

The Economic Recovery of Havana

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The city of Havana and its environs was elevated to the status of a province, because of the characteristics of the Castro totalitarianism dictatorship. The failure of agricultural food production, and industrialization, led to a march towards the subsidized center of the country: its capital. This was a reversion of the trend instilled during the inauguration of the Republic, which had as its major task the conquering of the Cuban frontier: the Eastern hinterlands. Half a century and two republics later, it must be remembered that Cuba was a decentralized country when compared to most other Latin American countries. Production was quite spread along the geography of the island, and the complexity of its transportation network, the most intricate in per capita terms in Latin America, reflected as well as substantiated this characteristic.

Therefore, the reversion of this tendency means that the success of the reconstruction of the Cuban economy would be critically dependent on the readjusting of the economy of the Havana metropolis and its environs. Thus, it would be essential that this task be completed successfully in order to succeed in achieving a reversion in the lineal process of economic deterioration that has been enthronized in Cuba.

Why is central importance given to Havana and its hinterlands? Politically because it is the hub of governmental decision making, being the seat of the central, state and city governments, which presently represents the megalopolis of the country. Cuba is not now a decentralized government structure, and to change it will take several years. Economically, because it represents the (by far) largest buying power and income generator in the island, its major productive center, and the hub of the main transportation spokes of the overall economy. It would not be exaggerated to state that, depending on the recovery of Havana, will the rest of the Cuban economy recover. Cuba's receipt of aid and loans will flow through its capital.

Cuba will have much to recover. Although the "habaneros" have been in a privileged position, in general income per head of population probably stands at five percent of its 1959 level

in real terms (i.e. 1999 prices, the latest year of the old millennium). And Havana, although the center of the island's pervasive black market and underground economy, still requires the agricultural, livestock and forestry production of the Cuban countryside. Suffice it to say additionally, so that the task at hand be adequately envisioned, that at this moment the income of Cuba's broken families (the healing of which will also be a major aspect of its reconstruction) lies well below- about half- the level which the United Nations Social and Economic Council considers extreme poverty or indigence, and which it defines at one dollar a day of income at 1995 prices. (meager food rations and free but deficient health and education notwithstanding)

One final aspect of this prelude must be constantly kept in mind, and it is the economic concept of absorptive capacity.¹¹ In the lore of the educated professional, the concept that is bandied around which most resembles it, is that of the bottleneck, or it's opposite the gap. Basically, for the reconstruction of the island, a task only comparable to a post-war rebuilding effort (like that sustained from 1899 onwards after the War of Independence), will only proceed as fast and strong as the expansion of its weakest links. These will usually be found along the decrepit infrastructure that the failed totalitarian regime will leave as its dark legacy, as well as along the supply and demand distributive networks that ensure the availability of products, an oxymoron in the present day communism in the island. It is being assumed that the two macroeconomic gaps that are so relevant in the economic development literature: lack of savings and foreign exchange, will be bridged by the massive foreign aid available to Cuba. If this guardian knot of absorptive capacity is not broken, the inflow of foreign funds will spend themselves in creating an inflationary process, as virulent as the unchanging characteristics of the gaps and bottlenecks.

1. Immediate Necessities

The foreign funding authorities are expected to contribute about \$10 billion, coming from friendly governments and multilateral agencies. Some may think this to be unattainable but, at current dollars at the dawning of the democratic transition in Cuba, it is actually less than the contributions

given to Central America on two occasions: the peace initiative in the early 1990s, and the reconstruction after devastating hurricanes and earthquakes towards the end of that decade. In order to ensure overwhelming support for the Cuban process of democracy, it is necessary to alleviate the food shortage afflicting the island, which would certainly be approaching levels of famine in the near future. At the same time, the rationing system should be instantly abolished, and an alternative delivery mechanism established, based on equality rather than privilege, as presently exists. The present stores for obtaining hard currency for the government, the Tiendas de Recuperacion de Divisas (TRD), CIMEX, etc. should be officially renamed "shoppings", its unofficial name, and be transformed into the distributive centers of massive food aid, which would require the rapid building of new stores.

