5</sup> This recent case is carefully analysed in Lazear (1996). For further evidence on the impact of incentive plans see also the research discussed in Leibenstein (1966) and the studies contained in Blinder (1990).

<sup>6</sup> This 20% gain measures the pure incentive (motivation) effect from switching from hourly wages to piece rates as distinct from the "sorting" effect. The latter captures the idea that since performance-based pay systems reward more productive workers, workers who are "inherently" more productive will be attracted by ("sort themselves" towards) firms that employ incentive-pay systems, while less productive workers tend to avoid employers using such systems. While it may make little difference to the individual firm whether the underlying source of any observed productivity improvement is the sorting or pure incentive effect, only the incentive-induced portion can be counted as a gain from an economy-wide perspective. (Lazear, 1986).

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Despite the positive effects of piece-rate wages documented in the autoglass company's case and others, the link to individual worker productivity and firm profitability is not as clear cut as it may seem at first sight. Some studies found evidence of simple piece rate schemes inducing a perverse response in workers, causing them to hold back output.<sup>7</sup> The positive incentive effect of monetary rewards may also in part be offset by the development of adversarial workplace relationships and frictions between different groups of employees or between employees and management, causing a hostile, non-productive environment.

In evaluating the overall impact of incentive plans on firm profitability, consideration must also be given to the fact that they are relatively costly to administer. This is due to the need for frequent revisions in response to technological changes and introduction of new products, and for more complicated payroll computations than would be necessary for straight hourly pay. The typical volume-based incentive systems also bear the risk of encouraging the substitution of quantity for product quality.

Two important lessons can be drawn from a careful review of simple incentive pay plans. First, this particular system of performance-based pay is more suitable to some organizational circumstances than others. It works best in situations where the nature of the work is simple, stable, repetitive, easily measurable, and designed for individuals or small groups with a minimum need for integration.<sup>8</sup>

Second, incentive plans are neither a necessary nor sufficient condition for productivity improvements. Ryan, in reviewing incentive systems that were operative in parts of Jamaican industry in 1991/92, points to appropriate managerial support and effective organisation of work measurement, materials supply, and maintenance as necessary conditions for a successful incentive regime. He advances that incentive systems are frequently used to compensate for deficiencies in these regards. By serving as a substitute for, rather than a complement to, improved management, incentive systems may actually deter productivity improvements.<sup>9</sup>

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<sup>7</sup> Taylor (1911) viewed the deliberate restriction of output (soldiering) by workers as a response to employers regularly cutting piece rates with rising productivity, leaving the rewards for extra effort to be short-lived. Mathewson (1969) cites fear of unemployment as a major factor in output restriction while others point to the development of informal norms about how productive workers should be (Mitchell et al., 1990).

<sup>8</sup> Mitchell et al. (1990).

<sup>9</sup> Ryan (1991).

### **Profit- and Gain-Sharing Plans**

In contrast to simple piece-rate incentive schemes that are characterized by a close link between individual performance and compensation, the monetary reward effect of profit or gain sharing plans is more diluted. Since such plans tend to cover entire plants or firms, they create a free-rider problem where an individual worker's reward is a function of everybody's effort, not just his own. This is said to induce individual workers to hold back effort, thereby diminishing the plans' effectiveness in encouraging the socially optimal degree of effort and generating positive productivity effects.

On the other hand, profit- and gain-sharing foster a certain commonality of interest between labour and management which may serve to reduce labour-management frictions, thereby improving individual and company performance. Frequently this effect is reinforced by explicit mechanisms that promote employee involvement and cooperation, give workers a greater sense of control over the outcome, and allow for the development of a company spirit. Towards that end, many profit and most gain-sharing plans are coupled with some element of worker participation in decisionmaking, ranging from consultative participation (for instance, in the form of quality control circles) to labour representation on company board of directors.

Empirical research on profit- or gain-sharing and related plans finds that such systems can exhibit significant productivity as well as profit-boosting effects.<sup>10</sup> Mitchell et al. (1990) assert that the productivity-enhancing effect prevails even after controlling for the impact of "noneconomic participation", a variable that captures a wide variety of firm-level human resource policies, including the existence of a formal employee participation or information-sharing programme for employees. While the financial reward aspect of such sharing arrangements may thus have a positive incentive effect in its own right, it is the fact that most such plans also contain an element of shared decision making that fosters team spirit and collective effort and reduces labour-management tensions that may account for much of the observed productivity improvements.<sup>11</sup>

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<sup>10</sup> For a detailed discussion of the evidence see Mitchell et al. (1990) and Weitzman & Kruse (1990).

<sup>11</sup> This is not to suggest that participatory arrangements are universally successful. Levine & Tyson warn that "participation does not always lead to higher morale and satisfaction. Furthermore, there is no predictable link between morale or satisfaction on the one hand and increased worker productivity on the other." (1990, p. 188)

### **Employee Ownership Plans**

A similar conclusion is reached concerning the performance effects of employee ownership plans. While the purely monetary incentive effect may be negligible due to the weak link between individual effort and company performance, positive motivational effects are derived under such arrangements from merging labour's and management's interests and giving workers a direct stake in company performance. Empirical evidence is inconclusive as to the performance effects of employee ownership per se but points to a positive impact of the interaction between ownership and meaningful participative structures.<sup>12</sup>

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<sup>12</sup> For a more extensive discussion of employee ownership plans and their performance effects see Conte & Svejnar (1990).

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**Exhibit D.1 Evaluation of Alternative Payment Systems**

	<b>Simple Incentive Plans</b>	<b>Profit Sharing</b>	<b>Gain Sharing</b>	<b>Employee Ownership</b>
<p><b>Description</b></p> <p>employee compensation linked directly to individual or small-group output</p> <p>common forms:</p> <ul style="list-style-type: none"> <li>* piece rates (pay proportional to output)</li> <li>* commissions (pay based on value measure, eg sales)</li> </ul> <p>most suitable for work that is simple, repetitive, stable, easily measurable</p>	<p>bonus payments to workers in a plant or firm based on company profitability</p> <p>profit-share paid in form of</p> <ul style="list-style-type: none"> <li>* cash</li> <li>* tax-deferred contributions to retirement fund (more common)</li> </ul> <p>frequently associated with provisions for worker participation in decision-making</p>	<p>group incentive pay typically linked to improvements over past performance in some measure of operating performance (eg payroll to sales)</p> <p>typically contains mechanisms for worker participation in decision-making:</p> <p>participation &amp; managerial attitudes viewed as critical to success</p>	<p>principal forms:</p> <ul style="list-style-type: none"> <li>* in the US: employee stock ownership plans (ESOPs), i.e. stock bonus plans which invest primarily in employer securities; employees have right to insist on distributions in form of employer stock</li> <li>* in Western Europe: cooperatives</li> </ul>	
<p><b>Potential Benefits</b></p> <p><i>Monetary incentive effect</i></p>	<p>strong due to direct link between individual performance &amp; compensation</p> <ul style="list-style-type: none"> <li>* rewards individual effort</li> <li>* counteracts workers' tendency to shirk</li> </ul>	<p>present but diluted by weak relationship between individual effort/performance &amp; corporate profits (free rider problem)</p>	<p>present but diluted by weak relationship between individual effort/performance &amp; company performance (free rider problem)</p> <p>.../continued</p>	

**Exhibit D.1 Evaluation of Alternative Payment Systems (cont'd)**

	<b>Simple Incentive Plans</b>	<b>Profit Sharing</b>	<b>Gain Sharing</b>	<b>Employee Ownership</b>
<b>Potential Drawbacks</b>	<p>employee/union resistance to risk factor: pay variability</p> <p>development of counter-productive, adversarial work-place relationships between groups</p> <p>perverse incentives</p> <ul style="list-style-type: none"> <li>* emphasis on quantity over quality</li> <li>* waste of raw materials</li> <li>* emphasis on measured activities, ignoring other needed tasks</li> <li>* output restrictions, working at slow rates</li> <li>* hiding of new work methods to prevent revision of piece rates</li> </ul> <p>higher administrative cost</p> <ul style="list-style-type: none"> <li>* constant revision of rates in response to changes in technology, product design</li> <li>* complex computations of employee compensation</li> </ul> <p>requires smooth functioning of managerial, organisational support system</p>	<p>employee/union resistance to risk factor: pay variability; especially in view of lack of control over outcome</p> <p>increased pressure for worker participation in decision-making and associated weakening of capitalist property rights; if workers' demands are frustrated, may increase turnover and reduce work effort</p>	<p>positive performance effects largely dependent on well-managed participative structures</p> <ul style="list-style-type: none"> <li>* requires management to be favourably disposed to participation</li> <li>* requires low-level mgt. to be prepared for &amp; accept changes in their roles</li> </ul> <p>typical plan focus is on labour costs</p> <ul style="list-style-type: none"> <li>* problematic where other cost factors are significant and under control of workers</li> <li>* risk of other cost factors being ignored or even increased to reduce labour costs</li> </ul> <p>other requirements:</p> <ul style="list-style-type: none"> <li>* flexible formulas that establish clear, visible link between performance &amp; reward &amp; adapt to changes in products, technology, organisational activities</li> <li>* considerable time &amp; effort to set up &amp; maintain plans</li> </ul>	<p>increased pressure for worker participation in decision-making and associated weakening of capitalist property rights; if workers' demands are frustrated, may increase turnover and reduce work effort</p> <p style="text-align: right;"><i>.../continued</i></p>



Exhibit D.1 Evaluation of Alternative Payment Systems (cont'd)

	Simple Incentive Plans	Profit Sharing	Gain Sharing	Employee Ownership
<p><b>Evidence on Performance Effects</b></p> <p>simple incentive plans can have positive productivity effects</p> <p>gains of 10-25% reported common under properly managed plans</p> <p>viewed by management as having good potential for productivity improvements but being less likely to enhance worker loyalty or providing labour cost flexibility</p>	<p>profit-sharing can have positive productivity effects</p> <p>viewed by management as beneficial primarily in the areas of worker loyalty and labour cost flexibility</p> <p>viewed as less successful than gain-sharing in influencing individual or group effort, espec. in large corporations with weak link between individual performance and corporate profit</p>	<p>gain-sharing can have positive productivity effects</p> <p>one study estimates labour cost savings at 16-17%, another reports median productivity increases after one year of 19-20%</p> <p>often viewed as requiring more elaborate employee decision-making participation than other plans</p> <p>worker participation frequently regarded as essential component of successful plan</p>	<p>no conclusive evidence on the performance effect of ESOPs per se; positive performance effects may be largely due to interaction between employee participation and ownership</p> <p>studies of cooperatives in industrialized Western economies point to individual worker ownership having positive productivity effects</p>	
<p><b>Note.</b> Recent incentive contract theories contend (and empirical evidence confirms) that a firm's employment practices are to be viewed as complementary parts of a coherent incentive system; incentive pay plans therefore work best when coupled with supporting innovative work practices such as flexible job design, employee participation in problem-solving teams, training, extensive screening and labour-management communication.</p>				

**APPENDIX E**

**MICRO & SMALL ENTERPRISES**

## Micro & Small Enterprises and Productivity

International evidence indicates that the size distribution of firms is an important factor in the process of industrial transformation and that industrial enterprise scale increases with development. That is, even though small firms are pervasive at all stages of industrial development, they are particularly prominent in countries at the lower stages of industrialisation. Similarly, their contribution to employment creation is most significant in countries whose national per capita incomes are low in international comparison.<sup>1</sup>

Especially during the early stages of industrial development, small-scale enterprises play a vital role in promoting economic growth, social equity, and human development. They contribute to broadening a country's productive and employment base and promote the development of entrepreneurial and managerial skills and experience. In addition, they foster product diversity and flexibility and enhance an economy's ability to adjust to new market trends.

In Jamaica, the small business sector constitutes an important source of employment and income. It is estimated to generate more than 22 percent of total employment and 27 percent of GDP.<sup>2</sup> The sector is rather heterogeneous, comprising a diverse range of business activities in establishments of different sizes. While reliable, up-to-date, detailed information on the characteristics of the sector and its contribution to the economy as a whole is scant, data presented in Tables 7, 8, and 9 give a broad indication of the predominance of small firms throughout the economy. With the exception of the Utilities and Mining sectors, small firms with less than 50 employees account for at least 62 percent of all firms in the various sectors. On average, 76 percent of all non-agricultural businesses in Jamaica employ less than 50 people (see appendix Table 7).

A recent survey of the Jamaican Micro and Small Enterprise (MSE) Sector provides more comprehensive data for the smallest-firm segment of the sector, that is non-agricultural micro and small businesses operated by persons who either work alone or with unpaid family help (own-account workers) or who employ *less than 10 workers*, not including themselves.<sup>3</sup>

Some of the MSE Survey's major findings are presented in the following. They attest to the fact that the micro and small enterprise sector accounts for a substantial portion of economic activity in Jamaica and identify some of the issues that constrain the sector's development. To the extent that

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<sup>1</sup> Young (1994).

<sup>2</sup> Planning Institute of Jamaica, *Economic and Social Survey Jamaica 1996*.

<sup>3</sup> See Government of Jamaica/Government of the Netherlands Micro Enterprise Project (1997), *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*.

these issues differ from the ones facing larger enterprises, any attempt to address the productivity problem in the Jamaican economy needs to give particular consideration to the MSE sector and to the factors that impact upon its efficiency and productivity.

### *The Micro and Small Enterprise (MSE) Sector in Jamaica*

According to MSE Survey estimates, in 1996 more than 93 thousand non-agricultural micro and small enterprises with less than ten employees were operative in Jamaica. The overwhelming majority of these firms (72.9 percent) were operated by working proprietors and unpaid workers (family members). Another 18.8 percent of MSEs employed one or two paid workers. Average employment per firm was estimated at 1.76 in 1996 (see Table 1).

Overall the MSE sector provided employment for some 174 thousand people, or 18 percent of the total employed labour force. Own-account and unpaid workers in the sector are estimated to account for close to one third of all such workers in the labour force. Paid employees in the MSE sector represent slightly over 10 percent of the national total (see Table 2).

In the aggregate, the non-agricultural micro and small business sector is estimated to have generated sales valued at J\$ 48.6 million in 1996. This is equivalent to 13 percent of the gross output produced by firms of all size classes combined in the sectors covered by the survey and is indicative of the MSE sector's sizeable contribution to overall economic activity in Jamaica.<sup>4</sup>

As regards the sectoral distribution of MSE activity — whether measured in terms of number of firms, employment, or sales — the Wholesale & Retail Trade sector features most prominently. It accounts for 63.3 percent of all MSE establishments, 54.6 percent of MSE employment and 60.2 percent of annual MSE sales. MSE activity is further concentrated in Manufacturing, Restaurants & Hotels, and Personal Services. Finance & Business Services rank second after Trade in terms of the percentage of MSE sales (10.1 percent), but account for a rather small proportion of the number of MSE establishments (1.5 percent) and of MSE employment (3.7 percent) (see Table 3).

At the sectoral (industry) level, Micro and Small Enterprises make the most significant contribution to the production of Personal Services, where MSE sales account for 70.3 percent of gross output. MSEs also contribute substantially to output in Wholesale & Retail Trade (43.3 percent) and Restaurants & Hotels (23.2 percent). Not surprisingly, their output share is negligible in Construction and in Transport, Communication & Storage (see Table 3).

