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How Financial Liberalization in Indonesia Affected Firms' Capital Structure and Investment Decisions

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Financial reform has had a significant impact on firms' real and financial choices — helping to reallocate credit toward smaller firms and relaxing the financial constraints they face.

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How did financial liberalization affect Indonesian firms? Harris, Schiantarelli, and Siregar analyzed real and financial indicators for the establishments in their panel of Indonesian manufacturing establishments for 1981-88. Their sample was not representative, but their evidence shows that economic reform had a favorable effect on the performance of smaller firms.

Liberalization helped reallocate domestic credit toward smaller firms to a level roughly proportionate to their contribution to value-added. Moreover, other firms were successful in replacing expensive domestic credit with cheaper foreign credit, releasing some domestic credit to establishments that lacked access to it.

Nominal and real interest rates rose to very high levels, but real returns to capital assets remain high and have increased substantially for small and medium-size exporting establishments. For all groups, higher rates of financial leverage gave rise to extremely high returns on owned equity. Medium-size firms — both conglomerate and nonconglomerate — have had the highest rates of return to capital, financial leverage, and returns to equity.

Financial reform has had a significant impact on firms' real and financial choices. Shifting from administrative allocations of credit to market-based allocations has increased borrowing costs, particularly for smaller firms, but it has also widened access to finance. The net effect appears to have been a decrease in the degree of market segmentation and a relaxation of financial constraints to the benefit of investment activity.

How Financial Liberalization in Indonesia Affected Firms' Capital Structure and Investment Decisions

by

John R. Harris, Fabio Schiantarelli, and Miranda G. Siregar
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INTRODUCTION

Since 1968 Indonesia has had a high rate of growth facilitated considerably by the high oil prices in the 70's and early 80's. As an oil exporter, Indonesia experienced two major booms during 1974-77 and 1979-82. There was clear recognition that oil revenues were a temporary blessing and so the overall policy was directed to channeling this money into investment in order to assure sustained growth after oil becomes depleted. Fostering growth in the manufacturing sector was a central goal of government policy to be achieved by channeling money to the private industrial sector through the banking system. The banks were instructed to finance at low interest rates certain types of investment, particularly in import substitution and backward integration of heavy industries, during the boom periods. With the undeveloped capital market, the financial sector was typically repressed.

Following sharp declines in oil revenues in late 1982, and again in 1986, policy makers recognized the need for major reforms. First, non-oil exports had to be increased in order to maintain the flow of imports essential for continued development. Second, with the decline in oil revenues, fewer resources were now available to the public sector and therefore it became necessary to stimulate private savings mobilization. An integral part of the policy reform was the deregulation of the banking system of June 1983 in which banks were allowed to set interest rates, central-bank liquidity credits were reduced substantially, and administratively-determined credit ceilings were abolished. The general objective was to move away from administrative control to market allocation of credit flows.

When oil prices fell further in 1986, the government was again forced to devalue the currency, and further deregulation measures were taken. The continuing evolution of policy towards increased market orientation reached its peak in 1988 in a series of major policy reforms, affecting primarily the banking system, capital markets, fiscal measures and trade policies. These series of reforms have indeed affected the real sector significantly. (Chant and Pangestu, pp 1-5).

The purpose of this paper is to assess the effects of reforms, in particular of the financial reforms, on the structure and behavior of the manufacturing industries in Indonesia. How did credit allocation change with financial deregulation? What was the impact on firms' investment choices? Did

the effects of reform differ across firms?

We will make use of data from a panel of the manufacturing establishments in Indonesia during the 1981-1988 period. The paper will be divided into four sections. Section I contains a macroeconomic overview. In section II we discuss the structure of manufacturing industries and the determinants of access to credit markets. In section III we describe the economic and financial evolution of establishments during the 80's, using a balanced panel of 218 reporting units. Finally, in section IV we present some preliminary econometric evidence on the effects of financial liberalization on investment and borrowing behavior. The Appendix contains a detailed description of the data construction and cleaning procedures which have been used. In the conclusion we summarize the main findings.