The other basic needs of the Cuban citizenry which are presently unavoidable: clean water, sanitation, power, essential health services, communication and transportation, effective education and other social, public and infrastructure overheads, should be provided freely as well, on an emergency basis. Again, the average Cuban citizen should be able to clearly perceive how different his life will be in a democratic Cuba, and shelve his constant dreams for an emigration exit. This will ensure that a massive exodus to the U.S., Mexico, Central American and the Caribbean does not take place.

The periodic infectious diseases that have afflicted the Cuban populace after the demise of the massive Soviet aid, which reached a peak of over \$8 billion a year in the late 1980s, are an indicator of water borne infirmities. Not only is water scarce for personal hygiene, but the sanitation system which should parallel the water delivery one, to take care of refuse, garbage and contaminated water, are in abundant disrepair. At the present time the trend points towards no clean water delivered and no dirty water (and other spoilage) removed. Thus, Cuba is presently not only in danger of famine, but of epidemics. Until permanent alternatives are put in place, which will take time, water should be provided in water- piped trucks at distribution centers around the shopping stores. Garbage (which at present piles up in Cuba) should be drawn down to acceptable levels by increasing the fleet (and employment) of

refuse trucks which would be a welcome sight in the city. A massive plan for the building of septic tanks should be implemented with celerity, while repairs to the existing sanitation systems are moving forward.

The provisions of power to households, public facilities and places of employment should be speedily revamped. It would be a great boon to the Cuban society to experience the shelving of all agit-prop activities of the previous fascist-communist totalitarian regime, like the so-called "battle of ideas", invasion preparedness and massive concentrations, which wasted a lot of energy resources. Then the revamping of the power grid and increased availabilities of petrol (kerosene, gasoline and other distillates) and gas, together with the demise in the use of firewood (Cuba has one of the highest per capita usage in the world) should be accomplished simultaneously. The potential use of the sugar industry as a bio-refinery should be quickly explored. As well as independent provision of the energetic needs of the nickel industry, through special provisions utilizing the ports in Eastern Oriente province, to diminish the burden of this activity to the national grid. Finally, public transportation should be emphasized, to be able to transport personnel and goods between work places and homes, by importing energy efficient buses.

The health crisis existing in the island should be immediately addressed as well. Donations of essential medicines, which are in extremely short supply in Cuba, should be the first priority. Emergency and ambulatory centers should be refurbished to provide most of the care needed to address the recurrent needs of the populace. Gifts of advanced medical equipment would have to be matched by the provision of essential wares like sutures, bed sheets, bedpans, bed toilets, fans and similar non-durable hospital supplies. Basic hygiene should be stressed, requiring that animals be kept outside the home, except for pets, which is the cause of many of the endemics and epidemics presently spreading throughout Cuba.

2. Stabilize and Expand Short-Run Production

Without new investment, it will be necessary to keep whatever existing production remains at the time of transition, not only in a recovery and ongoing mode, but expanding in the

countryside. While the quagmire of title in rural areas is settled, farmers should be allowed occupy land from the state-owned farms and cooperatives, to establish production activities in small plots, for their own self substance, and for distribution to the wider markets. These parcels of land should be small, but minifundia should be avoided, and credit should be provided by the Banco Popular de Ahorro, appropriately renamed Banco de Fomento Agrícola e Industrial de Cuba (BANFAIC), a noted first-rate institution founded during the democratic era of the early 1950s. The objective would be to avoid the consequences of famine in the island.ⁱⁱⁱ

The same framework should inform industrial and services production in terms of providing the credit necessary for activities to continue, and if possible expand, although the prospects for the latter would probably be dim. Of course, the firms in question would not be amenable for subdivision like in the primary activities just considered, thus mostly continuing their operations as before. Loans would be forthcoming through the BANFAIC.

These measures will alleviate partially the scarcity of available goods and services at transition time, and would constitute a dovetailing of the emergency measures under Section 1. The city of Havana, and its hinterland in the wider province, should constitute the bulwarks of this recovery strategy, that should extend west and east across Cuba, and the success of which, would reinvigorate the recovery of the capital city.