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<sup>4</sup> The MSE Survey notes that estimates of the gross output of micro enterprises were not derived due to a lack of data on current stocks. An evaluation of the MSE sector's contribution to overall economic activity is, therefore, based on a comparison of MSE sales with aggregate or industry gross output, assuming "that the level of change in stocks is not too large so as to have a significant effect on the value of gross output." (p. 16, note 6)

In terms of employment, micro and small enterprises also account for a substantial share in Wholesale & Retail Trade/Restaurants & Hotels (47.8 percent) and Manufacturing (17.9 percent).

The MSE Survey sought to identify factors in the Jamaican environment that constrain the operations and further development of micro and small enterprises. A detailed list of the problems that were reported is given in Tables 4 (by Industry) and 5 (by Business Type/Employment Size). Across all industries and establishment sizes, the most frequently cited problem is "low market demand" which some 45 percent of MSE operators identified as a concern, followed by "non-payment by customers given credit" (33.4 percent), "high prices for supplies" (33.2 percent), "capital & cash flow" (28.4 percent), "high utility costs" (19.8 percent) and "availability of supplies" (10 percent).

The relative importance of these and other problems varies to some degree with the industry within which the MSE operates. The Construction sector, for instance, appears greatly affected by the non-payment by credit customers, while this is almost a non-issue for the Transport, Communication & Storage sector. "Low market demand" is of particular concern to the Restaurant & Hotel, Personal Services, and Community & Social Services sectors (see Table 4).

Interesting patterns emerge when the MSE sector's problem issues are classified according to employment size, with the categories including "own account", "1-2 workers", "3-4 workers", and "5-9 workers" (see Table 5). In most cases, a clear correlation — be it negative or positive — becomes apparent between employment size and the frequency with which a particular constraint is cited. More specifically, it appears that

*the significance of the problem tends to decrease with firms size for issues such as*

- |                                   |                             |
|-----------------------------------|-----------------------------|
| * low market demand               | * inadequate work space     |
| * non-payment by credit customers | * inadequate transportation |
| * high prices for supplies        | * high cost of fuel         |
| * availability of supplies        |                             |

*the significance of the problem tends to increase with firm size for issues such as*

- |                         |                       |
|-------------------------|-----------------------|
| * capital & cash flow   | * shortage of workers |
| * high taxation         | * incompetent workers |
| * unpaid bills/invoices | * poor work attitudes |

Evidently, even *within* the Micro and Small Enterprise sector, establishment size is an important variable that correlates with factors impacting upon the firm's operations, productivity, and growth potential. For instance, not surprisingly, labour-related issues such as the availability

and quality of labour assume greater significance as the number of employees increases. On the other hand, there are advantages to larger scale when it comes to the availability and price of supplies (including fuel) and other factors such as work space and transportation.

If firm size matters for the experience of micro and small enterprises, it is likely to be of even greater significance in a comparison of micro and small enterprises with medium and large firms. Hence policies designed to address the productivity problem in the Jamaican economy need to consider establishment size as an important variable and tailor interventions accordingly. The MSE sector deserves special consideration in this exercise because of the prevalence of small firms and their vital role in the process of industrial transformation and development.

### *Efficiency / Productivity Considerations*

What — if any — is the relationship between firm size and efficiency?

Neither theoretical nor empirical research is able to provide a clear-cut answer to this question. International evidence on the relative efficiency of large versus small firms suggests that "whether small is synonymous with efficient often depends on which sector is being considered." More precisely, "SSEs [small scale enterprises] are beautiful in terms of efficiency only in some sectors, but, in less industrialized countries, those sectors are commonly where small enterprises are most prevalent, with traditional, labor-intensive and low-average labor-productivity technologies."<sup>5</sup>

The answer also depends on which efficiency or productivity measure is applied. Donald Snodgrass, coordinator for USAID's Employment and Enterprise Policy Analysis Project at the Harvard Institute for International Development, notes, "My impression is that if one uses the simplest measure, value added per worker, it is pretty clear in most cases that productivity is higher in larger firms. The question is, how much of this is attributable to higher capital intensity and how much, if any, to more efficient use of resources? Evidence on capital productivity and TFP [total factor productivity] is more mixed."<sup>6</sup>

At a theoretical level, a number of opposing forces are at play that influence the relative efficiency of firms of different sizes. Larger establishments stand to benefit from *economies of scale*, that is lower average cost per unit at higher output levels, for a variety of reasons. One critical determinant is the type of production process that will prove most economical for the firm as a function of its output volume. For instance, larger continuous production levels generate cost

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<sup>5</sup> Young (1994), p. 10.

<sup>6</sup> Quoted in Young (1994), note 21, p. 39.

savings because they allow for a more capital-intensive production process with more specialised, higher-speed machinery. They also make possible the specialisation and division of labour, thus enabling workers to build up greater proficiency in their tasks. Other sources of economies of scale stem from larger firms being able to spread their overhead costs over larger output volumes and benefitting from the fact that equipment and energy costs tend to rise less than in proportion to production capacity.<sup>7</sup>

There are, however, limits to the decline in average production costs with rising output levels as the realisation of economies of scale is subject to diminishing returns and opportunities for further cost reductions are increasingly exhausted. Other considerations may in fact favour smaller rather than larger operations. These pertain in particular to the human resource factor and have bearing on important X-inefficiency related issues: worker motivation, industrial relations, and managerial control. In this regard, "[p]sychological surveys show that for reasons still imperfectly understood, workers express less satisfaction with their jobs, and especially with the challenge their jobs offer, in large plants than in small plants."<sup>8</sup> This lack of job satisfaction is likely to have adverse effects on worker productivity. Similarly, larger firms are more likely to be afflicted by poor labour-management relations which impact negatively on worker motivation and productivity. (See appendices for more detailed discussion)

Finally there is the issue of management and coordination problems which arise as an enterprise grows in size. Smaller firms have an edge in this regard because they offer greater scope for their chief executive officer to be more intimately involved with all aspects of the operation, giving him/her front-line knowledge for more informed business decisions. A small firm that is run by an owner-manager also avoids principal-agent problems that arise from a separation of ownership and control.

Despite these possible advantages, micro and small enterprises face substantial handicaps in practice that impact negatively upon their efficiency and productivity. These include:

- **capital & credit issues**

It is widely recognised that small firms are severely handicapped in accessing credit because of lack of collateral and of small loan sizes that are often considered uneconomic by traditional financing institutions. In Jamaica this is reflected in 37.7 percent of micro and small entrepreneurs identifying capital and credit problems as a first-priority constraint encountered at the start of the business. "Getting credit/money" is also reported as a major problem currently facing close to 30

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<sup>7</sup> Scherer & Ross (1990).

<sup>8</sup> *ibid*, p. 103.

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percent of microentrepreneurs, with 19.2 percent assigning this issue top priority. Furthermore, the need for "more working capital" is the most frequently cited (29.8 percent) requirement for output expansion.<sup>9</sup>

- **entrepreneurial & management skills**

Even though closer to and presumably more informed on the realities of front-line production and marketing operations, managers of micro and small enterprises often lack the requisite skills and experience for a successful business venture. In the MSE Survey of Jamaica, some 27 percent of microentrepreneurs report to be without basic skills and 21.5 percent without training.<sup>10</sup> Slightly more than half of all microentrepreneurs surveyed express a desire for training, primarily in the areas of new product design, enterprise management, technical basic skills, bookkeeping, and marketing (see Table 6).

- **input supplies**

The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica cites supply problems as an important obstacle to growth in the MSE sector. While the major issue in this regard is the cost of supplies, their availability and quality is also of concern. "High prices for supplies" ranks third and "supply availability" sixth out of twenty possible problems. Both issues appear more problematic the smaller the firm size, with 34.3 (10.4) percent of "own account workers" reporting "cost" (availability) as a problem vis-a-vis 27.8 (5.6) percent of firms employing 5-9 workers. (see Table 5)

- **market access = inadequate market demand (in MSE survey; p. 59)**

number one obstacle = inadequate demand; 1992 survey: small-scale firms produce mainly for local market (espec. in rural areas); most unable to avail themselves of instruments, eg subcontracts, which could serve to widen their potential markets

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<sup>9</sup> See *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*, Tables 1.5.2, 1.5.9, and 1.5.17 respectively.

<sup>10</sup> *ibid*, Table 5.1.5. In terms of formal education, some 35 percent of microentrepreneurs in firms with paid workers report to have received primary and close to 50 percent secondary education. (see Table 5.1.4)



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***Policy Issues***

In recognition of the special role and development potential of micro and small businesses, numerous initiatives have been designed to address the constraints that face in particular this segment of the Jamaican economy. The focus of the interventions that are currently in place is on the provision of affordable credit to the sector.

target the SME sector --> may need strengthening / revamping (check submissions to NPC re MSE sector)

interventions to be tailor made (micro versus small); see MIIC presentation to NPC; see also MSE survey: varying significance of problem issues according to firm size within MSE sector

programmes re: access to and cost of credit

productivity/resource centers, UNDP programme: special emphasis on MSEs  
management skills/training

NIP: importance of creation of networks of interdependent firms = key to building competitive advantage; relates to deliberate strategies of cost-effective sourcing of inputs, targeting markets for expansion through collective action; building strategic alliances with local and international firms

Table 1: Size Distribution of Micro and Small Enterprise (MSE) Sector, 1996

Industry	Type of Business				Total	Average no. of workers
	Own acct. workers	1-2 paid workers	3-4 paid workers	5-9 paid workers		
<b>NUMBER</b>						
Manufacturing	3,220	1,570	710	410	5,910	2.41
Construction	190	40	80	90	400	3.73
Wholesale & Retail Trade	48,450	7,750	2,090	620	58,910	1.42
Restaurants & Hotels	4,200	3,330	890	580	9,000	2.03
Transport, Communic'n, Stor.	920	220	80	110	1,330	1.49
Finance & Business Services	440	370	300	300	1,410	3.17
Community & Social Services	700	880	290	160	2,030	2.04
Personal Services	7,740	2,170	430	90	10,430	1.35
Motor car/other repairs	2,010	1,230	330	120	3,690	1.99
<b>TOTAL</b>	<b>67,870</b>	<b>17,560</b>	<b>5,200</b>	<b>2,480</b>	<b>93,110</b>	<b>1.76</b>
<b>PERCENT</b>						
Manufacturing	54.6	26.5	11.9	7.0	100.0	2.41
Construction	47.2	10.4	20.7	21.7	100.0	3.73
Wholesale & Retail Trade	82.2	13.2	3.5	1.1	100.0	1.42
Restaurants & Hotels	46.6	37.0	9.9	6.5	100.0	2.03
Transport, Communic'n, Stor.	69.2	16.4	6.1	8.3	100.0	1.49
Finance & Business Services	31.1	26.3	21.3	21.3	100.0	3.17
Community & Social Services	34.5	43.3	14.3	7.9	100.0	2.04
Personal Services	74.3	20.8	4.1	0.8	100.0	1.35
Motor car/other repairs	54.5	33.3	8.9	3.3	100.0	1.99
<b>TOTAL</b>	<b>72.9</b>	<b>18.8</b>	<b>5.6</b>	<b>2.7</b>	<b>100.0</b>	<b>1.76</b>

Source: Tables 1.2.4 and 1.2.5 in *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*.

Table 2: Labour Force Characteristics: Comparison of National v. MSE Estimates, 1992 and 1996

Labour force characteristic	1992			1996		
	Total in labour force	Total in MSE	MSE as % of total L force	Total in labour force	Total in MSE	MSE as % of total L force
Employed labour force	896,300	163,680	18.3	959,780	174,010	18.1
Paid employed labour force	509,275	113,290	22.2	569,900	65,600	11.5
Own account/unpaid workers	373,950	50,390	13.5	361,330	108,420	30.0

Source: Table 1.ii in *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*.

Table 3: Profile of the Jamaican Micro and Small Enterprise (MSE) Sector, 1996

Industry	Number of Enterprises		Number of Workers			Annual Sales		
	No.	% of MSE Sector	No.	% of MSE Sector	% of Industry Total	J\$ million	% of MSE Sector	% of Industry Gross Output
Manufacturing	5,910	6.3	17,970	10.3	17.9*	4,609.2	9.5	5.7*
Construction	400	0.4	1,210	0.7	0.1	404.5	0.8	0.5
Wholesale & Retail Trade	58,910	63.3	95,210	54.6	47.8	29,239.9	60.2	43.3
Restaurants & Hotels	9,000	9.7	24,500	14.0		4,647.8	9.6	23.2
Transport, Communication, Storage	1,330	1.4	2,310	1.3	4.8	621.4	1.3	1.4
Finance & Business Services	1,410	1.5	6,380	3.7	11.7	4,931.8	10.1	14.5
Community & Social Services	2,030	2.2	6,150	3.5	8.9	774.8	1.6	13.0
Personal Services	10,430	11.2	15,760	9.0		1,880.9	3.9	70.3
Motor car/other repairs	3,690	4.0	4,940	2.8	n.a.**	1,480.8	3.0	n.a.**
TOTAL	93,110	100.0	174,430	100.0	18.2	48,591.1	100.0	13.0

Notes: The Micro and Small Enterprise Sector is defined to include non-agricultural businesses operated by persons who either work alone or with unpaid family help (own-account workers) or who employ less than 10 workers not including themselves.

\* includes Motor car/other repairs.

\*\* included in Manufacturing.

Source: Based on Tables 3.i and 4.1.8 in *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica* and Planning Institute of Jamaica. *Economic and Social Survey 1996*.

**Table 4 Problems Identified by MSEs as Facing Small Operators  
by Industry, 1996  
(in percent)**

Problems	Total	Mfg	Con	Trade	Rest/ Hotel	T/C/ Storg	F/B Serv.	C/S Serv.	Pers. Serv.	Re- pairs
Low market demand	44.5	39.6	45.5	44.3	50.0	36.9	41.3	46.6	47.2	40.8
non-payment by customers given credit	33.4	29.4	63.6	37.4	22.0	4.6	17.4	21.9	39.2	38.5
High prices for supplies	33.2	37.7	22.7	35.7	32.7	15.4	21.7	17.8	33.6	33.7
Capital & cash flow	28.4	35.0	27.3	28.9	24.8	13.8	34.8	15.1	28.4	29.0
High utility costs	19.8	13.5	9.1	17.4	25.2	3.1	8.7	17.8	28.2	14.2
Availability of supplies	10.0	16.6	4.5	9.8	5.1	3.1	10.9	11.0	7.3	16.6
Inflation	9.8	4.9	9.1	14.3	13.6	10.8	6.5	5.5	9.7	3.6
Inadequate work space	9.1	7.7	-	3.8	6.5	6.2	2.2	12.3	14.4	16.0
Spare parts/machinery	8.7	16.6	4.5	2.5	1.4	38.5	-	5.5	9.5	12.4
High taxation	7.9	5.2	4.5	9.8	13.1	20.0	21.7	8.2	3.8	6.5
Theft/lack of security	5.2	4.3	4.5	7.9	8.4	4.6	-	2.7	2.2	8.3
Inadequate transportation	4.9	6.7	9.1	9.6	4.7	1.5	2.2	-	1.8	1.8
Meeting productn targets	3.6	6.1	4.5	1.9	0.5	-	2.2	4.1	5.2	4.1
High cost of fuel	3.3	3.1	-	2.3	5.6	36.9	-	1.4	1.0	1.2
Shortage of workers	2.8	5.2	4.5	1.1	2.3	1.5	10.9	1.4	2.3	4.7
Unpaid bills/invoices	1.6	2.5	4.5	1.3	2.3	1.5	10.9	-	0.7	1.2
Incompetent workers	1.6	2.8	4.5	0.4	2.8	1.5	-	2.7	1.5	1.2
Lack of technical advice	1.4	1.8	-	1.5	0.5	-	-	-	1.7	1.8
Poor work attitudes	1.2	2.8	4.5	0.6	1.4	-	-	2.7	0.7	1.8
Lack of foreign exchange	0.5	-	-	1.3	-	1.5	-	1.4	0.2	-

Source: Table 1.5.6 in *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*.