I. MACROECONOMIC AND POLICY DEVELOPMENTS IN INDONESIA:

1. THE MACROECONOMIC BACKGROUND

The oil boom which began with a quadrupling of oil prices in 1973 and continued with high prices until 1982, had profound effects on the Indonesian economy. Macroeconomic policy was fairly sound during this period, characterized by a concern for keeping inflation under control and maintaining a prudent fiscal policy. A cautious foreign-borrowing policy, following the infamous Pertamina affair of the mid 1970's, kept the country's debt service ratio fairly low throughout the boom period, (e.g. in 1981, the ratio of public debt service to exports was only 9% and slowly increased to 18% in 1984). The government was actually less than fully successful in controlling inflation given its inability to sterilize oil revenues with the limited monetary instruments, and this resulted in an inflation rate of approximately 18% by the end of 1982. At that time the economy was "overheated" with high levels of oil-related public investments and an upsurge in private investments being accompanied by more protectionist and interventionist policies.

Falling oil prices in 1983, together with world wide recession and an increase in the US real interest rate, worsened Indonesia's balance of payments, thereby impairing its ability to service debt. The Government responded by devaluing the Rupiah by 50 per cent at the end of March 1983, partly for budgetary reasons so that the nominal value of government revenues would continue to show an increase, and primarily in order to boost non-oil

exports. Following this large discrete devaluation, the foreign exchange regime was changed to a crawling peg system in order to reduce volatile expectations of large dollar depreciations which induced episodic large scale capital outflow. (Chant and Pangestu (1992), pp.38-9) To reduce both external and internal imbalances, a series of austerity measures were also introduced which included budget cuts, postponement of some capital and import-intensive projects, reduction of domestic fuel subsidies, and reduction of state enterprise and agricultural subsidies. The government also moved quickly in its efforts to increase the mobilization of domestic resources through reforms in the financial sector and by improved collection of non-oil tax revenues.

Prior to June 1, 1983, Indonesia had most of the characteristics of a financially repressed system.(Chant and Pangestu (1992), pp.6-8) The banking sector was heavily regulated and entry was very restricted. The market was dominated by State banks, where Bank Indonesia alone accounted for 35% of the total assets of all financial systems, and the five large state banks held another 40%. Bank Indonesia set ceilings on bank credits for individual banks which was the principal means of control of monetary expansion because it was believed that reserve management alone was insufficient given the volatility of international financial flows via oil revenues and the absence of restrictions on private capital movements. Over time, an extensive selective credit system with subsidized interest rates was introduced. Moreover, Bank Indonesia provided direct lending to some economic units, and channeled substantial amounts of low-interest liquidity credits to high-priority or 'strategic' sectors. These controls and credits provided the Government of Indonesia with basic tools for channeling oil earnings to the private and parastatal sectors in order to increase investment. When the volume of oil revenues fell precipitously, the principal task facing the financial sector changed quickly to mobilization of domestic resources.

Together with the trade and industrial policies, which were basically protectionist and were primarily implemented through a detailed licensing system, this cheap credit policy created a few dominant economic groups or 'conglomerates' in the Indonesian economy which prospered because of their ability to make use of the administrative allocation systems (Robison (1986)). In addition to privileged access to the domestic credit market, these groups also were able to make use of offshore loans because of their extensive links with financial and trading networks in Singapore, Malaysia, and Hong Kong. Entry restrictions via industrial licensing, receipt of quotas on imports

and/or being granted monopoly importer status, and substantial interest rate reductions for credits to 'priority sectors', created a number of additional distortions that generated profits for the firms (principally conglomerates) which were able to obtain preferential access to them. In addition, the majority of domestic private banks in Indonesia have been acquired by these conglomerates which have been able to use the banks to gain access to credit for their non-financial operating units at prevailing deposit rates .

Efforts to increase the mobilization of domestic funds through the financial sector and improve the collection of non-oil tax revenues were reflected in significant reforms in the 1983 banking deregulation and in the tax reforms of 1984. The principal objectives of the banking deregulation were to provide higher returns to depositors and lower costs to borrowers by raising the degree of competition in the financial markets; to increase savings mobilization through the banking system; to improve the efficiency of allocation of financial resources through increased reliance on the market mechanism; and to increase the use of capital market instruments to raise equity capital and enhance the liquidity of shares.