Investment will have to increase from a dismal negative net rate (new investment being below amortization and depreciation) presently, but that would have to be coming mostly from abroad. In addition to the international organizations and governments mentioned in the first section of this essay, private investors will be keenly interested in a reemerging Cuba, and many of them will be Cuban-Americans. Apart from the public loans just specified, private capital will contribute to stabilize and hopefully bolster production throughout the economy of Cuba. Most of this effort should be addressed to the bolstering of goods and service for internal demand, but some should be directed to the foreign markets of Cuban products. It has been

argued in another book that exports from the island will experience substantial growth at most within 3 to 5 years of economic liberation, and in some cases, like tourism, immediately. Havana will be at the center of those increases.^{iv}

One controversial item strictly tied to investment from abroad, would be the privatization of businesses in the island. During transition, this activity should be limited only to those properties that could not be entangled in claims expected from expropriated owners, which should be addressed by an elected government under a new constitution replacing the last one approved by the communist government in 1992. However, property strictly owned by the previous government of Cuba, should be privatized in order to finance public services without imposing a tax burden that would be unbearable for the population. An example of this alternative are the eight sugar mills built in the totalitarian period with financing and technical assistance from the Soviet Union.

The advantage of early privatization would be to bolster production during the transition period, in addition to the fiscal benefits already mentioned. The former is an essential piece in the dismantling of an exploitative system in which the Cuban people were living from hand to mouth through meager coupon rations, while suffering high payroll (hidden) and consumption taxes.

In addition to the measures just discussed, it is expected that the previous owners and the present users of productive property will voluntarily strike some bargains, in the manner described in the literature of external economies and diseconomies. Agreements between these parties may give rise to sharing between past and actual holders of the properties, that would be mutually beneficial to both, and would result in improvements in their conditions, and increased output thereafter. It is expected that such endeavors will particularly be important with regard to rural production.

3. Encourage Free Enterprise

Even now the largest share of the goods and services produced in the Cuban economy is supplied by those feeding the black and grey (meaning partly legal) markets. The state owns well in

excess of 90 percent of all national productive property, yet most of its output is addressed to foreign demand, principally exports and the serving of the tourist business, which to a large extent is undertaken within Cuba, but in clearly defined enclaves. The small share of its productive capacity effectively serving the needs of the internal market is overwhelmed by the supply coming from the partial or total underground economic activities, in addition to the dwindling numbers of very small private businesses which constitute the informal economy. Obviously the underground (black and gray markets) and informal economies are hampered by measures spanning from stark prohibitions to restrictive regulations which suppress their potential. Lifting them would constitute probably the most effective way of increasing the production and trading of goods and services across the board, as it would allow the market to incite production and trade in all sectors.

The city of Havana will be at the center of such expansions if the past is any indication, and it is believed this will be so. When the totalitarian Castro regime feigned an opening about 15 years ago, more than 250,000 new small businesses registered, concentrated in the capital city. This pulled a lot of production into this largest Cuban market, which at the time was the gravitational point of tourist activities, later deemphasized there. It is expected that in a matter of months small enterprises will double their ranks, from the presently dwindling number of own account producers (cuentapropistas), which are now about 125,000.

In order to support the expected growth in small business, new infrastructure will have to come along, and much of it will be put in place in the hub of the country: Havana. Of course, under the watchful eye, for the gaps and bottlenecks that may emerge, of the transitory government. Transportation and communication are the venues for micro business, they need to spread the information among potential traders, while the goods have to be delivered and received. The freeing of the internet and the breakup of the media monopoly will be essential for the markets to perform their wonders and vanquish scarcity, as much as the multiplication of buyers and sellers. But again, the key to economic movement would be haulage at the ports and airports.

Credit will have to be provided for many of the small firms, and that again should be organized using a window of the BANFAIC, which in 1959 was already offering the micro finance that recently has become so popular and in vogue. Providing the grease that would make the moving parts of micro enterprises accelerate the economy forward, would represent an essential component of the recovery that is envisaged. Although the lending branches should be spread along the island, the central mechanism will reside in the city of Havana.