**Table 5 Problems Identified by MSEs as Facing Small Operators  
by Employment Size, 1996  
(in percent)**

Problems	Total	Type of Business			
		Own Acct	1-2 workers	3-4 workers	5-9 workers
Low market demand	44.5	46.7	41.2	41.7	29.2
non-payment by customers given credit	33.4	38.4	25.2	21.6	12.5
High prices for supplies	33.2	34.3	32.3	28.1	27.8
Capital & cash flow	28.4	27.8	29.1	28.1	36.1
High utility costs	19.8	18.3	22.6	26.6	16.7
Availability of supplies	10.0	10.4	9.9	9.4	5.6
Inflation	9.8	9.1	11.2	9.4	15.3
Inadequate work space	9.1	10.1	7.5	7.2	4.2
Spare parts/machinery	8.7	8.6	9.1	8.6	8.3
High taxation	7.9	4.6	11.9	18.7	23.6
Theft/lack of security	5.2	4.5	8.0	2.9	6.9
Inadequate transportation	4.9	5.4	5.2	2.2	-
Meeting production targets	3.6	4.0	2.4	2.9	5.6
High cost of fuel	3.3	3.5	3.0	2.9	1.4
Shortage of workers	2.8	1.9	3.7	6.5	8.3
Unpaid bills/invoices	1.6	0.8	1.7	5.8	8.3
Incompetent workers	1.6	0.4	3.0	4.3	8.3
Lack of technical advice	1.4	1.6	0.4	1.4	2.8
Poor work attitudes	1.2	0.5	1.5	5.0	5.6
Lack of foreign exchange	0.5	0.5	0.6	0.7	-

Source: Table 1.5.7 in *The 1996 Micro and Small Enterprise (MSE) Survey of Jamaica*

**Table 6: Training Needs Identified by Microentrepreneurs  
1996**

Field of Training	Number	Percent
No training desired	942	46.1
Total desirous of training of which:	1,102	53.9
Designing new products	411	37.3
Management of enterprise	287	26.0
Technical basic skills	274	24.9
Keeping written accounts	269	24.4
Marketing & promotion	204	18.5
Using & repairing machines	106	9.6
Negotiating with banks	61	5.5
Negotiating w/ customers,suppliers	52	4.7
Technical training for workers	-	-

Source: Table 5.1.7 in *The 1996 Micro and Small Enterprise (MSE)  
Survey of Jamaica*

**APPENDIX F**  
**INDUSTRIAL RELATIONS**



### Industrial Relations

An important factor that lies largely outside the individual firm's orbit of decision making and control yet impacts profoundly on its productivity are the institutional arrangements governing the labour market and the industrial relations system. The channels through which these arrangements affect productivity at the micro and macro levels are manifold. They range from the way in which labour relations practices and procedures affect worker motivation and effort as well as the level of industrial disputes to the degree to which labour market flexibility allows for adjustments in resource allocation within and across firms and industries.

Empirical evidence attests to the importance of labour market institutions for productivity growth. Crafts (1992), for instance, attributes Germany's leading edge over Britain in the period prior to the 1980s to a number of specific institutional factors including the structure of industrial relations. Correspondingly, Britain's recovery during the 1980s is credited, at least in part, to a reduction in trade union bargaining power. Similarly, Pratten (1976) finds that "behavioural differences", that is strikes, restrictive practices, and manning levels, account for approximately half the productivity gap observed among multinational corporations operating in both Britain and Germany in the early 1970s.

In Jamaica, views differ widely as to the role and relative importance of the industrial relations structures and climate for the country's economic performance. Groups such as the Private Sector Organisation of Jamaica as well as a number of US investors operating in Jamaica regard the country's labour laws and industrial relations climate as one of the major factors inhibiting economic growth.<sup>1</sup> Others point instead towards poor work habits, lack of education, and deficiencies in the transportation system as primary obstacles. Furthermore poor management in terms of attitudes, outdated practices and outdated technology and a widening gap between managers' and workers' compensation are said to contribute to inefficiency and low productivity.<sup>2</sup> These sentiments are echoed by the unions which view issues such as the rehabilitation of social infrastructure (health care, housing, transportation, security), human resource development and employee participation in workplace governance as critical to productivity improvements.<sup>3</sup>

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<sup>1</sup> See Labour Market Reform Committee (LMRC) Interim Report (1996), Private Sector Organisation of Jamaica (1997), and U.S. Department of Commerce (1995). According to a recent Investor Attitude Study conducted by the US Department of Commerce, "Jamaica's powerful unions are becoming a major deterrent for further investment." (p. 5) In particular, "[f]or the Bauxite/Alumina industry and some other manufacturers, labor issues are the main obstacle to operating in Jamaica. Worker strikes and slow-downs have become more common, resulting in major losses by investors in these industries." (p. 6)

<sup>2</sup> See LMRC (1996, 55) referring to two 1994 USAID-sponsored studies. Findings are based on responses by over 250 employers.

<sup>3</sup> LMRC (1996).

In order to put these diverging opinions into a factual context, it is useful to consult available industrial dispute statistics so as to gain some insight into the actual scope of the industrial relations "problem" in Jamaica and its implications for productivity.

### *Recent Trends in Industrial Unrest*

Table 1 and Figure 1 depict trends in the number of industrial disputes and work stoppages (strikes) in Jamaica for the period 1986-1996. The data reveal a general downward trend in the number of industrial disputes, from a peak level of 391 disputes in 1986 to a low of 181 in 1995. In 1996 this figure rose again to 195. Work stoppages, in contrast, exhibit an almost diametrically opposed pattern, rising to a peak level of 95 in 1994, then dropping off to 59 in 1996.

The breakdown of disputes by sector given in Table 1 indicates that both the Services and Goods Producing Sectors are more or less equally prone to industrial unrest. Of the 3,090 disputes reported over the 1986-96 period, 1,600 (52%) afflicted the Service sector and 1,490 (48%) the Goods Producing Sector. With respect to strike action, the Service Sector accounted for 297 (44%) of the 682 work stoppages taking place over the same time period. In recent years, work stoppages have been more evenly distributed over the Services and Goods Producing Sectors. Within the Goods Producing Sector, industrial unrest is most prevalent in agriculture and manufacturing.

### *Causes for Industrial Action*

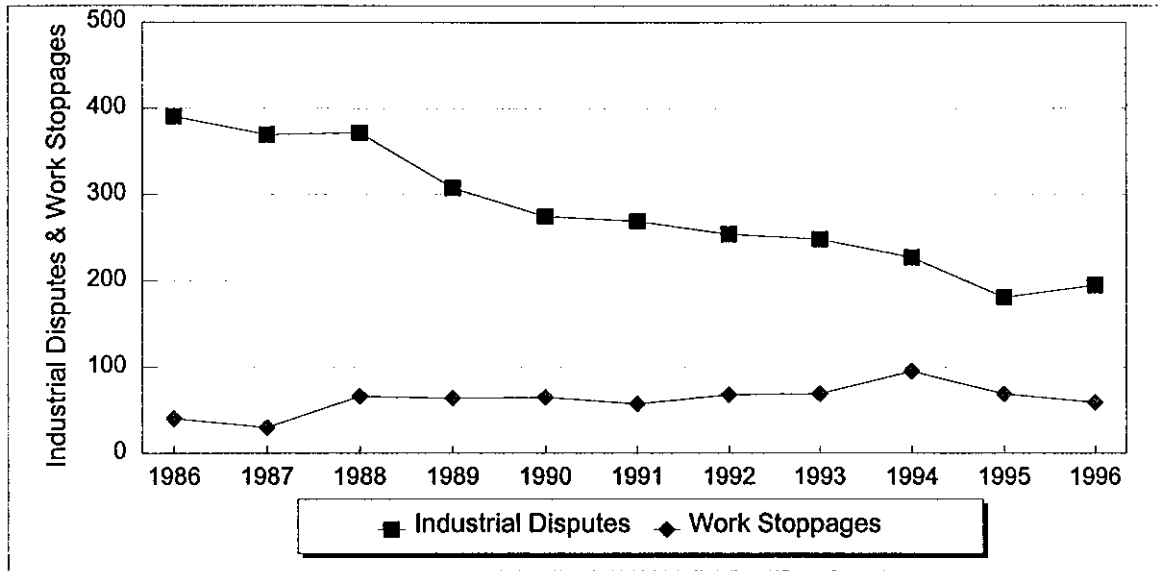
According to official statistics on the causes of industrial action reported in Table 2, the majority of strikes in Jamaica is the result of differences related to wage and employment conditions. This holds true in the aggregate, where between 1986 and 1996 390 out of 680 strikes (57.4 %) involved wages and conditions of employment, as well as at the sectoral level. The exception is the agriculture sector where in recent years the "miscellaneous rights disputes" category has featured prominently as a major strike cause.<sup>4</sup>

The dominance of "wages and employment conditions" as the leading cause for industrial action may in turn be related to the unstable macroeconomic environment prevailing in Jamaica. It is argued that high inflation rates and frequent exchange rate devaluations exacerbate the normal friction between labour and management by necessitating frequent costly and disruptive wage negotiations. In this context it is interesting to note that the high cost of living in Jamaica is cited

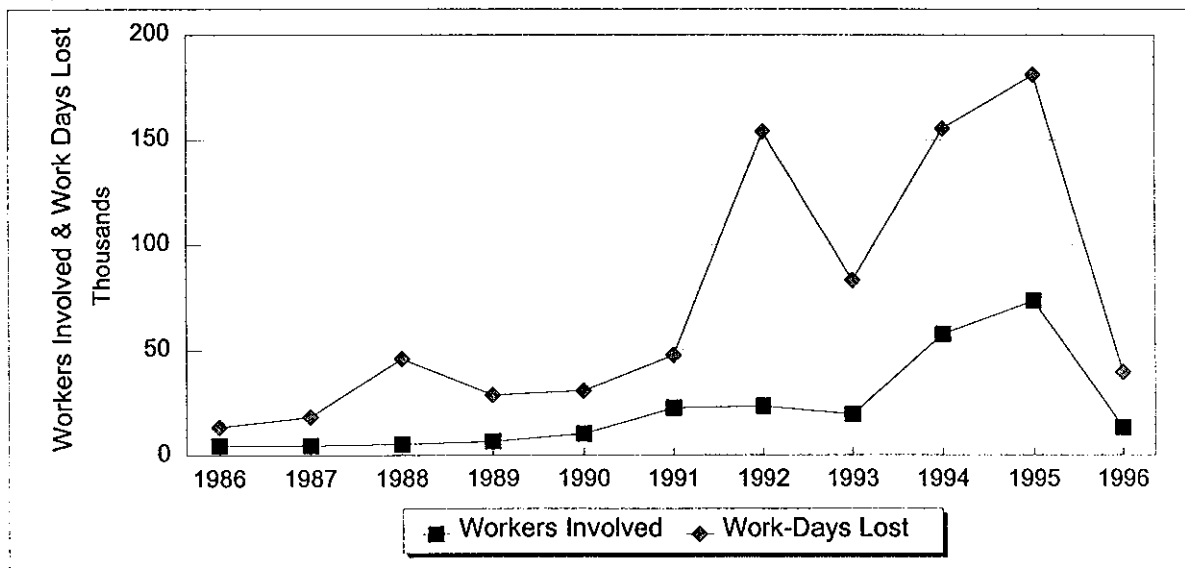
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<sup>4</sup> The "Miscellaneous" category captures reasons such as breach of contract, differences in the interpretation of wage contracts and transportation.

**Figure 1: Jamaica: Industrial Disputes and Work Stoppages, 1986-1996**



**Figure 2: Jamaica: Number of Workers Involved in Reported Work Stoppages and Work-Days Lost, 1986-1996**



as a major source of pay dissatisfaction. That is, a large part of the workforce perceive their present pay as fair for the job they are doing and their productivity, but are dissatisfied because, given the high cost of living, it affords them too low a standard of living.<sup>5</sup>

Other factors that have been cited as further raising the frequency of work stoppages include union rivalry; the alleged lack of effective dispute settlement mechanisms; non-adherence to established procedures, statutory as well as non-statutory, for the resolution of disputes; and failure on the part of government to enforce crucial provisions of the existing LRIDA, such as the requirement to settle all unresolved disputes, and specifically those in essential services, without resort to industrial action.<sup>6</sup>

A recent study on the motivational status and work-orientation of the Jamaican workforce identifies five main factors which, in the view of union delegates, are primarily responsible for strikes in unionised organisations (see Carter, 1997). These are, in order of magnitude:

- (1) poor communication and misunderstanding,
- (2) management's inhuman attitude towards workers,
- (3) lack of co-operation between management or delegates and supervisors,
- (4) contract implementation,
- (5) wages and wage-related matters.

Evidently union delegates attach less importance to "wages and wage-related matters" as a major source of industrial action but instead regard the lack of communication, co-operation and respectful human relations between management and labour to be the root cause of conflict (see Exhibit 1).

Persons perceived as most responsible for strikes are (1) supervisors; (2) personnel; and (3) management (see Exhibit 2). According to Carter "[e]ighty-two per cent of the union delegates are convinced that over 87 per cent of the strikes at the workplace are caused by supervisors who are untrained for the job or who are not conversant with the content of the collective agreement. Delegates are also convinced that *70 per cent of the strikes could have been prevented if supervisors were better trained.*"<sup>7</sup> These findings point strongly to an urgent need for education and training on industrial relations and collective agreements.

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<sup>5</sup> Carter (1997).

<sup>6</sup> See U.S. Department of Commerce (1995) and Labour Market Reform Committee Interim Report (1996).

<sup>7</sup> Carter (1997, 100), emphasis added.

