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THE INFORMAL TRANSPORT SECTOR IN THE GREATER MANILA AREA

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1. Introduction

In the midst of the growing enthusiasm expressed by most development economists and social planners about the employment generating potentials of the urban informal sector, there seems to be a tendency to overlook the possibility that many of the activities falling under this sector may very well be among the major sources of social costs in urban economies. Small enterprises, partly because of their smallness, often easily manage to evade governmental regulatory practices so that illegality has become a characteristic commonly applied to discriminate between formal and informal sector participation (Sethuraman 1974). The very presence of government controls may indicate possible divergences between the marginal social values and the marginal social costs of the goods and services produced by the covered activities.[1] Then, too, some of the "products" coming from the informal sector are outrightly banned because they are almost universally deemed "socially undesirable" (although they may be privately remunerative). Ethics will commingle with economics in any discussion of such issues, so that it is perhaps best to exclude them in this study.

Aside from those pursuits which are felt to have negative social value, there are those informal sector activities where marginal social costs tend to be higher than marginal private costs because of the failure of the participants to impute economic value on otherwise scarce resources. For example, hawkers and vendors often consider sidewalks and busy streets as costless inputs to their trade, although the entrance of an additional worker reduces the average product not

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[1] For one thing, their marginal costs will be higher than those of tax-paying enterprises by the amount of tax.

only of the hawkers and vendors already plying the given area but probably also of the pedestrians and other road users. To the extent that the workers are able to escape from government regulation almost costlessly, the level of employment in such itinerant trades is pushed beyond the point where the marginal product of the workers just equals the opportunity cost of the same workers in other pursuits. This is basically the behavioral circumstance underlying the presence of disguised unemployment in urban centers.[2]

These instances are pointed out here not as a prejudgment on the efficiency or inefficiency of the urban informal sector but merely as an appeal for a more objective and balanced view of the problems and prospects facing this sector. The growing interest in the informal sector has probably been kindled mainly by *equity* considerations: informal sector activities are the means of livelihood of the *urban poor* and therefore deserve the planners' attention. However, without due concern for the allocative dimensions, the designed equity-oriented programs may fail to deliver their expected outcomes or may not be able to realize their stated objectives without incurring substantial resource costs.

Obviously, these issues can be settled only at the empirical level. It may turn out that the activities where one would expect disguised unemployment are really very few and may even be operating at close to optimum employment levels (because some enterprising observers such as self-appointed "organizers" may be exacting private taxes on the workers and thus be appropriating the rent due the scarce resource).[3] It is also widely held that informal sector enterprises, although they may manage to evade taxes, are at least as economically efficient as their larger competitors and are often faced with factor prices more closely reflective of the true social opportunity costs of the resources to the economy. These observations are simply meant to bear out the complexity of the economic relationships characterizing the urban informal sector.

The confusing maze of equity-efficiency interactions is especially true to urban transport activities. By its very nature, the transport sector involves technological externalities and associated social controls. In land transport, for example, over some relevant range, every

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[2] The volume of disguised unemployment is defined as the difference between actual employment and that employment level which would set the marginal product of workers equal to opportunity cost. See Harberger (1971).

[3] A politico-anthropological analysis of this phenomenon is presented in Stone (1973).

additional vehicle on the road imposes a reduction in speed on the other vehicles, necessitating some system of control on the flow of traffic. The link between transport and governmental regulatory functions is in fact very direct in many other aspects. The road infrastructure is almost always public domain and its use subject to traffic rules and regulations. Vehicles have to be registered and drivers issued licenses. In some cases, the government even competes actively with the private sector in the provision of transport services. Any discussion of the transport industry, therefore, will have to include an analysis of transport-related policies.

To understand its productivity, employment and equity dimensions, the informal transport sector in Metro Manila will be examined in detail. The first section provides an industry overview focusing on the characteristics of land transport operations in Metro Manila, which account for the bulk of informal sector employment in urban transport activities. An analytical description of the participants — enterprises, heads of enterprises, and workers — follows as gleaned from the Metro Manila informal sector survey. With the help of the survey data, empirical models of output and productivity are also discussed and tested to identify the factors significantly affecting these welfare concerns. A final section summarizes the study and traces some policy implications emerging from the analysis.

2. Informal Transport Activities in Metro Manila

What is commonly known as the "transport sector" in official statistics is really a conglomeration of three broad industry groupings: transport, storage and communication.[4] These three groupings are of course highly heterogeneous. It would thus be more meaningful to limit the scope of this study to the transport industry *per se*, excluding storage and communication. Anyway, the last two either tend to be the domain of the formal sector or are relatively unimportant in terms of absolute employment generating potential.

A further breakdown of the transport services industry into the conventional modes (roads, rail, water and air) will show that for the country as a whole, among small enterprises, road-based activities by far dominate all the other transport modes. In 1972, road transport

[4] The groupings are at the three-digit ISIC (International Standard Industry Classification) level. Transport includes land transport (ISIC 711), water transport (712), and air transport (713). Storage, strictly speaking, is at the four-digit level (7192) but, for convenience in this discussion, is used synonymously with services allied to transport (719). Communication services (720) should not have any definitional problem.

accounted for 94 per cent of all small establishments and 90 per cent of employment in all small establishments (National Census and Statistics Office, 1975). This study will thus be confined to road transport.

It should also be borne in mind that the transport industry deals mainly with the *marketing* of passenger and freight services and is therefore synonymous with *public transport.* The major vehicle modes are of course trucks for freight transport and jeepneys, buses, taxis, calesas and tricycles for passenger transport. Now since public transport is considered a public utility, subject to stringent government regulations on entry, pricing, and operations, one may wonder how an informal subsector could flourish within such a tightly controlled environment. A brief review of the public transport system is perhaps in order to better understand the role of informal activities in the industry.