But the private sector should be involved as well. Private banks and micro-finance enterprises are not allowed in Cuba presently. This will be one of the first measures to be undone in the island, as the providing of micro, small and medium-sized loans provides the wherewithal to undertake the essential buying and selling that would constitute the basic ingredients feeding the establishment of free markets. It must not be lost in the fray that small and medium-sized firms not only address private consumer and government demands, but also purchase substantially from one another. With regards to financing one caveat, should be kept in mind: the proliferation of banks that took place after the demise of communism in the Soviet Bloc should be avoided. The recreated central bank of Cuba, the Banco Nacional, should establish strict regulatory requirements to the creation of banks and other credit institutions, and should strictly supervise the conduct of their affairs, as customary in Western nations.

The final step necessary for the freeing of private economic activity is the support of markets. These were a success whenever they were left to operate under the invisible hands of demand and supply, even in communist Cuba. Again, like in credit, the restoration of the central Havana markets, so dilapidated at the present time, should be the starting point of the spread of these facilities into the countryside. The major demand of the island's economy will continue to be unfurled in the markets of its central city, where over 20 percent of the population resides, and which is the seat of the government, and the financial capital of the nation. Apart from the central markets, the infrastructure of distribution within the central city into its barrios, and its spreading throughout the rest of the country, will ensure success for freedom of enterprise.

4. Fiscal Reform

One of the most egregious backward steps of the most recalcitrant Soviet communism, unfortunately still existing in Cuba, is the callousness of its tax oppression. Taxation in this system is hidden. Most of it is discounted from wages and salaries at the source, without any recognition of even a rate of taxation. This means that every recipient of an emolument of any kind from the government is secretly taxed. This must give way to a transparent system in which, in principle, both employee and employer must contribute. It is proposed that a flat-rate tax system be instituted, with different grades depending on the level of income (but at most three). The system will be administered by the Ministry of Finance, which will lose the additional title of Prices, the latter term giving away the fact that, unknowingly, the Cuban populace is charged a hidden tax in any of the prices they pay for anything, given that the government is practically the sole purveyor of goods and services in the economy.

Another aspect that must be changed is the hidden taxation of profits obtained by the communist firms (practically all), that inefficiently provide the goods and services that are interchanged in the country. At the present time the government absorbs both the apparent profits and losses (more common) of the government enterprises. Thus, there is no demarcation between the finance ministry and the socialist enterprises. Therefore, no incentives are given for increasing revenues and reducing costs, since the communist government will reap all of this benefit. But on the other hand, who would care about losses if the public sector will ultimately absorb them. Here a strict, and relatively low flat tax has to be charged, with no gradations.

Finally, the turnover tax that is typical of communist countries, in which sales are taxed at every level (although in Cuba these have been disguised), resulting in an ever greater cascade as the goods and services approach the ultimate consumer, has to be replaced by the modern value-added tax (VAT) concept. This burdens only that part of output that is not contributed by inputs from other sectors, basically what is paid to the factors of production. As a result each output and sale

is taxed only once. A VAT tax around 15 percent would appear reasonable at that juncture.^v

These taxes, together with the proceeds of the limited privatization that would take place during the transition, should ensure a balanced budget, something that has not happened in Cuban since 1959. It should be remembered that by the middle to late sixties the Banco Nacional de Cuba was stripped of the traditional responsibilities of central banking, and was strictly devoted to the function of fiscal agent of the Cuban treasury. That meant financing the voluminous deficit of the communist government. Thus the repressed inflation that since then existed in the island has had a combined fiscal-monetary origin. Clearly the initial measures of the transition must decouple one institution from the other.

All these reforms, which are conducive to low burdens upon production and consumption, will have the city of Havana as its main stage, given that the Ministry of Finance (jettisoning the insulting epithet of prices) and the Banco Central de Cuba, now with its name reverting to the original Banco Nacional de Cuba, have been always in residence in the capital. Of course, this would not be to the detriment of provinces and municipalities, which being the urban areas around which essential primary production would be reorganized, will necessitate a strengthening of the diminished presence that they have had during the communist period.