**Exhibit 1: Union Delegates' Perception of Major Strike Causes**

<p><b>Question</b> <i>In your experience as a union delegate, what one thing (monetary or non-monetary) is most responsible for strikes in your company?</i></p>	
<p><b>Responses</b></p>	
<ul style="list-style-type: none"> <li>* management's failure to meet workers' demands</li> <li>* lack of communication</li> <li>* money</li> <li>* inhuman attitude of management</li> <li>* attitudes</li> <li>* disrespect and misunderstandings</li> <li>* lack of communication</li> <li>* attitude towards the workers</li> <li>* non-fulfilment of promises</li> <li>* non-fulfilment of promises</li> <li>* management refuses to honour agreement</li> <li>* workers' dissatisfaction</li> <li>* misunderstanding of the union contract</li> <li>* general dissatisfaction of workers</li> <li>* poor communication -- don't understand contract</li> <li>* bad relationship &amp; misunderstandings</li> <li>* money problems</li> <li>* low wages</li> <li>* bad treatment &amp; low wages</li> <li>* no understanding &amp; poor communication -- misunderstanding of contract</li> <li>* bad relationships &amp; poor communication -- misunderstanding of contract</li> <li>* management refusal to honour agreements</li> <li>* lack of co-operation</li> <li>* lack of care about workers &amp; workers' needs</li> <li>* lack of communication about labour agreement</li> <li>* lack of appreciation</li> <li>* irresponsible management</li> <li>* lack of education about workers' rights</li> <li>* management attitudes</li> <li>* exploitation of the mind &amp; soul of workers</li> </ul>	<ul style="list-style-type: none"> <li>* lack of co-operation</li> <li>* management failure to listen to workers</li> <li>* lack of co-operation on the part of management</li> <li>* bad management</li> <li>* lack of concern for workers</li> <li>* poor communication -- don't have the facts</li> <li>* attitude of supervisors</li> <li>* attitude of management</li> <li>* exploitation and no respect for us</li> <li>* poor communication - don't know the facts</li> <li>* lack of concern for the worker</li> <li>* failure to honour agreement</li> <li>* poor communication - we are in the dark concerning the facts</li> <li>* bad working conditions</li> <li>* management won't compromise &amp; force us to take a hard stand</li> <li>* management's reluctance to discuss or implement programmes benefitting workers</li> <li>* poor communication -- we don't know what's going on</li> <li>* workers' dissatisfaction</li> <li>* lack of communication</li> <li>* lack of co-operation</li> <li>* lack of co-operation</li> <li>* unwillingness to compromise</li> <li>* bad blood between management &amp; workers</li> <li>* failure to recognise that the worker has a role to play in decision-making</li> <li>* failure by management to treat workers as human beings</li> <li>* lack of proper communication -- we are in the dark</li> </ul>

Source: Kenneth L. Carter: *Why Workers Won't Work. The Worker in a Developing Economy; A Case Study of Jamaica.* MacMillan Education Ltd, 1997.

**Exhibit 2: Union Delegates' Perception of Persons Primarily Responsible for Strikes**

<p><b>Question</b> <i>Based on your experience as a union delegate, who do you think is mainly responsible for strikes at your workplace?</i></p>	
<p><b>Responses</b></p> <ul style="list-style-type: none"> <li>* top management personnel, especially the personnel department</li> <li>* personnel department -- they are anti-personnel</li> <li>* both management &amp; workers</li> <li>* supervisors don't know contract</li> <li>* supervisors don't know contract</li> <li>* supervisors don't know contract</li> <li>* organised workers</li> <li>* management &amp; the personnel department</li> <li>* supervisors &amp; personnel department</li> <li>* those who are not educated about the collective agreement</li> <li>* personnel department -- oppressors</li> <li>* those of us who will not allow management to have their own way</li> <li>* supervisory management -- don't know contract</li> <li>* both management &amp; workers</li> <li>* supervisors who are not aware of the collective agreement rules</li> <li>* personnel &amp; supervisors who are not aware of the contract rules</li> <li>* supervisors who do not know the contract rules</li> <li>* personnel department</li> <li>* supervisors don't know contract</li> <li>* the attitude of management &amp; supervisors alike</li> <li>* both workers &amp; management</li> <li>* senior persons who always try to abuse the rights of their juniors</li> <li>* supervisors don't know contract</li> <li>* supervisors don't know contract</li> <li>* supervisors don't know contract</li> <li>* supervisors don't know contract</li> <li>* top management</li> <li>* management</li> <li>* management</li> </ul>	<ul style="list-style-type: none"> <li>* unsatisfied workers</li> <li>* management</li> <li>* bad supervisors</li> <li>* we the workers</li> <li>* supervisors &amp; management</li> <li>* supervisors who don't know the collective agreement</li> <li>* both management &amp; workers</li> <li>* it all depends on where the trouble starts</li> <li>* the workers -- undisciplined</li> <li>* supervisors &amp; workers</li> <li>* management at the highest level</li> <li>* the workers -- poor attitude</li> <li>* the co-workers</li> <li>* management &amp; supervisors</li> <li>* the unionised workers</li> <li>* management</li> <li>* union delegates</li> <li>* supervisors -- can't communicate</li> <li>* personnel department</li> <li>* the management. They never stop squeezing</li> <li>* the exploited workers</li> <li>* all groups</li> <li>* management because of their misinterpretation of the labour clauses</li> <li>* supervisory group -- misinterprets labour clauses</li> <li>* the union</li> <li>* the supervisor</li> <li>* unionised workers</li> <li>* supervisors untrained</li> <li>* supervisors untrained</li> <li>* senior management</li> <li>* militant types like myself who take the responsibility to force the issue</li> </ul>

Source: Kenneth L. Carter: *Why Workers Won't Work. The Worker in a Developing Economy; A Case Study of Jamaica.* MacMillan Education Ltd, 1997.

### *Productivity Implications of Industrial Action*

Industrial unrest, and in particular work stoppages, are disruptive to the production process. They entail losses in output and in productivity as a direct result of time lost for productive activity. Moreover, they pollute the industrial relations climate, thereby impacting adversely on worker motivation and effort with additional, possibly even greater, negative productivity implications.

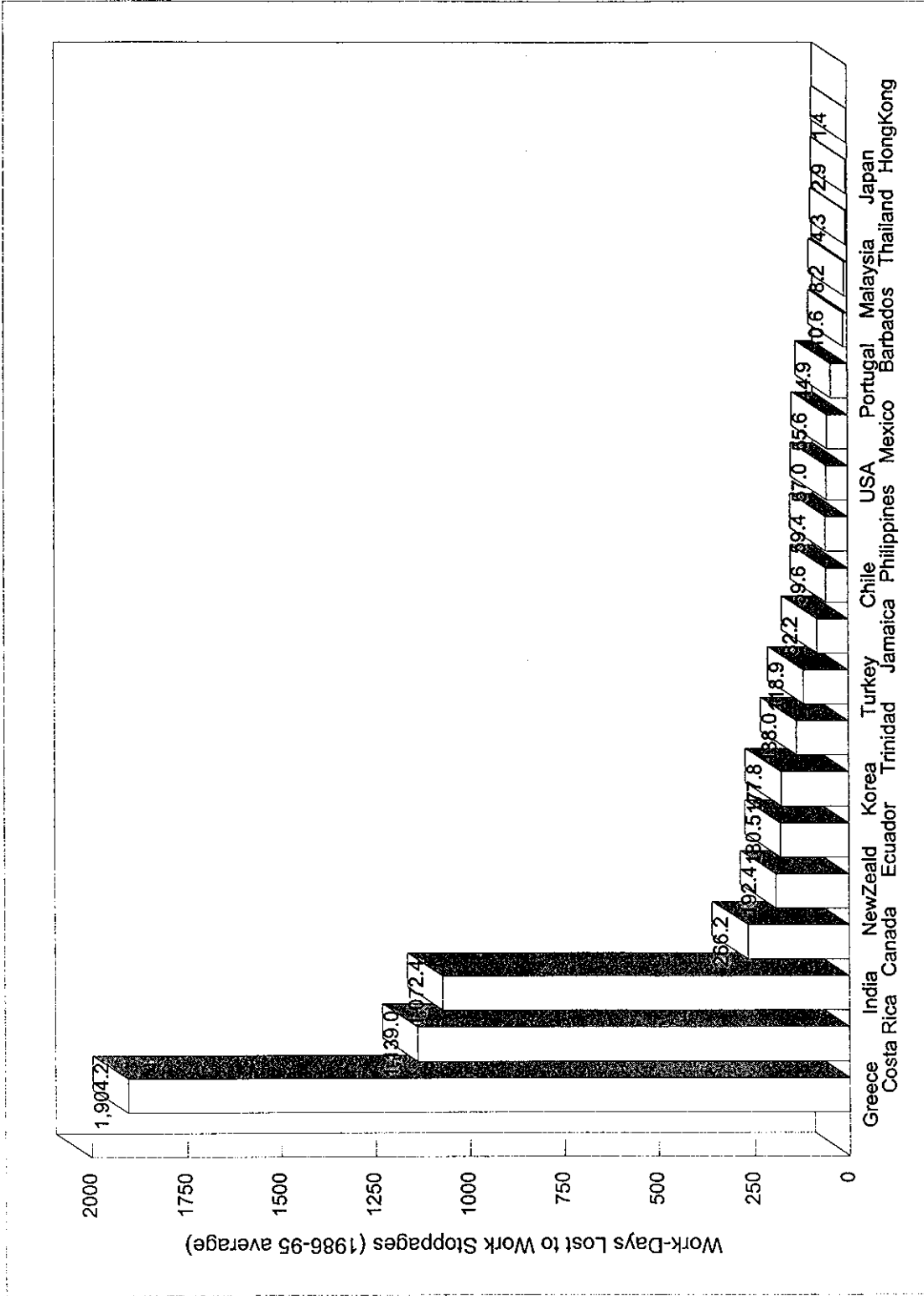
Two statistics, the number of workers involved in strikes and the resulting work-days lost, capture the direct output effect. As shown in Table 3 and Figure 2, both variables followed an upward trend, both in the aggregate and on a per-strike basis, up until 1995 when a record 73,468 workers participated in work stoppages, leading to a loss of over 180 thousand work-days. In 1996, these numbers dropped significantly with 13,265 workers participating in strikes and 39,624 work-days lost.

To gain some insight into the scope and significance of these figures, an international comparison of the number of work days lost as a result of industrial action is useful. Table 4 provides information on cross-country differences in this measure for the period 1986 to 1995. To put these figures in perspective and to allow for valid cross-country comparisons, time lost for productive activity is set in relation to aggregate employment by calculating work-days lost per year *per 1,000 employed persons*. The last column in Table 4 gives an annual average of the number of work-days lost in each country. The variation across countries in this summary measure is illustrated in Figure 3.

Among the twenty countries included in Table 4 and Figure 3, Jamaica ranks 11th with, on average, 82.17 work-days per 1,000 employed persons lost per year during the time period under analysis. The East Asian countries of Hong Kong, Japan, Thailand, and Malaysia incurred the fewest work-day losses as a result of work stoppages, with annual averages ranging from 1.37 to 8.20 per 1,000 employed persons. (The exception in the East Asian region is Korea with, on average, 177.84 strike-days per annum.) At the other end of the spectrum are India, Costa Rica and Greece, all with well in excess of 1,000 work-days lost per year per 1,000 employed persons.

Among countries in the Latin American & Caribbean region, Barbados suffered the smallest losses (10.55), followed by Mexico (55.56) and Chile (59.64). Countries in the hemisphere with relatively more strike-days than Jamaica include Costa-Rica (1,139 per 1,000 employed persons), Ecuador (180.53) and Trinidad & Tobago (137.98).

**Figure 3: International Comparison of Number of Work-Days Lost per Year due to Work Stoppages, 1986-1995**  
 (annual average number of days per 1,000 employed persons)





A number of important observations emerge from this analysis of time lost for productive activity as a result of industrial action:

- (1) *In international comparison of work-days lost to work stoppages, Jamaica occupies a middle ground. Within the Latin American & Caribbean region, it fares better, on average, than some of its competitors such as Trinidad & Tobago, Ecuador and Costa Rica but worse than the regional developing economies of Chile, Mexico and Barbados.*
- (2) *When seen in relation to aggregate employment and thus total time available for productive activity, the losses imposed on the Jamaican economy by industrial action are not as substantial as one might expect at first sight. On average, less than one work-day was foregone per year for every ten persons employed in the Jamaican economy. This is equivalent to a loss of 0.04 percent of total production time, under the conservative assumption of 200 work-days per year.<sup>8</sup>*
- (3) *The majority of countries that have fared less favourably than Jamaica in a comparison of the annual average number of work-days lost over the 1985-1996 period, appear to be turning around their poor performance in this regard and have experienced a downward trend in strike days in recent years. Jamaica, in contrast, has been moving in the opposite direction, experiencing an increase in work-day losses over time.<sup>9</sup>*

### ***Labour-Market Deregulation: The New Zealand Experience***

New Zealand ranks among the group of countries whose work-day losses per employed person have exceeded those of Jamaica over the period 1986-95 but which have benefitted from a marked decline in these losses in recent years. During the five-year period 1986-90, New Zealand lost an annual average of 341 work-days per 1,000 employed due to work stoppages.<sup>10</sup> This figure fell to 44 work-days lost on average during 1991-95. Notwithstanding the dramatic fall-off in 1996, Jamaica, on the other hand, has shown an overall increasing trend in time lost for productive activity over the study period. The diverging experiences of Jamaica and New Zealand are contrasted in Figure 4.

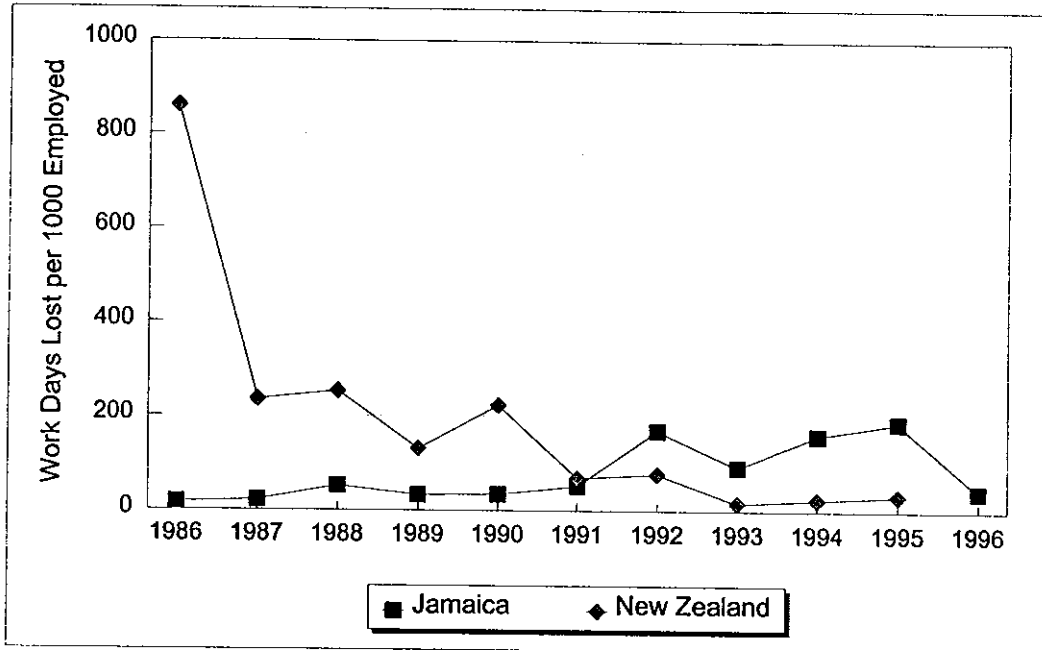
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<sup>8</sup> These statistics ignore second-order effects by which a work stoppage in an input-supplying industry will have negative repercussions for other sectors in the economy.