3. Entry into the System[5]

As modes of public service, almost all forms of public transport are required by law to have a Certificate of Public Convenience (CPC) or some other type of permit before they are allowed to operate. Only pedicabs and calesas are exempt; they simply have to register at the municipal or city government offices. The process of acquiring a CPC from the Board of Transportation (BOT) is long and tedious. At the time of application, one has to show proof, through official vehicle registration receipts from the Land Transportation Commission (LTC), that he has ready units for operation. An initial hearing is then set to prove the necessity of the service to be provided and to listen to the sides of the affected parties (both the general public and the operators whose lines may be affected by the one applied for). This may take a year or longer, depending on the opposition of the other operators, before a decision is reached, and the decision may even be negative. Once a CPC is granted, the operator can then apply for the proper public utility license plates from the LTC. The length of effectivity of the CPCs varies with the type of utility: jeepneys and motorized tricycles have five years; buses, 25 years and taxis, 15 years.

Aside from the regular certificates, the Board of Transportation also issues "reserve" permits, special permits, and provisional authorizations to operate. One reserve unit is allowed for every four regular units, although it used to be one for one until recently. (Reserve

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[5] The public utility rules and regulations described in this sections are those prevailing as of 1976, the time of this study.

units are supposed to operate only when a regular unit is out of order but bus operators are known to use them on a regular basis.) The provisional permits are more common with buses than with jeepneys. All these various types of permits make vehicles eligible for public utility license plates and essentially provide the same privileges as the regular certificates of public convenience.

The bureaucratic processes involved in the acquisition of official authorization to operate public utility vehicles are quite an ordeal, especially for small enterprises unfamiliar with and afraid of dealing with government entities. However, the enforcement of the public utility requirements has been sporadic and inefficient. The BOT itself has no police powers; as a result, illegal means of entry have cropped up among enterprising operators. There was a time when the so-called *colorum* units flourished in the suburbs among jeepneys and motorized tricycles. It was not uncommon either to find private cars, jeepneys, and trucks for hire without the proper permits. The operation of these *colorum* vehicles has thus become one of the major informal transport activities.

Because of the illegal nature of the enterprise, there is hardly any available information on the number of *colorum* units. One would suspect that most of the enterprises concerned have very few operating units, as the big ones should already be in a position to apply for official permits. A few years ago, the government tried to "correct" the situation by granting *colorum* vehicles official permits, but figures on the rate of response from the operators are not readily available.

Another source of irregularity stems from the issuance of public utility license plates even to vehicles without official permits to operate. This is very glaring in the case of jeepneys: the number of units authorized by the BOT in 1976 was 28,114 while the number of public utility jeepneys (PUJs) registered with the LTC in 1975 was 45,919 units. As Table 1 shows, these discrepancies are also common with other transport vehicles. Some of these differences probably exist because the BOT data on authorized units may have included only the regular CPCs without having considered the other types of permits granted. Nevertheless, the gap in the figures is so wide that the extent of irregularities is likely to be significant. The centralization of vehicle registration procedures beginning in 1977 is hoped to prevent such anomalies.

Since the acquisition of official permits is complicated and the operation of *colorum* units is still risky despite lax policing activities, a system of *kabit* (literally, connection, but with an illicit connota-

Table 1 — Number of Establishments, Operators, and Units by Vehicle Mode, for Selected Years, 1972-1976.

a. Philippines

Vehicle Mode	1975 Registered Vehicles	1976 Number of Operators	1976 Authorized Units
Jeepneys	45,919	8,133	28,114
Buses	17,392	4,319	14,363
Taxis	9,417	1,048	13,920
Freight trucks	11,772	1,756	4,556

b. Metro Manila

Vehicle Mode	1975 Registered Vehicles	1976 Number of Operators	1976 Authorized Units
Jeepneys	14,287	2,577	10,479
Buses	5,420	134	707
Taxis	7,412	592	8,741
Freight trucks	3,979	384	1,365

Note: The 1975 registration figures are from the LTC, while the 1976 statistics on the number of operators and authorized units are from the BOT. See the text for further explanation.

Sources: Land Transportation Commission and Board of Transportation statistics cited in Republic of the Philippines, National Economic and Development Authority, Project TRAPOLI, "Transport Policy Formulation Study," Report Number 1, February 1977.

tion) has evolved whereby unused permits are illegally rented out by official holders to the small operators. Rentals are usually payable on a monthly basis, with the rates and terms determined mainly by market forces: highly profitable routes command premium prices. The permit holder takes care of all the paperwork and government transactions.

The proliferation of *kabit* operations is unofficially acknowledged by the transport authorities. The system is well entrenched in all the major public utility modes, even though the BOT allows the outright transfer as well as the leasing of the operating permits. The system indeed seems very convenient for the small entrepreneurs.

The verbal contract can usually be terminated anytime, a feature attractive to new operators who may entertain doubts on the profitability of their venture. But the main consideration is probably the fear and avoidance of dealing with the government bureaucracy which ownership or official leasing entails.

4. Public Transport Operations

Why public transport in the Philippines attracts small entrepreneurs when it is often classed among "natural monopolies" together with other public utilities may seem to be a puzzle to many people. Yet the available statistics do attest to this attraction: at the five-digit industry level, the 1972 Census of Establishments ranked motorized tricycles operations second only to *sari-sari* stores (small variety stores) in terms of prevalence of establishments, with jeepney operations coming in seventh.