The measures taken included the abolition of credit ceilings, a reduction in liquidity credits, and the granting of permission for state banks to set their own interest rates on deposits and loans. Each of these measures required drastic changes in bank behavior and in the techniques of liquidity management. All banks were subjected to much greater competition and became responsible for acting on their independent assessments of profitable opportunities. Although the immediate effects of the 1983 banking reforms were to substantially increase interest rates paid on deposits and charged for loans, and to increase the share of GDP being channeled through the formal financial system, the anticipated changes in competitive behavior emerged only slowly and were really given impetus with the later round of reforms in 1988 and 1989. (Chant and Pangestu, (1992) pp. 8-26)

The banking deregulation was followed by the Tax Reform aimed at improving collection of tax revenues from non-oil sources. This reform was undertaken in stages beginning in 1984 with the abolition of the withholding tax and the introduction of the value-added tax. Subsequently income and sales taxes were rationalized. These reforms were not followed by analogous changes in trade and industrial policies, which were not liberalized but became even more protectionist, so that by the beginning of 1985 more than 1100 products had been placed under import license, import bans, or quotas. The worst thing

was that it enhanced further the dominant positions of the major conglomerate groups which had already benefited enormously by the easy credit-allocation policies.

The fall of oil prices from US$ 28 per barrel to US $ 9 per barrel by August 1986 forced the government to again carry out a maxi deval ıtion of the currency by 45% (from Rp. 1134 per US$ to Rp. 1644 per US$) in September 1986 in order to improve the country's balance of payments. The plummeting oil and primary commodity prices shocked the government and induced it to accelerate the introduction of reforms. It moved promptly by implementing a series of tariff reforms; removing most import licenses; reorganizing custom, ports and shipping operations; and introducing a duty-draw-back scheme designed to provide internationally-priced inputs to non-oil exporters. In 1987, a deregulation package was adopted to attract more foreign investment by removing various measures of discrimination vis a vis domestic investors and providing better and more attractive incentives to foreign investment.

This new attitude towards free market policies reached its peak when the government announced a package of banking and capital-market deregulation in 1988. The essential part of the new policies were the lowering of entry barriers and reducing reserve requirements. Foreign banks were also allowed to open branches in cities other than Jakarta. The 1988 deregulation is very important and probably had more profound effects on the actual functioning of financial markets than did the 1983 measures.

However, because establishment data for the industrial sector are presently available in suitable form only for the period 1981-1988, we will concentrate on the changes that occured in the middle of the 80's. Although we will refer to 1981-84 as a "pre-deregulation" period under the assumption that changes instituted late in 1983 had insufficient time to affect real investment decisions until well into 1984, and 1985-88 as a "post-deregulation" period, this dichotimization suggests a once-for-all regime shift that considerably exaggerates the reality. Rather, there was a fairly continuous process of deregulation of various aspects of the economy after mid 1983. Furthermore, the response of economic agents to these reforms took place fairly gradually. Nevertheless, for our purposes, the 1983 reforms were extremely significant for increasing the levels of real interest rates, and reducing the credit controls placed on individual banks. The dominant State Banks were forced to act more autonomously and to base their lending decisions more on commercial criteria than had been the case before the reforms.

2. THE 1983 BANKING DEREGULATION.

Following the 1983 banking deregulation, interest rates on deposits at the state banks almost doubled, to levels closer to those of private banks. For example, the average interest rate on 6-month time deposits at state banks doubled from 6% per annum in March 1983 to 11.5% one month later, whereas private banks increased their deposit rate from 18.3% to 20.0% . As a result, rupiah time deposits grew rapidly by nearly 75% in 1984 and by another 40% in 1985, although the maturity structure became shorter (12 months or less). Consequently, the banking industry had to adjust its lending rates, and as a result of the increasing share of short-term fixed-rate liabilities, they became more cautious in their credit policies. It was widely believed that the high cost of intermediation and the high credit risk of the financial system caused an unusually large spread between lending and deposit rates. Nasution (1986) calculated that, after deregulation, the weighted average cost of funds at state banks was in the range of 10-13% while the prime lending rate was around 18%. He concluded that the inefficiencies of the dominant state banks were also the main reason why competition had not lowered the interest-rate spreads and narrowed the real interest-rate differentials between domestic and international markets following the deregulation. It should also be noted that before the 1983 deregulation, the bulk of state-bank credits carried an average nominal interest-rate of less than 13% (supported by the low interest liquidity credits from the central-bank), whereas national and foreign private banks charged at least 21% per annum, reflecting a significant segmentation in the credit markets (Woo and Nasution (1989)). On the other hand, Chant and Pangestu (1992) p 13) suggest a somewhat different account. They argue that "the Indonesian financial reforms ... succeeded in narrowing the margins between the interest revenues and interest costs of the Indonesian banks. ... this evidence offers support for the view that financial reforms that eliminate administered interest-rates and credit ceilings can improve the efficiency of the banking system."