Finally, the most momentous fiscal measure to be initiated during the transition will be the facing of the social security crisis resulting from an aging population that is not explicitly covered by any explicit mechanism. Presently pensions for practically all workers in Cuba are directly paid out of the national budget. The reestablishment of the Social Security Bank created in 1959 and later dismantled, would be a first step in tackling this most serious problem, in a country soon to have more than 20 percent of its population at or above 60 years of age (retirement age is now being raised to 65). At this juncture, with the standard of living in the island being one of very extreme poverty, the state will have to confront the provision of cost-of-living pensions, as any consideration of privatizing the system is a question for the medium-term future.

The onus of this responsibility by the Cuban state will somewhat be alleviated by the dismantling of the system of rationing of goods and services, which is dependent on heavy budgetary subsidies in order to keep their prices artificially low (which might be added, discourage their above-board production by the private sector, and fosters black markets).

5. Financial Reform

Cuba has been hovering for decades between a foreign exchange system based in the duality of an artificial and arbitrary Cuban peso used for foreign transactions (the CUC or chavito), and the run-of-the-mill Cuban peso used for internal transactions. The former has over the years been given a symbolic value superior to that of the strong-hard currencies of the world, basically the dollar (which represents 90 percent of all foreign currency transactions), copying a chapter from the Soviet Union's convertible rubles. In contrast the circulating currency issued by the monetary authority of the day, has had a shadow price at the other extreme, being heavily discounted against hard currencies (again, usually the American dollar), even in the state run Casas de Cambio (exchange houses). This multiple system completely distorts production, trading and consumption in the island, and must be replaced by a unified one.

But what should be the value of the new Cuban peso after a monetary reform is undertaken at the beginning of the transition? It should reflect its history and strong international purchasing power. Thus, the main foreign exchange activity which would take place in the capital, under a restored Bolsa de la Habana, should define parity with the dollar. Like the Europeans after World War II, the value of the currency should adapt itself to the very large needs for imports; and this is why these countries established overvalued exchange rates at that juncture, backed by the Marshall Plan. It is our belief that Cuba would have similar support, at least \$10 billion in contributions from the multilateral financial institutions and the members of the Organization of Economic Cooperation and Development, to insure reserve backing for the dollar parity that its central bank would establish. Of course, a return to the institution established in 1948, the Banco Nacional de Cuba, should be pursued as well.

The latter institution will be strongly centered in Havana, as it was fifty years ago, although it would have branches across the island. It would be in charge of the foreign exchange transactions, implying the elimination of the Casas de Cambio, but its main role would involve the assurance that the reserves donated to Cuba at the beginning of its reconstruction are safe guarded, mostly as a backing to its currency. Of course, foreign exchange transactions will be decentralized, and conducted freely by the banking system that the Banco will inspect and supervise. The monetary reform that it will conduct, will not only establish a new currency, but will allow an orderly establishment of private banking in Cuba, both domestic and foreign, ensuring that the newly created banks conform to the capital requirements expressed by the Bank of International Settlements in its Basel II Agreement.

The Banco Nacional de Cuba will conduct monetary policy in the island as an independent institution devoid of political control from the executive branch, other than the naming of its authorities, with the approval of the legislative branch. Apart from ensuring the strength of the Cuban banking and financial systems, the central bank will be in charge of containing price inflation in the economy (as measured by a sophisticated consumer price index) to a reasonably moderate range. It would not be in charge of counter-cyclical or growth policies, which should be the responsibility of the Ministry of Finance.