An explanation commonly offered concerning the smallness of enterprises is the absence or lack of access to credit, especially for transport activities which require relatively huge initial investments (see Table 2 for typical vehicle prices by mode and by passenger capacity). Capital, however, does not seem to be a binding constraint, since loans for the purchase of brand new vehicles are readily available from financial institutions upon application by the vehicle suppliers themselves. The terms usually require a down payment of 30 to 40 per cent, with the balance payable over two years. The gap between the nominal and the effective interest rates can be substantial, but the charges are still normally below those prevailing for institutionalized consumption loans. Amortization payments can easily be covered by net revenues from operations. Even for second-hand vehicles, market transactions may involve reasonable credit terms. If the argument of capital market imperfections has any validity, it is probably more relevant to considerations of entry. Once an enterprise establishes its credit standing, expansion of the vehicle fleet is no longer a problem in terms of access to financing.

A more appealing explanation for the prevalence of small-scale enterprises in public transport may be the rapid setting in of diminishing returns due to entrepreneurial capacity, an input relatively fixed to the enterprise.[6] Otherwise, why would official permit

[6] Some economists refer to this phenomenon loosely as diseconomies of scale, for which the common example is the apperance of organizational problems with the expansion of production. As Friedman (1964) notes, however, entrepreneurial capacity should be viewed as an input which, being relatively fixed and non-transferable, causes cost curves to rise and determines firm size.

Table 2 — Current Brand New Vehicle Prices, by Mode and by Capacity (1976)

Type	Capacity	Average Price
Jeepneys	12 passengers	₱ 20,495.00
	14 passengers	23,007.00
	16 passengers	25,833.00
Motorized Tricycles (with side cars)	2 passengers	6,500.00
Taxis	4 passengers	35,000.00
Mini-buses (Mazda)	45 passengers	58,730.00
Freight Trucks*	8 tons	100,842.00
	10 tons	147,500.00

*Note: Trucks are converted into buses by having the bodies purchased and installed separately.

Sources: Phone calls were made to several motor vehicle sales companies.

holders rent out some of their lines (through the *kabit* system) instead of operating the units themselves? A brief description of current vehicle operations may shed some light on this issue.

Public transport enterprises differ from most other activities in the sense that the major revenue-generating asset is mobile. Unless the owner drives the vehicle himself, he finds it difficult to monitor the operations of the enterprise. Management problems therefore immediately tend to set in with the expansion of the vehicle fleet. Other costs also seem to increase disproportionately with the scale of operations. Terminal or garage facilities, for example, can be had at negligible unit cost with small operations, as the owner's residence easily doubles up as the garage. At the same time, with the home garage, the operator is more assured of the safety of his vehicles and finds it more convenient to manage the enterprise. These advantages easily disappear as the number of vehicles grows beyond the capacity of the home terminal.

This limitation in entrepreneurial capacity imposed by the nature of the enterprise is perhaps the reason behind the preponderance of the so-called "boundary system," wherein the vehicle is essentially "leased" daily to the driver who pays the operator an agreed amount depending on the actual hours of vehicle use. Usually,

the driver takes care of fuel expenses while all other maintenance and operating expenses are borne by the operator (except fines for traffic violations, official or otherwise, which are sometimes shared by the two). There are two drivers alternating to a vehicle because of the hectic nature of city driving and the long vehicle operating hours. The typical driver starts off as early as 5 or 6 a.m. and goes back to the garage between 8 and 11 p.m., depending on passenger demand patterns along his given route.

Much has been written in newspapers and magazines as well as public documents about the "evils and excesses" of the illegal boundary system (Wage Commission, 1972). Drivers are said to be forced to work longer hours and drive recklessly to meet the daily boundary requirements. They are also said to enjoy no job security. From a positive viewpoint, however, the very prevalence of the system should perhaps be taken as indicative that such a system may be deemed desirable by both the drivers and the operators. Indeed, the huge share of small enterprises in total industry employment and output suggests a highly competitive atmosphere in vehicle operations, so that whatever conditions prevail under the boundary system are really the result of competitive demand and supply forces. Boundary rates are themselves flexible. Long working hours seem to be governed more by patterns of passenger demand than by the simple whim of the operators. The absence of any institutionalized job tenure system may be working to the advantage of both driver and operator in an activity where personal interactions are very strong, as employer and employee have to account with each other on a daily basis. When it comes to recklessness, the public utility driver certainly enjoys no monopoly; even the most educated driver is often guilty of traffic violations. The problems are more on enforcement and the rationality of existing traffic rules and regulations. (For an interesting analysis of the driver in relation to traffic laws and enforcement, see Stone, 1973).

None of these arguments should be construed as implying that the ideal size of a public utility enterprise is one that is necessarily small. Instead, what should be stressed is that the issue of optimum scale cannot be determined *a priori* and should rather be inferred from prevailing industry conditions. There seems to be a growing presumption among Philippine industry specialists from both the government and the private sectors that smallness is synonymous with inefficiency. However, small firms do coexist with big firms in public transport, and the available statistics show that there are more small firms than big ones across all major vehicle modes. The *kabit* system may indicate that small operators can and do compete efficiently with the bigger establishments.

The current data, while suggestive, are not of course sufficient to support an outright appeal for leaving the present industry structure as it is. Not only are the statistics scanty, but, more importantly, the very issue being addressed should be seen within the context of the whole matrix of policies governing the transport sector. Before these policy dimensions are explored, however, a closer look at the structural characteristics of small transport establishments is perhaps in order. For this purpose, the subsample of transport enterprises from the 1976 Informal Sector Survey of Metro Manila is analyzed in the section that follows.

5. The Participants: An Analytical Description

Out of some 3500 enterprises included in the Informal Sector Survey, only 67 establishments reported their activities as falling within the transport sector. A breakdown of the respondents by specific industry category is presented in Table 3. The distribution of the subsample across industries reflects the predominance of public transport operations in the sector as a whole, with some categories having only one or two observations. It will be noticed that some activities more properly belonging to the formal sector, such as travel agency operations, were included in the sample because of their small employment size. Given these considerations, only four major activities are retained for the analysis — jeepney, motorized tricycle, calesa, and freight truck operations.[7] About 14 cases were discarded because of doubtful responses to key questions dealing with enterprise operations, reducing further the already small sample size to 53 enterprises.