<sup>9</sup> The total number of work-days lost to work stoppages in Jamaica did decrease from 181,020 in 1995 to 39,624 in 1996. It is hoped that this marks the beginning of a new downward trend.

<sup>10</sup> The year 1986 is somewhat of an outlier with 860.73 work-days lost per 1,000 employees. For the 1987-1990 time period, the annual average work-day loss amounts to 211 days.

**Figure 4: Work-Day Losses due to Work Stoppages  
Jamaica versus New Zealand, 1986-1996**



The decline in work-day losses in New Zealand coincides with the launching of a major labour-market-deregulation initiative that formed part of the country's comprehensive reform programme. In 1991 the Employment Contract Act (ECA) was introduced with the intent of promoting an efficient labour market and providing for freedom of association. Towards that end, the ECA replaced the country's centralised bargaining structures with decentralised enterprise bargaining, giving no special status to unions but allowing employee and employer to freely choose his or her own bargaining agent and to determine whether contracts should be individual or collective. The ECA also includes provisions for the settlement of personal grievances and the resolution of disputes.<sup>11</sup>

<sup>11</sup> Evans et al. (1996).

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While it is difficult to disentangle the various forces at play, the ECA has nonetheless received at least partial credit for the positive labour market and productivity outcomes observed in New Zealand following the passage of the act. More specifically, the ECA is argued to have been a key factor in subsequent productivity improvements that are indicated by an increase in a number of labour productivity measures.<sup>12</sup> One study reports that 80 percent of employers reported productivity improvements with a third crediting the ECA as the single most important force behind these gains.<sup>13</sup> It is also said to have induced a considerable change in the role of unions. Union membership declined significantly following the introduction of the ECA, and so did the role of collective contracts, allowing for considerably more flexibility in work and pay practices.

### *Implications/Conclusions*

The following insights stand out from the preceding discussion:

- New Zealand's experience underscores the fact that different labour market institutions have implications for the organisation of production and for productivity. The specific nature of these institutions and their applicability to the Jamaican environment merits further exploration.
- Industrial dispute statistics suggest that the majority of strikes in Jamaica is the result of differences related to wage and employment conditions. Macro-economic instability tends to worsen the normal friction between labour and management over these issues by necessitating frequent costly and disruptive wage negotiations. Continuous efforts to further consolidate macro-economic stability are thus critical to promoting industrial peace and solidifying the foundation for a social partnership.
- Union delegates identify a lack of communication, co-operation and respectful human relations between management and labour as the root cause of industrial conflict. They are furthermore convinced that the vast majority of strikes are caused by supervisors who are untrained for the job or who are not conversant with the content of the collective agreement.
- Jamaica's industrial relations climate cannot be viewed as a source of significant output or productivity losses when judged by easily quantifiable measures such as the number of strikes and work-days lost. In an international comparison of work-day losses due to industrial action, Jamaica ranks 11th in a group of 20 countries, performing better, on average, than countries such as Trinidad & Tobago, Korea, New Zealand, Canada, and Costa

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<sup>12</sup> *ibid.*

<sup>13</sup> Whatman et al. (1994).

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Rica. Also, Jamaica's work-day losses are insubstantial when seen in relation to overall time available for productive activity.

- However, a poor labour relations climate may not manifest itself primarily through industrial unrest and work-day losses. More importantly, the same factors that have been identified as the root causes of industrial unrest — lack of communication, co-operation and respectful human relations between management and labour — have a profound demotivating effect on workers, resulting in poor work attitudes, minimum effort levels, and hence significant productivity losses.<sup>14</sup>

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<sup>14</sup> See Carter (1997). The major findings and policy recommendations emerging from this study are reviewed in further detail in Appendix C: Worker Motivation and Effort.

**Table 1**  
**Industrial Disputes and Work Stoppages by Industry, 1986-1996**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Industrial Disputes</b>											
<b>Goods Producing Sectors</b>	217	174	172	150	127	130	126	105	107	88	94
Agriculture, Forestry, Fishing	49	44	28	44	40	28	30	14	24	22	21
Mining	5	6	8	6	8	8	9	8	8	5	4
Manufacturing	142	113	125	96	74	84	81	76	70	48	62
Construction	21	11	11	4	5	10	6	7	5	13	7
<b>Services Producing Sectors</b>	174	196	200	158	148	139	128	143	120	93	101
<b>Aggregate</b>	391	370	372	308	275	269	254	248	227	181	195
% Change over previous year		-5.4	0.5	-17.2	-10.7	-2.2	-5.6	-2.4	-8.5	-20.3	7.7
<b>Work Stoppages</b>											
<b>Goods Producing Sectors</b>	27	22	52	39	31	31	38	31	46	32	34
Agriculture, Forestry, Fishing	8	4	17	19	14	7	7	6	12	8	6
Mining	-	1	2	1	1	-	1	1	1	4	-
Manufacturing	19	16	28	18	16	22	29	23	30	17	22
Construction	-	1	5	1	-	2	1	1	3	3	6
<b>Services Producing Sectors</b>	13	8	12	25	34	26	30	38	49	37	25
<b>Aggregate</b>	40	30	64	64	65	57	68	69	95	69	59
% Change over previous year		-25.0	113	0.0	1.6	-12.3	19.2	1.5	37.7	-27.4	-14.5

Source: Based on data of PIOJ, *Economic and Social Survey Jamaica*; various years.

**Table 2**  
**Percentage Distribution of Causes for Work Stoppages**  
**by Industry, 1986-1996**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>All Industries</b>											
Wages & Conditions of Employment	52.5	53.3	35.9	59.4	47.7	52.6	60.3	66.7	65.3	69.7	57.6
Dismissals & Suspensions	22.5	26.7	23.4	12.5	23.1	21.1	19.1	11.6	13.7	10.1	16.9
Miscellaneous <sup>a</sup>	25.0	20.0	40.6	28.1	29.2	26.3	20.6	21.7	21.1	20.3	25.4
<b>Goods Producing Sectors</b>											
Wages & Conditions of Employment	53.8	75.0	41.7	51.3	35.5	48.4	42.1	61.3	54.3	65.6	61.8
Dismissals & Suspensions	15.4	0.0	25.0	12.8	32.3	22.6	28.9	12.9	23.9	6.3	17.6
Miscellaneous <sup>a</sup>	30.8	25.0	33.3	35.9	32.3	29.0	18.9	25.8	21.7	28.1	20.6
<b>Services Producing Sectors</b>											
Wages & Conditions of Employment	51.9	45.5	34.6	72.0	58.8	57.7	83.3	71.1	75.5	73.0	52.0
Dismissals & Suspensions	25.9	36.4	23.1	12.0	14.7	19.2	6.7	10.5	4.1	13.5	16.0
Miscellaneous <sup>a</sup>	22.2	18.2	42.3	16.0	26.5	23.1	10.0	18.4	20.4	13.5	32.0
.../continued											

**Table 2 ctd.**  
**Percentage Distribution of Causes for Work Stoppages**  
**by Industry, 1986-1996**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Agriculture</b>											
Wages & Conditions of Employment	50.0	50.0	23.5	47.4	50.0	71.4	71.4	83.3	41.7	37.5	33.3
Dismissals & Suspensions	37.5	25.0	0.0	5.3	14.3	0.0	0.0	0.0	16.7	0.0	16.7
Miscellaneous <sup>a</sup>	12.5	25.0	76.5	47.4	35.7	28.6	28.6	16.7	41.7	62.5 <sup>b</sup>	50.0
<b>Mining</b>											
Wages & Conditions of Employment	0.0	100.0	0.0	100.0	0.0	0.0	100.0	100.0	100.0	100.0	0.0
Dismissals & Suspensions	0.0	0.0	50.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Miscellaneous <sup>a</sup>	0.0	0.0	50.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Manufacturing</b>											
Wages & Conditions of Employment	52.6	37.5	39.3	55.5	25.0	40.9	31.0	56.5	53.3	64.7	72.7
Dismissals & Suspensions	21.1	43.8	35.7	16.7	50.0	27.3	37.9	17.4	30.0	11.8	18.2
Miscellaneous <sup>a</sup>	26.3	18.8	25.0	27.8	25.0	31.8	31.0	26.1	16.7	23.5	9.1
<b>Construction</b>											
Wages & Conditions of Employment	0.0	100.0	60.0	0.0	0.0	50.0	100.0	0.0	100.0	100.0	50.0
Dismissals & Suspensions	0.0	0.0	20.0	100.0	0.0	50.0	0.0	0.0	0.0	0.0	16.7
Miscellaneous <sup>a</sup>	0.0	0.0	20.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	33.3

Source: Calculated from data of PIOJ, *Economic and Social Survey Jamaica*; various years.

- Notes: a Includes breach of contract, differences in the interpretation of wage contracts and transportation.  
 b One work stoppage was caused by issues relating to workers' bargaining rights.

**Table 3**  
**Number of Workers Involved in Reported<sup>a</sup> Work Stoppages**  
**and Work-Days Lost by Industry, 1986-1996**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Number of Workers Involved in Reported Work Stoppages</b>											
<b>Goods Producing Sectors</b>	1,996	4,622	3,257	4,567	5,739	7,505	16,904	8,081	19,935	14,523	4,218
Agriculture, Forestry, Fishing	1,110	2,080	230	2,444	3,165	5,569	13,670	4,614	12,629	3,276	1,024
Mining	-	300	360	500	375	-	1,000	700	1,800	3,840	-
Manufacturing	886	1,742	2,597	1,593	2,199	1,918	2,234	2,755	4,316	6,907	2,443
Construction	-	500	70	30	-	18	-	12	1,190	500	751
<b>Services Producing Sectors</b>	2,660	142	2,129	2,001	4,434	14,885	6,408	11,371	37,662	58,625	9,047
<b>Aggregate</b>	4,656	4,764	5,386	6,568	10,173	22,390	23,312	19,452	57,597	73,468	13,265
Average number of workers involved per rep. work stoppage	233	298	168	188	261	487	542	335	662	1,166	255
<b>Work-Days Lost</b>											
<b>Goods Producing Sectors</b>	9,060	18,077	40,261	22,229	19,585	24,406	124,699	54,822	106,700	90,003	19,829
Agriculture, Forestry, Fishing	4,220	6,160	7,560	11,595	9,605	16,831	106,660	43,904	72,814	31,964	9,728
Mining	-	2,100	720	3,500	1,125	-	500	700	1,800	27,380	-
Manufacturing	4,840	7,817	31,771	7,014	8,855	7,395	17,539	10,182	24,296	28,159	8,342
Construction	-	2,000	210	120	-	180	-	36	7,790	2,500	1,759
<b>Services Producing Sectors</b>	4,511	192	5,633	6,501	11,091	23,268	29,473	28,447	48,791	91,017	19,795
<b>Aggregate</b>	13,571	18,269	45,894	28,730	30,676	47,674	154,172	83,269	155,491	181,020	39,624
Average work-days lost per reported work stoppage	679	1,142	1,434	821	667	1,109	3,585	1,436	1,787	2,873	762
Avg. Work-days lost per worker	2.9	3.8	8.5	4.4	3.0	2.1	6.6	4.3	2.7	2.5	3.0

Source: Based on data of PIOJ, *Economic and Social Survey Jamaica*; various years.

Notes: a = reported to the Ministry of Labour, Social Security and Sport

Work-days lost = duration of stoppage in days times number of workers involved



**Table 4**  
**International Comparison of Number of Work Days Lost per Year due to Work Stoppages, 1986-1995**  
 ( per 1,000 workers employed )

Country	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Avrge 86-95
Hong Kong	1.87	1.03	0.86	1.20	1.29	0.07	1.20	5.75	0.12	0.34	1.37
Japan	4.33	4.33	2.89	3.58	2.31	1.51	3.60	1.80	1.32	...	2.85
Thailand	5.92	...	3.03	1.30	3.24	2.30	7.29	4.83	6.67	...	4.32
Malaysia	2.49	1.84	9.36	3.70	45.17	...	2.29	0.97	...	0.64	8.20
Barbados	1.10	23.70	6.95	36.60	16.67	6.34	...	0.40	0.19	3.04	10.55
Portugal	89.08	25.69	43.81	83.98	31.05	25.49	41.80	17.92	...	...	44.85
Mexico	...	...	74.57	...	...	53.04	...	56.14	...	38.49	55.56
United States	108.22	39.74	38.11	140.87	49.88	38.94	33.66	33.11	40.81	46.21	56.95
Philippines	173.84	91.74	70.94	43.72	59.67	49.60	30.26	29.03	22.56	22.73	59.41
Chile	15.58	25.98	20.49	67.48	54.98	160.98	69.03	62.58	...	...	59.64
Jamaica	16.79	21.61	52.50	32.95	34.23	52.52	170.22	91.88	161.06	187.94	82.17
Turkey	...	...	102.61	154.40	173.80	195.83	57.80	28.87	11.89	226.32	118.94
Trinidad & T.	206.68	82.79	19.12	249.03	27.90	39.08	170.63	71.94	27.16	485.50	137.98
Korea	4.64	424.97	321.34	361.70	248.12	175.03	80.56	67.95	74.83	19.27	177.84
Ecuador	...	290.73	348.59	312.20	183.78	119.92	118.70	42.99	27.30	...	180.53
New Zealand	860.73	235.29	253.09	131.65	223.39	69.48	77.55	15.89	24.53	32.68	192.43
Canada	591.27	306.73	382.34	282.85	385.81	194.80	164.32	116.53	120.90	116.15	266.17
India	1,307.0	1,392.7	1,320.3	1,258.1	913.98	988.59	1,155.3	746.98	568.72	...	1,072.4
Costa Rica	47.12	0.98	37.45	109.56	155.83	97.64	5,538.7	3,095.7	140.05	2,167.0	1,139.0
Greece	350.69	4,956.2	1,788.4	2,544.0	6,303.0	1,607.7	768.09	430.71	175.65	117.40	1,904.2

Source: Calculated from data in *Yearbook of Labour Statistics, 1996*, International Labour Organization.

**APPENDIX G**  
**CASE REPORTS**

## case 1

## High Productivity at Jamalpro

THE Jamaica Aluminum Products Limited (Jamalpro) plant at Twickenham Park, St. Catherine is this year's winner of the annual JMA competition. The company has also won the prestigious 1996 Hon. Robert Lightbourne Productivity Award.

The six-year-old company also won the highest award in 1992 and again in 1994, in the Minerals and Metal Products Group.

"We believe that constant vigilance on productivity and efficiency is the only way for us to keep in step with the market," says manufacturing and engineering manager Kenneth Garfield, a metallurgist who has over 27 years experience in standards development and in the processing of products.

Jamalpro is a monopoly producer of aluminum extrusions, the sales of which contribute 45 percent of total revenue. The company was established in 1991, taking over the extrusion plant from Alcan Sproston Ltd. It now exports to 15 companies within the Caricom niche market while supplying over 90 percent of Jamaican needs. Export of aluminum extrusions and scrap is averaging over 20 percent of sales. The 1996 total sales performance was outstanding and was easily the best year so far.