But perhaps the central role of the Cuban economic recovery would lie under the tutelage of the also resurrected BANFAIC, which was established in 1950 and later dismantled by the Castro regime in 1960. It has already been mentioned that it must be involved in the crucial expansion of agricultural production during the transition, providing loans along the different phases of cultivation, harvesting, storage and distribution of these products. It should, like it did in the past, support the creation and operation of free farmers' cooperatives, for credit, production and services, and of course support of the independent producers after the state farms, operating directly, or indirectly under the guise of different kinds of public cooperatives are dismantled. Yet not less important, though perhaps not as immediate, would be the recovery of industrial output in the island. Cuba would be ripe for recovering its old

industrial base, well decentralized over its national territory, and which was sacrificed to the devil's curse of becoming a primary producer of sugar for the benefit of the Soviet Bloc, while internal production of the secondary sector was sacrificed at the altar of low-quality imports of manufactures from the communist countries. Further along, attention should be provided to export processing and free trade zones to manufacture products for the North American Free Trade Area (NAFTA), which Cuba should quickly enjoin. To finance these objectives, the BANFAIC should float public bonds appropriately.

6. Foreign Trade Opening

Very few observers have commented on the total control which is applied to external trade in Cuba. Apart from the distorting dual exchange rate commented upon in the previous section, the island has kept a communist style planning of its foreign economic relations. This has also been inimical to the economy.

The dismantling of the system has to begin with a drastic lowering of tariffs and the elimination of quotas. The latter are particularly tied to the fact that the government is the only authorized agency to bring goods into the country, through a dependency appropriately called Alimport. Exemptions to this rule are provided to foreign investors which participate in jointly-owned firms with the public sector (at most reaching 50 percent ownership), which imply duty-free importation, and are generally a source of corruption. The average level of import duties borders around 30 percent, and is among the highest in the world.

Importing should be taken out of public hands, and allowed to respond to the needs of the free enterprise system, devoid of any kind of controls. It is well understood that for a few years imports would be well in excess of exports, given the dearth in the supply of goods presently characterizing the Cuban economy. The gap will be to some degree financed by foreign aid. The same approach should be applied to export, which up to the present is a totally-controlled government activity, only with exceptional dispensation in some large exporting sectors partially owned by foreign investors, like tobacco, citrus, nickel and tourism. Private enterprise is by far more apt to exploit international markets, and should be given free rein to

do so. Since the parity of the dollar with the peso would be a disadvantage, it is essential to insure that raw material, intermediate and capital imports be given free entry, so that Cuba could become an entrepôt for North America, as it is expected to enter NAFTA right away. It should be finally noted that the exportation of tourist services is expected to quickly contribute several additional billion dollars to gross foreign exchange receipts, contributing a good part of the financing of the country's import needs, obviously in excess of those needed for the tourists, which should also be partly served by a revived agricultural and manufacturer production.

It is clear that the port and airports of Havana would be the principal entry and exit points for the foreign trade of Cuba. The bottlenecks that they represent will be a challenge to its city planners. At this moment this port is an environmental eyesore and a limitation to any, but the minimal economic activity of present time scarcity. This bottleneck may give rise to an inflationary bout that would imperil future economic activity, and the pace of recovery. Even though the bulk of the population is concentrated in the capital and its province, the aspect discussed above will require a fuller use of the about a dozen other active ports in the Island, as well as its other international airports.

Again, implied in all of the above is that the custom tariffs in Cuba should be kept at low nominal levels to facilitate the reconstruction of the island. The comparison to the post-war rebuilding in Europe beginning in 1945 has been used as an appropriate example. In the Cuban case it is even more apropos, since it is expected that export-processing zones, customs-free areas, assembly activities and all binds of maquilas, would boost economic activity in the short-run. This requires drawbacks of any import taxes, as well as exemptions from the value-added tax. Consistent with low import duties is the requirement to feed an undernourished and famished population, which in part would put pressure on imports, when not being able to be served by a revived internal production system.

Apart from the hard currency provided by the exportation of tourist services, an economy with a small internal market like Cuba, would have to rely on foreign export markets to achieve a

high rate of growth. Its nearness to the largest import market in the world, with which it had a long-standing relationship half a century ago, would recommend exploiting such an advantage to foster an open economy based on the exportation of primary and secondary goods to this market. For this, it is imperative to resurrect the ferries that brought Cuban exports of non-traditional products to the U.S., taking advantage of the identical gauge of the railways at both ends of the Florida Straits. Apart from sugar-based exports, to be dealt with in the next section, it should not escape anyone what the opening of the American cigar and rum markets would generate in terms of exportable production.