Having only 53 units in the sample is certainly far from an ideal situation for any thorough analysis of the sector. It restricts the level of confidence at which inferences about the population can be made. One mitigating factor, however, is the prior information suggested by other evidence that within each of the four vehicle modes, the variances in operating characteristics across enterprises tend to be low. The study now proceeds with an analytical description of the participants: the enterprise, the head of the enterprise, and the worker.

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[7] Bus operations, where the share of small enterprises is relatively unimportant, were not represented in the sample. Neither were pedicab operations, probably because pedal-operated tricycles have been replaced by motorized tricycles in most areas in Metro Manila.

Table 3 — Distribution of Respondents
By Industry Category

Nature of Operation	Original*	Retained*
Jeepneys	20	20
Motorized Tricycles	15	15
Taxicabs	2	—
Calesas	8	8
Freight Trucks	13	10
Water Transport	1	—
Brokerage	2	—
Services Allied to Transport	2	—
Travel Agencies	4	—
Total	67	53

*Notes on the difference between the original and the retained samples:

1. Travel agencies are excluded because they are more formal in nature.

2. Several other industry categories are dropped because of inconsistent responses to major questions dealing with enterprise operations.

3. Three observations from freight trucks are discarded because of inconsistent responses to major questions dealing with enterprise operation.

6. The Small Transport Enterprise

The "boundary" system prevailing in the small public transport sector (from buses down to tricycles) raises some problems concerning the proper definition of an enterprise. Under the system, one can view the driver as an enterprise by himself, renting out the public utility vehicle from its owner at a fixed daily rate. The lessor-lessee relationship, however, is such that in most cases the vehicle owner still performs a direct entrepreneurial and managerial function in the day-to-day operations. It is thus more meaningful to view public transport operations as an integrated activity rather than as a composite of two separate activities.

The profiles of the enterprises covered in the survey show significant differences across vehicle modes. In terms of years of operation (see Table 4), calesas have the longest mean age of 11 years, although more than 60 per cent of the calesa operators have been in the business for less than 10 years. This fact is somewhat surprising: one would expect calesa operations in Metro Manila to be dwindling,

Table 4 — Distribution of Respondents by Vehicle Mode, by Age of Enterprise

Age of Enterprise	Jeepneys	Tricycles	Calesas	Freight Trucks
0	0	1	1	1
1	1	2	0	3
2	2	0	0	0
3	3	0	0	1
4	1	3	1	0
5	0	4	1	0
6	1	3	0	0
7	1	0	1	1
8	3	2	1	0
9	1	0	0	0
10	3	0	1	14
11 to 15	1	0	1	0
16 to 20	1	0	0	0
above 20	2	0	1	0
	20	15	8	10
Mean Age (in years):	9.05	4.53	11.13	5.30

Source: Informal Sector Survey, 1976.

considering the increasing value of passengers' time and the negative externalities that the calesas impose on other road users. Jeepney enterprises, on the other hand, have a mean age of nine years. In freight trucking, where the average age of the enterprise is only slightly above five years, none of the respondent firms is older than 10 years. Motorized tricycle operations are also very young. The low mean age of four years probably reflects more the relatively recent boom in motorized tricycle operations rather than a high turnover rate in the industry.

Rates of capacity utilization seem to be governed by demand patterns, except for calesas where the supply constraint may be the dominant factor (see Table 5). The low mean hours of operation for calesas (nine hours) relative to those for jeepneys (13 hours) and tricycles (11 hours) result from limitations in the physical capacity of the horse itself. Jeepneys and tricycles may have high means and variances because of the nature of commuter demand. These

Table 5 — Distribution of Respondents by Vehicle Mode by Hours of Operation

Hours of Daily Operation	Jeepneys	Tricycles	Calesas	Freight Trucks
3	0	1	0	0
5	1	0	0	0
6	0	2	1	0
8	2	1	2	6
10	1	2	3	0
11	0	0	1	1
12	3	3	1	2
13	1	2	0	0
14	4	0	0	0
15	3	2	0	1
16	2	2	0	0
above 16	3	0	0	0
	20	15	8	10
Mean hours:	13.40	11.13	9.38	11.47

Source: Informal Sector Survey, 1976.

two vehicle modes are often complementary, with tricycles also plying the jeepney routes. It should be pointed out, though, that while operating hours are long, many of these vehicles take a rest at terminal points during slack hours. Actual running time may thus be several hours shorter than what many respondents may have considered as operating time. For freight trucks, since most of the clients are enterprises with fixed working hours, 60 per cent of the operators follow a daily eight-hour schedule. None of the freight trucks operates beyond 15 hours per day. Among the four vehicle modes, cargo truck operations thus show the smallest variance in terms of daily working hours.

How small are these small transport enterprises? Size of course has several dimensions, among which are the number of workers, value of capital equipment, revenue from operations, and output or value added. Mean values by vehicle mode for each of these dimensions are presented in Table 6. Fixed assets of the enterprise other than capital equipment, particularly land and buildings, are left out because they are very hard to measure for most enterprises of this nature, where structures often serve jointly as places of business

and residence. Expectedly, freight truck operations dominate in all aspects, followed by jeepney operations. Tricycle enterprises are only slightly larger than calesa operations, except in the value of capital equipment where the average tricycle establishment has more than twice as much fixed investment as the calesa operator. The high average employment in freight trucking reflects the fact that several *pahinantes* or cargo carriers usually accompany a truck for loading and unloading purposes.