Extrusion products - also with value added by local fabricators - have a wide range of applications in building, electricity, energy conservation, transportation, roads and highways, agriculture and consumer products. Jamalpro items are now being used in almost all domestic, commercial and industrial buildings.

The layman will more readily recognise aluminum extrusions in their commercial forms. These are doors, partition windows, storefronts, hinges, towerbolts, conduits, ladders, satellite and television antennae, cladding and paneling, suspending ceilings, tubular furniture, deck chairs, picture frames, bridge rails,

signs, water tanks, solar panels to name just a few.

Quality is designed in the products, which are produced from the finest quality raw materials available. Main alloys used are AA 6063 for architectural and AA 6061 for structural applications. The company is working towards ISO 9002 certification.

"The product possibilities are endless," according to CEO and President Sherwin O. Brown. "We have dies and tooling for over 2,000 sections and we design and procure dies to order. Our products find application wherever strength, durability, versatility, aesthetic appearance, corrosion resistance, low maintenance and light-weightedness are required in a single package.

Such products are jointly produced by the company's Aluminum Extrusion Division at the Twickenham Park Industrial complex, near Spanish Town, with facilities for clear and colour anodizing, polishing, hinge and tower bolt making and high volume tube bending and scrap baling. Production is also done by the Roof and General Products Division which has facilities for roll-forming, sheet metal fabrication, ladder production and picture framing. This latter unit is located at 379 Spanish Town Road, Kingston, and like the Twickenham park facility it has a capacity of 3,000 tonnes a year at 3 shifts.

While both manufacturing plants operate as divisions of Jamalpro, a third division called Gemtrac trades in mobile equipment, parts and services. All three are linked together by a holding company known as Elite Enterprises Ltd., with headquarters at 379 Spanish Town Road. The plants themselves are far from state of the art as present markets would not justify such expenditure. However, the intention is to boost production by 30 percent if and when costs allow. Higher volume would mean greater competitiveness and market expansion.

**case 1, p.2****High Productivity at Jamalpro***(continued)*

Mr. Garfield explains that there are tremendous constraints in the cost of financing and especially for energy use. Energy, a high volume input, is costly at 13 US cents per Kwh conversion for electricity and 27 US cents a litre for LPG. By contrast, Trinidad spends 1/3 of this cost for electricity and far less on natural gas. However, energy conservation measures are being used to reduce this impact.

So what are the factors which contribute to Jamalpro's high productivity rating? "We have a very reliable plant and keep it well maintained at all times," concludes Mr. Brown, president since 1991. "Our staff is very loyal and equipment dedicated."

But he also emphasizes an efficiency drive which is linked to a productivity incentive programme for 25 permanent and 15 contractual staff. "Incentives work well for us," he says. "Since 1994 our employees can enjoy up to 25 percent of pay in awards. Last year incentive targets were reached five times. And for this year they have already earned incentives twice. The whole thing is co-ordinated as a team effort."

Customer service is honed to a fine point in terms of flexibility, timing, consistent supplies and ease of contact. Scrap generated from the process as well as purchased scrap are exported to the USA for recycling. Recycling also plays a big role in reducing cost while exerting a positive impact on the environment. The company provides safe working conditions and encourages safe working practices and uses waste minimization techniques in the management of industrial waste.

Management admits that the cost of funds severely restricts Jamalpro's ability to grow or access working capital; and debt servicing is exceptionally high. Nevertheless there is a clear vision of where the company is heading.

"We aim to install a powder coating plant to enhance the value-added component and aesthetic appearance of extrusions. This would greatly expand our markets with Cuba, Martinique, Guadeloupe, Puerto Rico and the Caricom partners," Mr. Brown says. "Powder coating permits a wider range of choices for the local/export market, a great advantage among builders and architects." Product development and improvement is an important feature of the company for the future.

Mr. Garfield, who has extensive metal industry experience in Britain, Canada and the USA, is anxious to move ahead but notes the need for caution imposed by the present financial climate. "Jamalpro looks to the time when the climate for manufacturing is more friendly. In the meantime we must hold our responsibility to our customers, to our employees and to the country as a whole. We will continue to be productive and efficient in the use of labour, equipment and working capital in providing extrusions of acceptable quality, reasonable price and on-time delivery. We will also continue to reduce process and non value added cost and to increase value added cost and the number of inventory turns."

■ *Sunday Herald, Sunday, August 17, 1997 p. 7B.*

## case 2

## Improving Productivity in Cigar Manufacturing

Peter Brown, formerly plant manager at Cifuentes Y Cia, Jamaica's leading cigar manufacturing company, has been promoted to general manager effective immediately.

With a mandate to introduce a Total Quality Management (TQM) programme in addition to running the packaging operations, Mr. Brown joined the cigar company in November 1994. Having achieved his goal, making an impact on productivity, he moved up the ranks in mid-1995 when he was promoted to materials manager with the responsibility of over-seeing such areas as purchasing, customs, inventory, shipments, etc. By September of that same year, he took on the added responsibility of managing the day-to-day operations of the plant when the then general manager was promoted to director of operations.

Brown's new role as managing director is focused on the strategic direction the company is now taking. Specifically, the cigar company must become even more competitive to keep up with international demand for its premium product. In fact, the tobacco company's Macanudo brand has become the top cigar brand in the US.

"The company is now in a growth mode," Brown explained. "And demand has now outstripped supply in our major market, the US." He added that "we now have to position the organization for the future and focus on what makes us competitive."

The upbeat general manager is indeed focused on the company's future. "We are a family of people here. Because of the interaction, our open-door policy and the fact that management is accessible to

staff, we are all focused on what we need to do to be competitive," he said confidently.

Because of the demand for "hand-rolled" cigars, the company necessarily is labour intensive. The cigar manufacturing company employs close to 1,200 workers, with no significant level of automation, reported Brown. The company has looked at its manufacturing process in its continuous effort to improve productivity. Part of that process led management to create a process called the Cellular (Cell) Manufacturing Process.

The concept essentially entails the grouping of workers at the company into work teams. Each team works as a unit to produce a steady flow of products to prevent any possibility of time wastage.

The new cell manufacturing process is expected to contribute greatly to increased production at Cifuentes y Cia from the less than 13 million hand-made cigars made in 1996, to 30 million in 1998.

The company's major market is the United States, while they also export to Europe, the Middle East/Asia, and the rest of the Caribbean. To date, according to Brown, there is no local market for its cigars. The company has however applied for a local sales license.

Overall retail sales in the US market exceeded 270 million units in 1996, an increase of over 60 percent from 1995.

■ *Financial Gleaner, Friday, August 15, 1997.*

## case 3

## Jamaica Broilers to Erect Co-generation Plant

THE JAMAICA Broilers Group and a Connecticut based partner, ERI Services, on Tuesday broke ground for the erection of a co-generation plant at Spring Village in St. Catherine.

Minister Robert Pickersgill, who holds the portfolio for energy, public utilities and transport, said the project is a "significant development, the successful completion of which, will map a route which may very well prove to be the course that a number of large companies, in particular, may follow to the greater benefit of themselves and Jamaica as a whole."

The project, which costs \$600 million, is a joint venture between Energy Associates Ltd. a subsidiary of the Jamaica Broilers Group and United States based partners, ERI Services in Hartford and its affiliate Creative Energy of Connecticut. The plant is scheduled to be commissioned next April.

The co-generation plant is designed to meet the energy needs of the Jamaica Broilers Processing Plant. Electricity produced above the requirements of the Jamaica Broilers Processing Plant as a result of generating their thermal needs will be sold to the Jamaica Public Service Company (JPSCo) at a rate of US\$0.06 per kilowatt hour. The co-generation plant will supply 12.1 megawatts of electrical capacity to the JPSCo.

Minister Pickersgill said, "co-generation projects can be particularly significant in the efforts at conservation, to attain greater efficiencies in energy production and in the reduction of negative environmental effects in the process of producing energy."

He stressed that "there are very tangible benefits of co-generation" to the Jamaica Public Service Company (JPSCo), Jamaica Broilers as well as the country.

The benefits to accrue, he said, would include:

- The lowering of net fuel consumption, and therefore lower fuel import costs to the country.
- A net reduction in stack emissions because of the reduced fuel usage. This would diminish the negative impact of the production process on the environment. Over time, there will be

a reduction in the cost of electricity to the JPSCo and rate payers, in this case Jamaica Broilers, which in turn impacts on the prices of goods to the consumers.

- Savings on the country's foreign exchange bill, because of the more efficient use of fuel on these projects.

### Thermal Energy

A co-generation plant, differs from a typical power plant. It not only produces electricity but also simultaneously produces thermal energy. This is done by capturing the heat from the engine exhaust gases, that is typically emitted to the atmosphere, and harnessing additional heat from the engine cooling and lubricating systems - all a by-product of the electricity produced by the engines.

A Jamaican, Nigel Davy, who gained substantial experience with co-generation plants in the United States, is the Director of Operations for the project. He estimates that the co-generation plant will yield an efficiency of between 62 - 70 percent. This is so because of the unique equipment selection, configuration, plant design, and the thermal needs of the Jamaica Broilers Processing Plant.

The contractors for the project is the Finland based Wartsila Diesel. They will execute a turnkey contract.

The co-generation technology will see:

- The engagement of three Wartsila Diesel 18V26 engines providing a total plant electricity capacity of 15.9 megawatts.
- Co-generated steam capacity of 13,100 pounds per hour for process and cooling purposes - recovered from engine exhaust.
- 400 tons of cooling for the Jamaica Broilers Processing Plant by way of a hot water driven absorption chiller.
- Additional thermal energy (hot water) recovered for Jamaica Broiler's plant process use, harnessed from the engine radiators and cooling system.

- *The Gleaner, Thursday, August 21, 1997 p. A14.*

## case 4

## Firms Quietly Laying Off

The drama surrounding the spate of layoffs and restructuring within the financial services sector has masked, and at times overshadowed similar but much less publicized changes within other companies, several of which have quietly mounted their own life-saving drive for improved efficiency.

"We started our downsizing from October 1994," says Caribbean Cement Company managing director, Compton Rodney. Within five months of the start of that programme, Carib Cement had trimmed 150 workers from its staff, as it consolidated its drive for improved efficiency and greater worker productivity.

That effort has continued, and last year Caribbean Cement spent \$20.34 million on redundancy payments, below half the \$43.3 million it incurred the year before. Between January and June this year, redundancy cost the cement manufacturer \$8.8 million.

Redundancies at companies like Carib Cement, Seprod, Desnoes and Geddes, CMP, have been on a scale similar to the much more publicized layoffs at financial institutions like Citizens Bank, Workers Bank, and Dyoll Group, but have not made the headlines that accompany retrenchment in the beleaguered financial sector.

Though the initial costs of the restructuring are generally staggering, the companies are pushing through with their programme - as their only viable long-term option.

Take the case of D & G. Redundancy costs for the six-month period to June 1997 was a whopping \$75 million, up from \$19 million during the similar two quarters the previous year. While Desnoes and Geddes executives did not return any call to the *Business Observer* to put some human numbers to

redundancy costs, the former managing director, Terry Challenor, who guided the restructuring programme, made it clear in April that the company had few other options. "We must continue to examine every possible means to reduce costs, improve efficiency, and invest in the business . . .," he said.

At CMP, another manufacturing enterprise, chairman, Winston Mahfood, also emphasized that retrenchment had to be part of the menu of solutions to arrest the slide in the company's profitability. "A significant number of management, clerical and production workers were made redundant," Mahfood told shareholders as he reported on the company's 1996 performance which showed a 30-odd percent fall in profit. "An ongoing programme to reduce costs and trim overhead expenses continues which will place the company in a better position to compete in the global marketplace."

Goodyear, the tyre manufacturer turned distributor had to fork out close to \$70 million for redundancy payments after it closed down its Morant Bay factory earlier this year because the company said it was more efficient to import from other plants elsewhere in the region.

Over the past four years, Seprod Group has laid off hundreds, selling off subsidiaries, and closing down others, but this firm is now enjoying the benefit of a much more focused and efficient business, with severalfold increase in its profit.

Carib Steel spent \$8.8 million on redundancy during the eight months to December 1996, while Carreras Group seems on a continuous programme of staff reduction costing millions in redundancy - all aimed at improved efficiency.

**case 4, p. 2**

**Efficiency Driving Layoffs**

*(continued)*

Economists say that the opening of the economy to imports, and the reduction in real spending are providing the impetus for firms to cut costs as the quickest way of shoring up their bottom line.

No sector is being spared. A *Business Observer* study shows that nearly a third of all listed companies, including those within the financial sector, have been trimming staff over the past two to three years. Several have continued the retrenchment programme.

Said Carib Cement's Rodney: "We have a programme of voluntary redundancy . . . efficiency is crucial if we are going to be competitive internationally, and we want to make ourselves as competitive as possible."

But such a programme, according to Rodney, is accompanied by investment in technology and plant upgrading.

- *The Jamaica Observer, Wednesday, August 27, 1997.*



## case 5

## Agricultural Productivity: The SNAP Programme

**O**VER \$51.6 MILLION has been disbursed by the Canadian International Development agency (CIDA) under its extended fund facility to assist Jamaica's Soil Nutrients for Agricultural Productivity (SNAP) programme.

The programme is a co-operative effort between the governments of Jamaica and Canada which seeks to provide assistance for sub-projects in the areas of research, technology transfer and environmental protection.

According to SNAP's latest quarterly report - for the period January to March 1997, 17 sub-projects are now being funded by CIDA. Funds disbursed during this period amounted to \$3.38 million.

These sub-projects are divided into two phases, one with nine and the other with eight.

The first phase for which \$46.44 million was disbursed up to March this year, includes a series of assessments and studies, being undertaken by a number of agricultural organizations.

These include: an assessment of the impact of fertilizer use on the environment under various management systems, by the Caribbean Agricultural Research and Development Institute (CARDI); fertilizer for domestic food production, by the Rural Agricultural Development Authority (RADA); increasing the efficiency of fertilizer by bananas, by the Banana Board; a programme to determine the optimum use of fertilizer in improving yields of citrus grown on major Jamaican soil types, by the Citrus

Growers Association; pineapple nutrition research; soil test correlation investigations by the Research and Development Division of the Ministry of Agriculture and Mining; the enhancement of the College of Agriculture, Science and Education's field laboratory teaching programme; participating communication for fertilizer technology transfer (Mekweseh) and the school garden programme.

Phase two, which consists of eight projects, includes: citrus, ginger and dasheen nutrition, pineapple multiplication, an upgrading programme for the soil and plant tissue laboratory; a programme for determining fertilizer and improved sustainable management systems for commercial guava and sour sop production; ex-post evaluation of the RADA sub-project - "Fertilizer use for domestic food production," and a programme for gender development and technology transfer among small coffee producers.

- *The Gleaner - Saturday, August 23, 1997.*

### Synopsis of Pineapple Trial Findings

**T**he pineapple trial "Determination of the Optimum Fertilizer Requirements in Pineapple for Maximum Development and Yield" which was initiated during Phase 1 of the

**case 5, p.2****Synopsis of Pineapple Findings** *(continued)*

SNAP Project has produced some interesting results. Among these are:

■ **Yield Capabilities:**

Yield capabilities using the Smooth Cayenne variety under Jamaican growing (rainfed) conditions can result in considerable profits.