7. Sugar Bio-refining

Last but not least, what to do with Cuban sugar cane? It might be asked, what does that have to do with Havana, an area relatively weak in sugar cane. The answer is, as has been mentioned previously, the exchanges for everything, whether for sugar by-products, stocks, bonds, foreign currency or commodities, would be located around the Bolsa de la Habana, the almost one-hundred year old institution, which in the late teens of the last century boasted the leading financial depth per capita in the world. Like London has its City, where finance and business are king; so will Havana have its financial district, and the plans for the architectural recovery of the old Paris of the Americas must provide for it.

But with regards to sugar cane proper, its consideration must begin with the central tenet that the plant is a source of energy that has always been competitive with fossil fuels. Early in the XXth century distilled ethanol, called carburante in the Cuban folklore, was used as a hydrocarbon in the island, to propel its automobiles. The sugar mill generates electricity as well, which it uses in the process of milling, as well as to co-generate for outside buyers like the national electric grid. The manufacture of ethanol as a by-product has enormous implications for the sugar industry, that has been plagued over the years with world over-capacity, and Cuba must face this challenge as early as possible. Not only for export to the voracious appetite of the American driver, but to make the norm the internal consumption by cars of the flex-fuel used by

Brazilians vehicles. With regards to electricity, it should not be impossible to attain the goal of the sugar industry generating 10 percent of the electric capacity of the island.

The concept of the sugar mill as a bio-refinery brings to mind the similar activity of taking crude hydrocarbons, and refining them in an oil refinery, to obtain a certain number of derivatives. Although much research still awaits, it seems to be generally accepted that as long as the price of crude oil is above the floor of \$50 per barrel, ethanol is competitive with gasoline, and should be mixed flexibly with it depending on their relative prices. However, there is a strategic consideration that must be added, and it is that the country consuming one quarter of the production of crude, in the world (the U.S.), appears to have made a strategic decision that it will not trust its conventional suppliers, and will foster the use of ethanol. There would be no closer foreign supplies of ethanol than those of Cuba.

Of course, the production and export of sugar itself should be another major objective of the bio-refinery. It is true that the path to regaining a foothold in the U.S. market would not be as promising as with ethanol. Nevertheless, the pessimists should take heart that the provisions of the World Trade Organization require that Cuba would be given some participation in this market. Certainly it would never be comparable to the advantageous position that the Castro totalitarian and communist dictatorship threw overboard, but several hundred thousand tons of sugar are within the realm of possibility. And in the future some agreement should be brokered with the American refiners, so that refining for the U.S.A. would be an added possibility of the Cuban sugar bio-refiners, together with a myriad of different grades of sugar, including organic ones. It should be remembered that in the early 1950s a deal of some sort with U.S. refineries was in the cards.

Finally, the bio-refinery would produce other products with value added comparable to refining. It has already been remarked that the buying power of American consumers provides numerous opportunities, rum and spirits being among them. Other sugar bio-refined products are different types of alcohol, chemicals, molasses, pharmaceutical goods, animal feeds, paper,

boards and wood. The determination of which should be emphasized involves a mathematical programming calculation that in the end private investors will have to make. But bio-refining will stand solidly in the middle of the economic recovery of Havana, Cuba.

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ⁱⁱ Although this concept is old, coming to the fore with the discipline of economic development in the 1950s, it is still very applicable. The best treatment in our view is that of John H. Adler, Absorptive Capacity, The Brookings Institution, Washington D.C. 1965.

ⁱⁱⁱ This applies as well to livestock, foresting and fishing production.

^{iv} See Jorge Salazar-Carrillo, "The Past, Present and Future of Cuban Trade", in Antonio Jorge and Jorge Salazar-Carrillo, eds. The Future Cuban Economy, University of Miami, 2007.

^v It should be noted that custom revenues from tariffs or import taxes should remain low at the beginning, given the famine-like scarcity of all kinds of goods that would certainly exist in Cuba at the time of the transition.