Table 6 — Measures of Average Size and Productivity, by Vehicle Mode

	Jeepneys	Tricycles	Calesas	Freight Trucks
Measures of size:				
Revenue per week	₱ 604	₱ 284	₱ 212	₱ 3,960
Value added per week	301	145	126	3,089
Value of capital equipment owned	27,960	10,153	4,000	127,550
Employment (excluding head of enterprise)	2.15	1.53	1.12	5.20
Employment, adjusted for hours worked*	3.41	2.91	1.34	5.61
Measures of factor intensity and productivity:				
Value added per worker	140.00	94.77	112.50	594.04
Value added per worker, adjusted for hours worked*	88.27	49.83	94.03	550.62
Capital-labor ratio, unadjusted	13,005	6,636	3,571	24,529
Capital-labor ratio, adjusted*	8,199	3,489	2,985	22,736

*Adjustment of the employment figures is made with the assumption of 44 hours per week as full-time work.

Source: Informal Sector Survey, 1976.

The revenue and value added statistics across vehicle modes have to be interpreted with caution. Because of the boundary system, revenues from passenger transport operations are typically the reported net earnings of the drivers. The operator never gets to know exactly how much goes to the driver. This probably explains the low revenue and value added figures for jeepneys, tricycles, and calesas relative to the corresponding values for freight trucks which are the gross salaries of drivers. Nevertheless, even if this factor were taken into account, freight trucking would still loom large compared with the other types of ventures.

From the indicators of firm size, the various productivity and factor intensity measures are easily derived. These ratios are presented at the bottom of Table 6. The capital-labor ratio is seen to be lowest among calesa enterprises and highest among truck operations, with wide margins across modes. The differences among the three passenger vehicle modes are somewhat reduced if the labor measure used is one which adjusts for hours of work. In terms of employment and output relationships, for any given increase in final demand, tricycle operations have the highest employment generating potential. Surprisingly, the calesa does not seem to have any significant advantage over the jeepney in this respect, as one corrects for hours of work in the employment measure.

The "quality" of the inputs used often matters as much as the quantity, especially when output and productivity relationships are concerned. For the work force, one invariably finds that most of the regular workers have had previous experience in the same occupation, although the high rates of non-response for tricycle (40 per cent) and calesas (60 per cent) suggest that in these two modes, experience is not a major block to entry. For the capital goods, on the other hand, enterprises owning new rolling stock are slightly more than those with secondhand or improved units. Tricycles are the exception, where 13 out of the 15 respondents have brand new capital equipment.

Responses to queries dealing with the financing of the enterprise reveal the informal nature of these activities. Almost all the respondents bought their capital equipment out of their own savings and meet big expenditures in the same manner. Only less than 10 per cent of the enterprises have tried unsuccessfully to get credit from formal financial institutions. The heavy reliance on equity finance in spite of access to formal credit sources is probably due to the high prevailing interest rates even in the formal financial markets. Effective interest rates for such loans are as high as the going rates for loans on consumer durable purchases.

7. The Head of Enterprise

The vitality of the informal sector enterprise owes much to the enterpreneurial abilities of its head. For an activity with small assets and a few workers to oversee, the head is often owner, manager, and worker all at the same time. A brief look at the characteristics of the entrepreneur would thus help much towards understanding the present state of the small transport enterprise. Table 7 summarizes these characteristics.

Informal transport is a heavily male-dominated activity, with only one out of every eight enterprises headed by females. This pattern varies substantially from that of all informal sector activities taken together, where the head is female for 57 per cent of all the enterprises. The average age of the head of the transport enterprise was 41 years. The freight truck operator was the youngest at 36 years while the calesa operator was the oldest at 44 years. Educational attainment was high at 10.5 years of completed schooling. This means that the average head of enterprise has finished high school. Differences across vehicle modes are wide, however. Only half of the calesa operators were high school graduates. None completed college. Among freight truck owners, all finished the secondary level and more than 60 per cent finished college.

In terms of geographical origin, more than half of these entrepreneurs were born outside Greater Manila but, again, profiles vary widely across modes. Seventy-five per cent of calesa owners were original city residents, suggesting that the enterprise may have been a family undertaking passed on from generation to generation. On the other hand, 70 per cent of the jeepney operators were born outside the Manila area. Among the migrants, however, only a few were new city dwellers. Three out of four have been in the metropolis for at least ten years. Slightly more than half came looking for a job; about one third came for further studies.

While most of the enterprise heads consider themselves as putting in long hours to oversee their transport business, many still find time to engage in other activities. Thirty per cent have earnings from other sources. These sources were not identified in the survey, but they are likely to be work-related rather than property-oriented. If this is so, the time spent in managing the enterprise is probably being used jointly for other purposes. Earnings from other sources are even higher than those from the enterprise itself for some of the jeepney and tricycle operators.

Table 7 — Distribution of Heads of Enterprise by Vehicle Mode, by Major Attributes

	Jeepneys	Tricycles	Calesas	Freight Trucks
Sex:				
Male	18	13	7	8
Female	2	2	1	2
	20	15	8	10
Age:				
21 — 25	2	1	0	0
26 — 30	0	2	1	3
31 — 40	6	6	3	5
41 — 50	8	4	1	1
51 — 65	4	2	3	1
over 65	0	0	0	0
Mean age:	42.4 yrs.	39.0 yrs.	44.0 yrs.	36.2 yrs.
Education (highest level completed):				
No schooling	0	0	0	0
Some elementary	0	1	0	0
Finished elementary	6	2	3	0
Some high school	3	3	1	0
Finished high school	4	4	3	3
Some college	3	3	1	1
Finished college	0	2	0	5
Beyond college	4	0	0	1
Mean years completed	10.0 yrs.	9.5 yrs.	8.5 yrs.	12.9 yrs.
Place of Birth:				
Greater Manila	6	7	6	4
Outside Greater Manila	14	8	2	6
Years of Stay in Manila:				
Less than 10 years	3	3	1	1
10 years or more	17	12	7	9
Hours Worked Per Week:				
15 — 20 hours	1	1	0	0
21 — 30	3	1	1	0
31 — 40	0	0	0	1
41 — 50	1	2	3	5
51 — 60	2	2	0	4
60 — 70	13	8	4	0
over 70	0	1	0	0
Mean hours worked	58.5 hrs.	59.0 hrs.	54.0 hrs.	51.0 hrs.