The results of the trial confirmed a direct positive relationship between levels/amounts of fertilizer, (type, method of application and time of application) and yields of fruit.

■ **Effect of Fertilizer on Size of Crowns:**

The observation that high quantities of potash affect the size of crowns by reducing them is in agreement with previous work in pineapple nutrition studies.

■ **Improved Storage Quality:**

High levels of potassium (applied as Potassium Nitrate) increased the shelf life of harvested fruits by as many as 12 days. This fact has significant implications when export marketing is contemplated.

Full details on the trial will be documented in the soon-to-be completed final report and this information will be available through RADA.

**HINTS: Fertilizer Placement**

Fertilizer placement is a very important aspect of farming. Many farmers broadcast the fertilizer on the soil surface. This is a very

wasteful method. Rain and sun will rob the manures or fertilizers of their nutrients except where the soil is very sandy.

However, the best method is to incorporate or mix the manure, compost or chemical fertilizer into the soil. This method, although it requires more time, labour and skill, is by far the best method. By mixing the fertilizers with the soil, the nutrients are placed where the plant needs them most, near to the roots.

- *The Gleaner - Saturday, August 23, 1997.*

## case 6

## Banana Exporters Move to Become More Competitive

LOCAL BANANA exporters have joined others in the region who are employing restructuring procedures, as the Caribbean's major banana sellers attempt to stem growing losses caused by the unfavourable World Trade Organization (WTO) ruling in April 1997, and the oversupply of the product on the international market.

These occurrences were serious blows to the banana industry. The WTO ruling is currently being appealed, but regional producers are expected to retain protection until the year 2000.

Growers recognise however, that reduced preference is inevitable and are taking steps both to improve efficiency and, in many cases, to diversify their operations.

A spokesman for Jamaica Producers Group explained that they plan to be in bananas well after the year 2000 and are therefore taking steps to reduce costs by improving production per worker, and increasing the yield per acre.

### Banana by-products

The company is also moving towards diversification so that so much of its income will not be dependent on banana production and export alone, but will spread into banana by-products for the local and international markets. It has also diversified into a range of agro-processed items such as orange juice, sauces, and condiments. The Group is quick to point out that this action is not solely in response to the WTO ruling, but is part of its long-term development programme.

Banana producers in Ecuador, the leading Latin American exporter, are going through a difficult time

as well. A new government-imposed increase in exporters' charges, an early end to the high season and a slump in world prices have already taken their toll.

The announcement by the Food and Agriculture Organization (FAO), that supply will greatly outstrip demand by the end of the century, has added to the problem. According to the UN body, world production in 1999 will exceed demand by 650,000 tonnes. This is yet further depressing news for Ecuador. A local exporter in Guayaquil said, "This is the worst period in Ecuador's banana history."

Optimum growing conditions in competing producer countries in the Caribbean, Costa Rica and Colombia have led to a flood of surplus fruit on the world market. These suppliers are four days closer than Ecuador to the important European market and are not obliged to transit the Panama Canal.

The result saw the fruit's high season in Ecuador end two months early this year at the start of April instead of June.

A WTO panel had come to a formal decision that the European banana import practices did not conform to multilateral trading rules, effectively terminating special export provisions allowed African, Caribbean and Pacific (ACP) countries - mainly former European colonies. Caribbean banana producers were up in arms at this threat to their export earnings.

Prior to this, the European Parliament had adopted a European Commission proposal to cut (from 30 percent to 26 per cent) the share of the European tariff quota allotted to traditional suppliers of bananas from the ACP states.

■ *The Gleaner, Tuesday, August 12, 1997*

## case 7

**More Coffee in the Blue Mountains****1996 - 1997 Coffee Crop**

Production	Boxes (1995/96)	Boxes (1996/97)
Lowland	222,379	189,989
Blue Mountain	339,398	423,704
<b>TOTAL</b>	<b>561,777</b>	<b>613,693</b>

**T**HE SIGNIFICANT increase in the Blue Mountain crop is the result of the Japanese Blue Mountain development programme under which 3,500 acres of coffee were successfully completed.

The HAP and IFAD projects for small farmers as well as private farmer initiative and good climatic conditions contributed to the increase in production.

The Lowland crop has been disappointing. This continuing reduction of coffee in the Lowland coffee growing areas of Jamaica is due to the lack of development programmes which could attract young farmers into producing coffee; the high cost of inputs (mainly fertilizers); and the absence of any large scale programme for this area since the 1500 acre EEC programme which was concluded in 1995. These factors have contributed to low production of Lowland coffee. The CIB is now seeking funding for a Lowland rehabilitation programme.

As of the 1996/97 crop, the CIB has made available to Lowland farmers, especially co-operative growers, a fertilizer programme to assist these growers to improve their production, yields, and quality of coffee.

The CIB in conjunction with Coffee Co-operatives and private farmers carried out Coffee Berry Borer control over the period March to July 1997.

Approximately 17,000 acres were sprayed. Blue Mountain farmers have been carrying out their own programme with advice from the CIB.

**Fertilizer Use**

There was considerable reduction in the use of fertilizers on coffee mainly because of fertilizer price

in relation to farmgate price of coffee. As a result of a special drive by the CIB to improve plant nutrition, the board's fertilizer programme was restarted in the Lowland during the year. The coffee plants are already showing encouraging signs as a result of this programme.

The CIB, in collaboration with NRCA and RADA and some NGO's, has succeeded in getting farmers to pay more attention to the preservation of the environment especially in respect of soil and water conservation and improvement in soil fertility.

**Processing**

The Tarentum Finishing Works in Clarendon is scheduled to come on stream during the 1997/98 crop, and the newly constructed Blue Mountain pulper at Albany in Portland is expected to come into operation during the latter part of the crop. The pulper will process cherry coffee from the nearby areas in the parish of Portland.

The Albany pulper will be the first one to operate with a fully equipped waste treatment system which will make the pulper operations environmentally friendly. The other pulperies are being modified to reduce their pollution potentials. Less water is now used during the pulping operation.

Japan continued to be the main buyer of exports of green coffee beans from Jamaica during the 1996/97 crop year. However, owing to a downturn in Japan's economy, the anticipated volume of imports by Japan was not realized.

During the year the Coffee Industry Board has been actively engaged in overseas trade promotion as a means of expanding awareness of Jamaican coffee in the North American and other markets. Promotion in the overseas market will be stepped up during the 1997/98 crop year.

■ *The Gleaner - Saturday, August 23, 1997.*

## case 8

**JAMPRO Helps Middleton Farmers to Shift Focus**

THE JAMPRO Productivity Centre and the World Food Programme have joined forces to help residents in Middleton in the Blue Mountains in their attempts at improving infrastructure and developing economically viable projects.

Their efforts are being marshalled through the Middleton Farmers Development Society, which has been registered under the Friendly Societies Act.

At a recent meeting, a development plan for the area was presented to the representatives of local and external funding agencies.

Special note was made of the traditional farming community's attempt at diversification to include the growing of exotic vegetables and fruits to supply the increasing demand among restaurants and establishments such as the nearby upscale Strawberry Hill hotel, which has an interest in *nouvelle cuisine*. The emphasis will be on crops which flourish in the cool climate and rich soil which characterize the Middleton area.

The co-operative is being guided by JAMPRO to develop its potential in agro-processing and already has in place a project for pickled peppers.

JAMPRO has also been providing assistance in product development and promotion.

Farmers are optimistic that they'll be able to tap new markets soon given the rich variety of fruits (including peaches, rose-apples, and mangoes) which grow in the area.

The development plan presented at the meeting also includes capitalising on the rugged beauty and lush foliage of the Blue Mountain area to develop eco-tourism ventures, including nature tours, hiking trips and camping, combined with the availability of organically-grown food.

Critical to the success of the project is the construction of a "multi-function" community centre.

It is expected that, on completion, the centre will house a skills training facility, a storage area for agro-processing equipment and other materials, a primary school serving Middleton and the surrounding

communities, a health centre, an office for the co-operative, a sports and recreational area and bakery.

The community, with assistance from JAMPRO and WFP, has also made representations to local agencies for infrastructure support.

Telecommunications of Jamaica, the National Water commission, and the Rural Electrification Programme have so far provided support.

The most recent community project is a road building and works project.

For over a month, members of the community have been digging and clearing a road to allow better vehicular access to the community.

According to Valerie Veira, JAMPRO assistant vice president for productivity, a holistic approach was being taken in the project.

"As we assist with training on issues such as quality and efficiency, they remain mindful of basic issues such as infrastructure to ensure that the environment was conducive to development."

The potential impact of these activities goes far beyond the hilly community of 300. Some 5,000 people in surrounding communities will be affected, with further economic and social spin-offs as the activities expand.

Jean Duclos of the UN Volunteers, described the project as "...Our first opportunity to work with an exciting group of self-organized people. Generally, we have had to assist people to create an organization."

Owen White, convenor and secretary of the Development Society, is confident that Middleton could in time serve as a model for other small communities in Jamaica. "Small communities are the backbone of this country. If they are not developed then Jamaica cannot develop," he said. "We know that we can build our community, with a little help to encourage the people."

In his view, the time for pontificating and empty talk is over.

■ *The Daily Observer, Sunday, August 3, 1997.*

## case 9

## Using Management Skills for Quality Service in Tourism

JUNIOR Gordon, the well built general manager of Sandals Ocho Rios, is sitting in his office debating. The question at hand is: Can the tourism industry as we know it survive? "Sure it can", says Gordon, with all the assuredness of a man who has been in tourism for all of 26 years. "If we raise the standard of service, we'll get a quality guest", he says. "The adage of being an inexpensive destination will also have to be addressed. Once we've achieved this, we'll have more tourist dollars to spend and all Jamaica will benefit." "Look at the Bahamas," he says, "Years ago they had a problem, got serious about it, and today they are doing very well."

From his earliest days in Rae Town from where he won a common entrance scholarship to Kingston College and later on to Cornell University, in the United States, where he studied management, Gordon has relied mainly on exploiting each opportunity presented to him. He started his career in the hotel industry back in 1971 at Calypso Bay, now Ambiance, before moving later to Playboy, now Boscobel Beach, and then on to Jack Tar before going overseas for stints in the Bahamas, St. Kitts, the Dominican Republic and Mexico.

Gordon, who will be 44 this year, is hoping that the discipline learned from childhood days as well as the combination of skills acquired over the years, including those learnt from mom-Gordon, will one day put him in the running for the top seat in the Sandals Group.

Still, Gordon, mindful of the friendly but fierce competition among the Sandals managers, with each one trying to outdo the others, knows that in the end

it's not wishing but performance that will ultimately count. He believes he has two factors working in his favour - the staff at Sandals Ocho Rios and the property itself which he describes as one of the most magnificent in the chain. He is aiming to win the chairman's award, a competition among the Sandals hotels based on customer feedback on the quality rating of the property and service.

Gordon has a lot to live up to as the property, under his predecessors, has won the coveted chairman's award four years in a row. He believes though, that the winning tradition can be maintained, and for this he says he'll be relying on staff.

And despite being a relative newcomer to the group, he doesn't foresee himself having any problems winning the loyalty of his staff as his mom taught him the essential skill of listening.

"You learn far more when you listen," says Gordon.

"The day you think you know it all and that you are above listening to your staff, is the day you start heading for trouble, big time," he says. "This is something I learnt from my mom."

In his 10 months at Sandals Ocho Rios, Gordon seems to have taken the skill of listening to another level. Each morning at 8 o' clock he can be found at the staff entrance greeting his workers and asking how they feel today and actually listening to what they are saying. "It may seem a simplistic gesture," says Gordon, "but if people feel good about themselves, they'll feel good about the guests and their co-workers."

**case 9, p.2****Using Management Skills for Quality Service in Tourism** *(continued)*

All this impacts on the quality of service in tourism and Gordon has some genuine concerns about that. He sees poor service as one of the main problems affecting tourism in Jamaica, and he can't wait for the day when that will be a thing of the past.

"We aren't there yet, but we are getting there," he says. His solution to eliminate poor service lies in the area of staff recruitment and training. "Select the best staff, those with the right skills and attitude even if you have to pay them a little extra."

Though Gordon may be the General Manager, he isn't necessarily the first person at Sandals Ocho Rios to see staff being selected. There is a chain which goes from the personnel secretary, the financial controller to the department to which the person will be assigned before Gordon has an input. Still, even with careful screening, mistakes are made in staff selection and then he has to deal with it.

However, he is reluctant to fire staff even when it is clear that mistakes were made in the hiring, preferring to try them out in other areas. Unless of course, they are hopelessly useless. It's not just the loss in time and resources which bothers Gordon about firing staff, but that management may have erred in the first place by putting *an individual in the wrong job*.

*As evidence*, Gordon points to a new recruit who wasn't performing and was about to be terminated but was given a reprieve. "We transferred that individual to another department," says Gordon, "and the person's performance has improved to the point that

that staff has now become one of our star performers."

His willingness to listen coupled with an open mind approach have given him the right temperament for the job, insiders say.

When you go to a new facility, it helps if you go with an open mind, to look and learn," Gordon agrees. And since joining the Sandals family he has spent more time listening than doing. But when he starts to do, he doesn't stop until it gets done, his colleagues say.

■ *Excerpt - The Sunday Observer, August 10, 1997  
p.7 by NEVILLE SPIKE - Observer travel writer.*

## case 10

## HEART Academy Increases Enrolment, Programmes

THE HEART/NTA Garmex academy, on Marcus Garvey Drive is reporting a 79% increase in the number of persons trained during the 1996/97 academic year compared to the corresponding period last year. This year, some 1,250 persons completed training courses up to level three in the National Vocational Qualification of Jamaica (NVQ-J). Of this number, 364 trainees who completed level one courses in six skills, received the certificate at the annual graduation ceremony, held recently.

Academy Manager, Miss Althia Edwards, in her year-end report on activities to the period ending June, 1997, noted that Garmex had broadened its programme offerings to adequately satisfy the needs of the garment and apparel industry.

"We have modularized the curriculum since September, 1996, and have incorporated a double shift system to allow flexibility. The Academy has also begun to offer higher level programmes, for persons in industry, as well as teachers and entrepreneurs who want to upgrade their skills or access other courses in the garment and textile industry," Miss Edwards explained.

These higher level programmes include garment construction, pattern making, introduction to computer aided designs, quality control, apparel engineering and fashion designing, the Academy Manager noted.

Miss Edwards said that the Academy had also worked in collaboration with the Ministry of Education to improve the skills of Home Economics teachers, islandwide, with participants being trained in metrication for fashion and aspects of drapery making. Garmex also provided consultancy services to the Social Development Commission for its programmes in garment and apparel skills.

The Academy Manager reported that during the academic year, instructors at the institution also participated in programmes to keep their skills relevant to the needs of the market. Activities included compulsory factory furlough to gain industry exposure, cross-training and regular in-house workshops to ensure that training is consistent and up to date.

"As part of our community outreach programmes, the Academy strengthened links with industry and the community through career talks at several secondary level institutions; career fairs and demonstrations," Miss Edwards noted.