Table 7 (Continued)

	Jeepneys	Tricycles	Calesa	Freight Trucks
Sources of Earnings:				
From enterprise alone	13	11	7	6
With other sources	7	4	1	4

Source: Informal Sector Survey, 1976.

8. The Work Force

Some characteristics of the work force in the informal transport enterprise have already been discussed in relation to the enterprise itself. In particular, employment size, average hours worked, and experience have been touched briefly. Here, these same dimensions are examined in more detail together with other basic worker attributes. Table 8 presents a summary of the workers' profiles by industry category.

Just as most of the heads of enterprise are male, so too are most of the workers, with less than 10 per cent being female. The major exception is freight trucking, where one out of five workers was a female. These women probably perform overseeing or administrative functions, since they are not likely to be riding the cargo trucks either as driver or as *pahinante.*

The average age of the workers by vehicle mode follows the same pattern as that of the average age of the enterprise. Workers in tricycle operations had the lowest mean age of 27 years, with only 26 per cent being at least 30 years old. On the other hand, calesa workers were the oldest at 34 years, 44 per cent of whom were at least 40 years old. Freight truck workers have the widest dispersion in the age distribution, probably a reflection of the variety of job functions within the enterprise.

A large majority of the laborers in these firms were regular, full-time workers. The rest were either part-time or casual employees. In terms of hours worked per week, tricycle workers had the longest, with an average of 84 hours. Those working in the jeepney enterprises averaged about 70 hours, while those in trucking put in the

Table 8 — Distribution of Workers by Vehicle Mode, by Major Attributes

	Jeepneys	Tricycles	Calesas	Freight Trucks
Sex:				
Male	40	23	9	42
Female	3	0	0	10
	43	23	9	52
Age:				
19 years and below	1	2	0	4
20 — 24	9	6	1	8
25 — 29	11	9	3	17
30 — 34	10	1	1	8
35 — 39	5	3	0	6
40 — 45	4	1	3	5
46 and over	3	1	1	4
Mean age:	31 years	27 years	34 years	31 years
Job Tenure:				
Regular, full-time	37	17	6	46
Regular, part-time	6	4	2	4
Casual	0	2	1	2
Hours Worked Per Week:				
20 and below	3	0	1	1
21 — 30	2	0	2	2
31 — 40	7	2	0	7
41 — 50	3	2	0	37
51 — 60	3	1	1	0
61 — 70	5	2	5	3
71 — 90	3	5	0	2
over 90	17	11	0	0
Mean hours:	70 hours	84 hours	53 hours	48 hours

Table 8 (Continued)

	Jeepneys	Tricycles	Calesas	Freight Trucks
Weekly Cash Earnings:				
0 — 49	6	5	4	8
50 — 99	17	10	5	35
100 — 149	6	6	0	4
150 — 199	1	2	0	0
200 — 249	7	0	0	2
250 — 300	6	0	0	0
above 300	0	0	0	3
Mean weekly earnings	₱122.00	₱84.00	₱51.00	₱107.00
Mean earnings per hour:	1.74	1.00	0.97	2.26

Source: Informal Sector Survey, 1976.

shortest at only 48 hours. More than half of all the workers in the passenger-based activities put in at least 70 hours a week, compared to less than five per cent for the workers in freight transport.

Long working hours do not necessarily mean high cash earnings. On a weekly basis, jeepney workers earned the most, at ₱122 on the average. Those involved in calesa operations had the lowest earnings at ₱51 per week. As corrections are made for hours worked, tricycle and calesa employees share the bottom at only about ₱1 per hour, while freight truck workers are at the top with ₱2.26 per hour. Variances in earnings also differ much across modes. None of the calesa workers earned any more than ₱70 per week, while 47 per cent of the jeepney workers earned at least ₱100 a week. Again, the wide differences in earnings among freight transport workers seem to indicate the wide variety of skills employed in the activity.

The rather dismal equity implications of the low earnings of transport workers in general improve when family size is taken into consideration. The average family size of workers for all the vehicle modes is low. There are only four members to a family among jeepney workers, and even less than three among tricycle workers. These figures are way below the corresponding family sizes for the head of enterprise, where the average is over seven persons per family. Of course, an income of ₱120 a week is still short of the poverty threshold for Metro Manila, even for a small family of four. However, the reported figures on earnings are only for a single worker and do not refer to total family income.

9. Productivity and Employment Relationships

The analysis of the survey results has thus far dealt mainly with the descriptive profiles of the informal transport sector participants, with emphasis on how attributes differ across the four major industry categories. Here, the interrelationships among the different dimensions pertaining to the participants are explored. In particular, for the survey data, determinants of value added and labor productivity are examined with the use of multiple regression techniques.

It will be recalled that three cases were dropped from the freight transport category in the descriptive analysis. These cases were put back for the regression analysis in spite of their "abnormalities." The rationale, aside from the obvious gain in degrees of freedom, is that these "abnormalities" may in fact be explained by the regressors used in the analysis. Thus, while the inclusion of these observations in the descriptive profiles may distort the inferred mean values of the variables concerned, their inclusion in the statistical analysis may even enhance the explanatory power of the models to be examined. With this note, the output and productivity relationships are now explored.