- *Excerpt - The Gleaner - Tuesday, August 19, 1997.*



**APPENDIX H**

**TABLES**

**Table 1**  
**Aggregate Indicators, 1986-1996**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Real GDP Growth (%)	1.6	7.8	2.9	6.8	5.5	0.7	1.5	1.4	1.1	0.5	-1.7
Aggr. Labour Productivity Index	100.0	103.1	102.5	109.8	112.7	112.1	114.1	115.5	109.7	110.5	109.2
GFCF/GDP	17.5	21.3	25.0	27.9	27.4	26.2	31.1	32.2	31.0	...	...
ICOR (net of depreciation)	8.5	1.3	3.4	2.7	3.9	18.4	15.4	23.4	22.7	...	...

Source: Calculated from data of STATIN, *National Income and Product*, and PIOJ, *Economic and Social Survey Jamaica*; various years.

Notes: Labour Productivity Index measures real output per worker (1986=100)

GFCF/GDP = ratio of gross fixed capital formation to gross domestic product

ICOR = incremental capital output ratio (net of consumption of fixed capital)

**Table 2**  
**Indices of Labour Productivity, 1986-1996**  
**(1986 = 100)**

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
<b>Goods Producing Sectors</b>	100.0	100.6	102.6	118.0	136.4	135.2	135.3	145.2	142.4	139.1	140.5
Agriculture, Forestry, Fishing	100.0	105.4	107.4	101.7	117.2	115.1	128.0	157.9	165.1	171.4	181.8
Mining	100.0	102.5	97.9	124.4	135.8	202.6	173.6	129.6	158.9	143.8	171.8
Manufacturing	100.0	88.6	90.3	98.7	126.8	128.1	126.1	129.2	129.8	119.7	121.0
Construction	100.0	94.0	93.6	91.9	90.1	88.6	87.6	83.0	69.3	68.1	60.3
<b>Services Producing Sectors</b>	100.0	105.8	101.5	106.8	99.4	100.5	107.5	104.9	108.1	109.8	110.6
<b>Aggregate</b>	100.0	103.1	102.5	109.8	112.7	112.1	114.1	115.5	109.7	110.5	109.0

Source: Calculated from data of STATIN, *National Income and Product*; and PIOJ, *Economic and Social Survey Jamaica*; various years.

**Table 3**  
**Indices of Hourly Wages, Unit Costs, and Productivity**  
**in the International Clothing Industry**

	Country	Index of Wages	Index of Unit Costs	Index of Productivity
1	Taiwan	420	143	294
2	Hong Kong	380	130	292
3	Slovenia	240	120	200
4	Tunisia	200	117	171
5	Mexico (US border region)	180	123	146
6	Morocco	140	113	124
7	Poland	140	100	140
8	Sri Lanka	120	130	92
9	Czechoslovakia	120	87	138
10	<i>Jamaica</i>	<i>100</i>	<i>100</i>	<i>100</i>
11	Malaysia	100	97	103
12	Estonia	80	97	82
13	Dominican Republic	60	107	56
14	India	40	107	37
15	Viet Nam	40	93	43

*Source:* Calculated from data in *World Investment Report*, United Nations, 1994.

**Table 4**  
**Comparison of Crop Yields: Jamaica and Developing Countries**

Crops	Yields (kgs./hectare)		Ratio: Developing Countries/ Jamaica
	Jamaica	Developing Countries (Average)	
Carrots	7,190	17,213	2.39
Onions	7,143	11,007	1.54
Tomatoes	9,019	16,860	1.87
Cabbage	9,655	17,253	1.79
Potatoes	9,211	12,990	1.41
Coffee (green)	436	518	1.19
Sugar Cane	50,094	57,611	1.15

*Source: Winrock International, Report on the Sustainability Assessment of the Jamaica Agricultural Research Programme, Jamaica Agricultural Development Foundation, 1992.*

**Table 5**  
**Labor-Productivity, Employment Share, and Output Share**  
**by Sector and Sub-Sector (Average, 1992-1994)**

	Labor Productivity J\$'000	Employment Share (%)	Output Share of GDP (%)
<b>I. GOODS</b>	<b>20.26</b>	<b>42.83</b>	<b>44.57</b>
Agriculture, Forestry, Fishing	5.88	25.10	7.43
Mining and Quarrying	239.49	0.73	9.00
Manufacturing	34.53	10.80	18.77
Construction and Installation	27.04	6.87	9.43
<b>II. SERVICES</b>	<b>24.31</b>	<b>55.47</b>	<b>68.77</b>
Electricity, Gas, and Water	167.19	0.50	4.47
Transport, Storage, and Communication	49.98	4.23	10.80
Finance, Insurance, Real Estate and Business Services	83.04	4.90	20.97
Wholesale & Retail, Hotels & Restaurant Services	24.18	20.43	25.13
Community, Social, and Personal Services	5.72	25.43	7.33
<u>Less: Imputed Service Charges</u>	-	-	13.33
<b>AGGREGATE</b>	<b>19.69</b>	<b>100.00</b>	<b>100.00</b>

*Source:* Calculated from data of PIOJ, *Economic and Social Survey Jamaica*, various years.

**Table 6**  
**Sectoral Indicators, 1993**

Sectors	Sectoral Share of GDP %	Sectoral Share of Aggregate Exports %	Sectoral Share of Aggregate Wage Bill %	Share of Sectoral Wages in Sectoral GO %	Share of Sectoral Exports in Sectoral GO %	Annual Avg Growth Rate of Sectoral GDP (91-95) %
Export Agriculture	1.00	1.41	2.38	28.48	14.95	-0.99
Domestic Agriculture	5.66	1.17	4.97	22.66	4.71	10.68
Bauxite/Alumina	6.37	40.93	3.75	10.04	97.12	0.69
Manufacturing	18.53	27.79	17.40	10.96	15.49	-1.95
Textile	0.05	0.11	0.10	20.13	20.18	11.97
Apparel	0.94	10.34	1.54	16.83	100.00	
Food Processing	6.80	10.8	7.32	11.13	14.53	-2.33

*Source:* Calculated from data of STATIN.

*Note:* GO = Gross Output

**Table 7**  
**Distribution of Firms by Size and Sector/Sub-Sector, 3-Way Comparison:**  
**All Jamaica, Approved Exporters, Provisional Exporters**

Sector/Sub-sector	Distribution of Firms, by number of employees and by Sector/Sub-sector (Percent of Firms)								
	All Jamaica*			Approved Exporters**			Provisional Exporters**		
	Percent of total firms	Size Distribution		Percent of total firms	Size Distribution		Percent of total firms	Size Distribution	
		10-49	50+		1-49	50+		1-49	50+
Mining	0.3	42.9	57.1	1.3	40.0	60.0	1.3	50.0	50.0
Manufacture	37.0	70.6	29.4	78.3	49.2	50.8	65.4	86.3	13.7
Food, Beverages & Tobacco	9.9	62.4	37.6	19.4	63.5	36.5	30.9	94.6	5.4
Garments, Textiles & Leather	7.5	63.6	36.4	23.8	23.1	76.9	10.6	62.5	37.5
Wood & Wood Products	3.9	85.9	14.1	4.7	55.6	44.4	1.7	100.0	0.0
Printing, Publishing & Allied Ind.	3.3	78.1	21.9	3.1	58.3	41.7	3.0	44.4	55.6
Chemicals, Petroleum, Rubber & Plastics	4.1	62.6	37.4	15.2	58.6	41.4	7.3	90.9	9.1
Non-Metallic Minerals, Pottery & Glass	2.2	83.3	16.7	1.3	40.0	60.0	1.3	100.0	0.0
Metal, Metal Products, Machinery & Equipment	5.0	77.1	22.9	6.8	50.0	50.0	5.6	82.4	17.6
Other Manufacture	1.1	91.7	8.3	3.9	86.7	13.3	5.0	100.0	0.0
Utilities	0.1	0.0	100.0	0.5	0.0	100.0	0.3	0.0	100.0
Construction	5.5	87.5	12.5	0.5	50.0	50.0	0.0	0.0	0.0
Distributive Trade	29.2	82.8	17.2	10.5	72.5	27.5	7.0	81.0	19.0
Transportation, Storage & Communication	6.7	78.9	21.1	2.1	87.5	12.5	20.3	95.1	4.9
Financial, Legal & Business Services	12.8	64.8	35.2	4.7	11.1	88.9	4.0	50.0	50.0
Other Services	8.5	86.6	13.4	2.1	62.5	37.5	1.7	80.0	20.0
<b>All Sectors</b>	<b>100.0</b>	<b>76.1</b>	<b>23.9</b>	<b>100.0</b>	<b>50.5</b>	<b>49.5</b>	<b>100.0</b>	<b>85.4</b>	<b>14.6</b>

Source: D. J. Harris (1997).

Notes: (1) \* Calculated from data-base of STATIN (for March 1995, excluding Agriculture, Government, Free Zones).

(2) \*\* Calculated from data-base of JAMPRO (for November 1995, adjusted to exclude Agriculture).

(3) Percentages may not add up due to rounding.

**Table 8**  
**Approved Exporters: Distribution of Firms by Sector, Employment, and Size**

Sector	Number of firms	Percent of total firms	Percent of total employment	Avg. no. of employees per firm	Distribution of Firms, by number of employees (Percent of firms in sector)						
					1-25	26-50	51-100	101-200	201-300	301-600	> 600
Agriculture, Forestry & Fishing	112	23	9	52	67	12	10	9	1	0	2
Mining	5	1	2	271	20	20	20	20	0	0	20
Manufacture	299	61	64	147	31	18	20	13	6	9	3
Utilities	2	0	3	931	0	0	50	0	0	0	50
Construction	2	0	2	591	0	0	0	0	0	0	0
Distributive Trade	40	8	3	53	60	13	15	5	3	5	0
Transportation, Storage & Communication	8	2	2	179	75	13	0	0	0	0	13
Financial, Legal & Business Services	18	4	15	591	0	11	22	11	22	11	22
Other Services	8	2	1	44	50	13	25	13	0	0	0
<b>All Sectors</b>	<b>494</b>	<b>100</b>	<b>100</b>	<b>139</b>	<b>41</b>	<b>16</b>	<b>17</b>	<b>11</b>	<b>5</b>	<b>6</b>	<b>4</b>

Source: D. J. Harris (1997). Calculated from data-base of JAMPRO (for November 1995).

Note: Percentages may not add up due to rounding.



**Table 9**  
**Provisional Exporters: Distribution of Firms by Sector, Employment, and Size**

Sector	Number of firms	Percent of total firms	Percent of total employment	Avg. no. of employees per firm	Distribution of Firms, by number of employees (Percent of firms in sector)							
					1-25	26-50	51-100	101-200	201-300	301-600	> 600	
Agriculture, Forestry & Fishing	113	27	8	17	89	4	1	4	0	0	1	0
Mining	4	1	5	296	50	0	0	0	0	0	25	25
Manufacture	197	48	50	62	81	6	7	2	2	2	2	2
Utilities	1	0	14	3,500	0	0	0	0	0	0	0	100
Construction	0	0	0	0	0	0	0	0	0	0	0	0
Distributive Trade	21	5	13	152	76	5	0	14	0	0	0	5
Transportation, Storage & Communication	61	15	4	17	90	5	3	0	2	0	0	0
Financial, Legal & Business Services	12	3	5	96	42	8	17	17	8	8	8	0
Other Services	5	1	1	28	80	0	20	0	0	0	0	0
<b>All Sectors</b>	<b>414</b>	<b>100</b>	<b>100</b>	<b>59</b>	<b>83</b>	<b>5</b>	<b>5</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>1</b>	<b>1</b>

Source: D.J. Harris (1997). Calculated from data-base of JAMPRO (for November 1995).

Note: Percentages may not add up due to rounding.

**Table 10**  
**ILO Productivity Mission Results**

Factory or Operation	Method*	Increase in Labour Productivity %	Impact on the Firm (Unit Cost Reduction)	
			Labour Savings %	Capital** Savings %
<i>India</i>				
Seven textile mills	n.a.	5-to-250	5-71	5-71
Engineering firms				
All operations	F,B	102	50	50
One operation	F	385	79	79
One operation	F	500	83	83
<i>Burma</i>				
Mold'g railroad brake shoes	A,F,B	100	50	50
Smithy	A	40	29	29
Chair assembly	A,B	100	50	50
Match Manufacture	A,F	24	19	--
<i>Indonesia</i>				
Knitting	A,B	15	13	--
Radio assembly	A,F	40	29	29
Printing	A,F	30	23	--
Enamel ware	F	30	23	--
<i>Malaya</i>				
Furniture	A,D	10	9	9
Engineering workshop	A,D	10	9	9
Pottery	A,B	20	17	17
<i>Thailand</i>				
Locomotive maintenance	A,F	44	31	31
Saucepan polishing	E,D	50	33	--
Saucepan assembly	B,F	42	30	--
Cigarettes	A,B	5	5	--
<i>Pakistan</i>				
Textile plants	C,H,G			
Weaving		50	33	33
Weaving		10	9	9
Bleaching		59	37	37
Weaving		141	29	29
<i>Israel</i>				
Locomotive repair	F,B,G	30	23	23
Diamond cutting & polish'g	C,B,G	45	31	--
Refrigerator assembly	F,B,G	75	43	43
Orange picking	F	91	47	--

\* A = plant layout reorganized      D = materials handling      G = payments by results  
 B = machine utilization & flow      E = waste control              H = workers training &  
 C = simple technical alterations      F = work method                  supervision

\*\* Limited to plant and equipment, excluding increased depreciation costs.

Source: Table II in Leibenstein (1966).

**Table 11**  
**Distribution of, and Projected Changes in, Per-unit Cost of Alumina Production**  
**by Individual Cost Components**

Cost Item	Share of Total Cost (in %)			Projected Change in Per-unit Cost Relative to Base (in %)					
	Base	Phase I	Phase II	Base --> Phase I		Phase I--> Phase II		Base --> Phase II	
				Total	Average Annual	Total	Average Annual	Total	Average Annual
Energy	19.6	26.4	29.1	-6.3	-1.26	-6.3	-2.10	-12.6	-1.58
Human Resources	18.8	18.6	15.9	-31.1	-6.22	-18.9	-6.30	-50.0	-6.25
Maintenance	16.0	13.0	12.0	-43.6	-8.72	-12.3	-4.10	-55.9	-6.99
Other	15.6	7.2	6.1	-67.9	-13.58	-8.9	-2.97	-76.8	-9.60
Bauxite	13.3	15.8	14.4	-17.3	-3.46	-19.1	-6.37	-36.4	-4.55
Caustic	9.1	9.7	10.9	-26.1	-5.22	-3.6	-1.20	-29.7	-3.71
Lime	5.3	6.4	8.1	-16.9	-3.38	6.1	2.03	-10.8	-1.35
Flocculent	2.1	3.0	3.5	-3.8	-0.76	0.0	0.00	-3.8	-0.48
TOTAL	100.0	100.0	100.0	-30.4	-6.08	-10.7	-3.57	-41.1	-5.14
Projected Production Expansion Relative to Base (in %)				13.7	2.74	42.7	14.23	56.4	7.05

*Notes:* Calculated based on per-unit cost data in base-year prices; consolidated for Plants 1 & 2.  
Timeframe: Base = 1993; Phase I = 1994-98; Phase II = 1999 - 2001.