It is sometimes heard that, by their very nature, informal sector enterprises are not likely to "obey" standard input-output relationships or well-behaved production functions and that other, so-called environmental factors may have significant, independent influences on output which may swamp out the effects of the traditional labor and capital inputs. Or, even if some stable relationships do exist, the quality of the data generated from such enterprises often does not allow for any meaningful empirical analysis of the production relationships. These observations seem to hold true for the informal transport activities in the sample. "Conventional" production functions of the Cobb-Douglas and constant elasticity of substitution (CES) types were tried out on the data without any statistically significant results. Even with these exigencies, however, the use of simple linear models which are not encumbered by any "formal" production function specifications may nevertheless help much towards an understanding of the major factors affecting the output of the informal transport enterprise.

What then are the likely determinants of value added of the enterprise (VAE)? The most obvious are the amounts of labor and capital services employed. The labor measure chosen for this purpose is the number of *all* workers in the enterprise, including the working owners themselves (WKR). Correction for hours worked is made by introducing a variable on weekly hours of operation (WHO) separate-

ly. For capital, on the other hand, the best measure available for the survey data is the value of capital equipment owned (EQP). Although this measure excludes other fixed assets not in the data file, this should not be a major problem as long as the other assets' value is proportional to the value of capital equipment.

The nature of the enterprise may also distinctly influence value added, so that dummy variables are employed to represent the three independent industry categories: tricycles (TRI), calesas (CAL), and freight trucks (FRT). Jeepneys, the residual category, will enter the constant term. Similarly, the age of the enterprise (AGE) may bear significantly on output as representing the managerial experience of the head of enterprise. Nonlinear effects are allowed for this variable with the inclusion of AGE^2 as an explanatory variable.

In summary form, the value added function posited by the discussion above is as follows:

$$VAE = f(EQP, WKR, WHO, AGE, AGE^2, TRI, CAL, FRT).$$

Several specifications of this basic relationship are then regressed by including or excluding certain variables at a time. In this manner, the contributions of the added variables are seen more clearly.

Table 9 presents the regression results for three different specifications. Equation 1 contains only the industry categories as explanatory variables. One observes that the differences in value added across the passenger vehicle modes (jeepneys, tricycles, and calesas) are not statistically significant. Although the regression itself comes out significantly, only 21 per cent of the variation in value added across enterprises is explained by the differences across industry groupings. On the other hand, in equation 2, the traditional labor and capital input measures plus the "experience" variables have a much higher degree of explanatory power. The corrected coefficient of determination increases by more than 75 per cent with the second specification. In fact, equation 3, in which all the variables are included, shows that industry groupings may not be significant when the effects of the other variables are taken into account, as $\bar{R}^2$ even declines slightly.

In equation 2, the value of capital equipment (EQP) is seen to have a very negligible effect on value added as the other factors are held constant. The number of workers (WKR), on the other hand, has a highly significant coefficient, with value added per week increasing by ₱465 for every additional worker. The negative sign of the coefficient of the weekly hours of operation (WHO) variable is probably due to the fact that freight truck operations, which are far

Table 9 — Regression Equations for Value Added of the Enterprise (VAE)

	(1)	(2)	(3)
Intercept	1050.750	1033.159	1050.750
EQP		0.000	−0.003
		(0.05)	(−0.59)
WKR		465.045	303.060
		(3.78)	(1.73)
WHO		−20.595	−15.198
		(−1.63)	(−0.99)
AGE		−210.713	−154.977
		(−2.25)	(−1.44)
AGE^2		6.931	5.654
		(3.31)	(2.35)
TRI	139.831		−254.478
	(−0.17)		(−0.33)
CAL	53.848		−569.323
	(−0.05)		(−0.59)
FRT	3100.284		1300.060
	(3.68)		(1.01)
R^2	0.26	0.43	0.46
$\bar{R}^2$	0.21	0.38	0.36
F	5.95	7.68	4.96

Note: Figures in parentheses are the coefficients' t-values.

larger than the other activities, have short operating hours. However, correcting for the industry categories in equation 3 does not reverse the sign of the coefficient although the t-value declines substantially.

The age of the enterprise appears to have a nonlinear effect on value added. The values of the coefficients of AGE and AGE^2 suggest that length of stay in the business initially has a negative impact on value added. A threshold level is then reached at age 15, beyond which the effect of experience becomes positive.[8] The high zero-order correlation between AGE and its square (r = 0.94), however, indicates a strong multicollinearity. For a similar equation with AGE^2 omitted, the coefficient of AGE is positive, although $\bar{R}^2$ drops to 0.26.

[8] The value of 15 years is arrived at by getting the partial derivative of the equation with respect to AGE and setting the derivative equal to zero. The value is a minimum since the second partial derivative is positive.

Several other variables having possible effects on output were also experimented with but none showed any significant influence. In particular, some equations were run which included worker-related characteristics like experience in the same occupation, as well as, owner attributes like place of birth. On the whole, however, the variables appearing in Table 9 offer the most "reasonable" set of factors explaining value added across enterprises.

10. Labor Productivity Relationships

Measured as value added per worker, labor productivity may be viewed as related to the value of capital equipment per worker, together with the other "shift" variables:

$$VAE/WKR = f(EQP/WKR, WHO, AGE, AGE^2, TRI, CAL, FRT),$$

where the variables are as previously defined. Table 10 summarizes the results of linear regressions employing different specifications of the basic function.

In equation 1, an obvious difference in labor productivity between freight and passenger vehicle operations is seen to exist. Workers in tricycle and calesa enterprises tend to have higher productivity levels than those in jeepney enterprises, but the differences are not really statistically significant. With a different set of regressors, $\bar{R}^2$ increases (equation 2), with the AGE variables having a stronger impact. Including all variables together, one finds $\bar{R}^2$ rising by 37 per cent, suggesting that, unlike in the value added equation, industry categories have a strong independent influence on productivity. The amount of capital equipment per worker has no effect; neither does the enterprise's number of operating hours per week. The impact of the AGE variables is highly significant, although the threshold level of experience declines to 12 years, compared to the value of 15 years in the value added function.

11. Other Considerations

In summary, an examination of the interrelationships among the major economic dimensions of informal transport activities reveals that significant differences in output and productivity do exist between passenger and freight transport activities in general. The value of capital equipment and weekly hours of operation, which are expected to have strong influences, turn out to be relatively insignificant in explaining variations in value added and labor productivity. What is surprising about the empirical results is the important impact of the age of the enterprise, with its corresponding threshold level. The nonlinear effect is probably explained partly

Table 10 — Regression Results for Value Added Per Worker (VAE/WKR)

	(1)	(2)	(3)
Intercept	37.134	407.576	218.935
EQP/WKR		0.003	−0.005
		(0.58)	(−0.98)
WHO		−2.894	−1.033
		(−1.29)	(−0.43)
AGE		−29.439	−19.324
		(−1.80)	(−1.19)
AGE^2		1.085	0.810
		(2.94)	(2.21)
TRI	19.922		−11.125
	(0.15)		(−0.51)
CAL	31.366		−81.774
	(0.19)		(−0.51)
FRT	450.929		382.992
	(3.24)		(−0.51)
R^2	0.19	0.28	0.40
$\bar{R}^2$	0.15	0.23	0.31
F	4.19	5.00	4.52

Note: Figures in parentheses are the coefficients' t-values.

by the fact that most enterprises start with new rolling stock which depreciates fast; beyond the threshold level, knowledge of the business may eventually overcome the depressing effects of accelerated depreciation. Unfortunately, the survey data do not permit the verification of such a hypothesis.

Other economic dimensions relating to the informal transport

sector do not seem to be as readily "explained" with the available survey information as the output and productivity aspects. Fitted earnings functions, either for the head of enterprise or for the worker, do not yield any significant regressors, with coefficients of determination staying at very low levels. The negative results arising from various experimentations with the data probably suggest that, in the future, a more specific and detailed survey instrument should be used where the peculiar characteristics of transport operations are kept in mind. Financial flows, for example, will differ between an operator who owns his certificate of public convenience and an operator who merely "rents" a line through the *kabit* system. Across vehicle modes, differential adherence to the "boundary" system may lead to non-comparable measures of revenue and value added, as some will be reporting revenues based on the gross of drivers' salaries while others will be reporting net revenues. A detailed sector-specific survey of enterprises should help much towards the resolution of these empirical problems.

12. Concluding Remarks

This study began with a heavy stress on the linkages between the informal sector and the policy environment which may condition the sector's growth. After the presentation of the empirical dimensions of the informal transport sector, it is but proper to return to a discussion of these policy linkages. At this point, however, a brief review of what has been covered thus far is perhaps in order.

Using secondary data, the informal transport sector in Metro Manila was examined within the context of the metropolitan economy, particularly in terms of its employment aspects. The transport sector in general was seen to be dominated by land transport operations. Smallness in employment size was found to characterize the firms in most of these operations, especially among jeepneys, calesas, and tricycles. This was observed despite the apparent economies of scale which could be had in the acquisition of permits to operate and annual vehicle licenses from the various government agencies dealing with public transport. A kind of polarization in public transport activities was thus suggested: actual road operations seem to be more efficiently handled by the small enterprises while some groups tend to "specialize" in those aspects where contact with the government agencies is required. This division of functions, which appears to have been the outcome of natural, economic forces operating within the institutional context, is nevertheless considered illegal.

A closer look at the participants in the informal transport sector activities was then undertaken using the cross section of transport

establishments included in the Informal Sector Survey of Metro Manila. Across the four vehicle modes represented in the survey, it was observed that substantial differences exist among the enterprises, heads of enterprises, and workers in terms of personal background as well as socioeconomic characteristics. Moreover, freight transport characteristics vary significantly from those of passenger transport in general, with cargo truck operations displaying dimensions of size and sophistication which may qualify the enterprises to be in the formal sector. Value added and productivity relationships explored through regression analysis showed the dominating influence of experience, as measured by the age of the enterprise.

Finally, limitations in the available information from the primary as well as the secondary sources were seen to constrain any attempt at a thorough analysis of informal transport operations at this point. Considering that transport activities require a productive input that is externally and almost costlessly provided to the enterprises, namely the road infrastructure itself, and the existence of the government's messy institutional framework which views transport as a "public utility," a more specific and detailed study of the sector is suggested with more focus on the institutional setup.

Most of the empirical evidence presented in this study therefore seem to suggest that an informal subsector thrives fruitfully within the transport industry, that smallness is not necessarily synonymous with inefficiency. However, *private* efficiency should not be confused with *social* efficiency, especially in transport, where social marginal costs tend to exceed private marginal costs. There would be so-called welfare losses associated with an overexpansion of the industry if private marginal costs were used as the basis for policy. Nevertheless, even if the optimum level of transport services were determined or solved with marginal social benefits and marginal social costs in mind, the implementation of policies needed to reach this optimum level would require an appreciation of the private efficiency aspects of transport operations.

A closely related issue is the need to include considerations external to enterprise operations themselves in any discussion of industry production functions or industry cost relationships. These external considerations refer to road infrastructure investments as well as traffic management aspects which bear significantly on the private costs and returns of transport enterprises. Finally, negative externalities associated with congestion should also be kept in mind.

This short list is by no means exhaustive of all the relevant aspects that are requisite to a thorough analysis of transport policy

issues. The list should be considered illustrative rather than definitive. However, it does serve to indicate that much still remains to be done even before tradeoffs between equity and efficiency objectives for policy can be meaningfully discussed.

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