Following the reforms of 1983, particularly the relaxation of credit-allocation ceilings to individual banks, the share of loans provided by the state-banks fell as did that of Foreign Banks while Private Domestic Banks expanded relatively. These shares are shown in Table 1.

Table 2 displays the increase in nominal and real interest-rates following deregulation. The average nominal lending rate increased from about

9% in 1982 to about 22.5% in 1988, whereas the associated real lending rates increased from -1.62 in 1982 to 10.97 by the end of 1988. The abrubpt increases in these rates in 1984 and 1985 are particularly evident.

TABLE 1: SHARE OF CREDIT PROVIDED, BY TYPE OF BANK

Year	State-banks	Private Banks	Foreign Banks
1981	0.87	0.08	0.05
1982	0.87	0.08	0.05
1983	0.85	0.10	0.05
1984	0.81	0.13	0.06
1985	0.78	0.17	0.05
1986	0.75	0.20	0.05
1987	0.75	0.21	0.04
1988	0.72	0.24	0.04

Source: Bank Indonesia weekly report, 1980 - 1989

Note: The figures reflect the lending to private sector including state enterprises, but not including lending to government.

TABLE 2: NOMINAL AND REAL LENDING RATES
1981 - 1988 (in percent per year)

Year	Nominal lending rate (i)	Inflation rate (π)	Real lending rate (r)
1981	9.00	9.50	- 0.46
1982	9.00	10.80	- 1.62
1983	11.00	12.40	- 0.36
1984	15.00	8.80	5.70
1985	19.00	6.60	11.69
1986	21.00	7.80	12.83
1987	21.70	9.20	12.08
1988	22.40	10.30	10.97

Source: Various issues of Bank Indonesia weekly report, and state & private banks annual report.

It is obvious that, with the inflation rate remaining stable while nominal interest-rates increased sharply after liberalization, real interest-rates changed from negative to high positive rates very quickly.[1]

[1]The nominal lending rate reported is the state banks' average lending rate. The average lending rate of all Indonesian banks will push the rate slightly higher, but will not change the trend.

It remains a puzzle how Indonesian real interest-rates could remain so far below comparable rates in Singapore and Hong Kong given the absence of restrictions on private capital movements since 1967. Clearly, during the pre-deregulation period, Indonesian credit was a relative (absolute) bargain for those borrowers granted access to loans. Of course, that is another reason why Bank Indonesia had to control the levels of lending under that regime since there must have been substantial excess demand. In the absence of such controls, one would expect interest-rate parity to apply between Indonesian and off-shore borrowing costs. Table 3 converts the costs of borrowing US Dollars abroad into equivalent Rupiah costs which take account of depreciation of the Rupiah against the US Dollar, thereby increasing the Rupiah costs of repayment. As far as foreign loans are concerned, the 1983 and 1986 devaluations resulted in a substantial increase in the effective cost of foreign loans, as shown in the final column of Table 3. These rates should be compared with the nominal Rupiah rates (i) shown in column 2 of Table 2.

TABLE 3 : EFFECTIVE COST OF FOREIGN LOANS

YEAR	6 month LIBOR rate (i_w)	% change of U$ exch. rate (δ)	Effective cost of foreign loan (%) (r_w)
1981	16.72	0.28	17.00
1982	13.60	4.68	18.28
1983	9.93	41.48	51.41
1984	11.29	7.74	19.03
1985	8.64	5.42	14.06
1986	6.25	46.4	52.65
1987	7.93	0.03	7.96
1988	9.43	4.0	13.43
1989	8.31	4.48	12.79

Note :- δ is the ex-post exchange rate depreciation at the end of calendar year, and was chosen due to the non-existence of the forward exchange rate market in Indonesia.

- Libor (London inter bank offer rate) was chosen because it was extensively used as a benchmark in most foreign loan agreement.

Indonesian nominal interest-rates have risen sharply over the period while international nominal rates have declined. It is evident that, through 1985, the relatively low nominal interest-rates in Indonesia

combined with substantial levels of devaluation, made domestic borrowing attractive relative to borrowing from abroad. This changed in 1985, although the maxi devaluation in 1986 again temporarily changed the situation. However, by 1988, adjusted foreign-borrowing rates were considerably lower than in Indonesia and this trend has accelerated since 1989. Thus, an effect of the deregulation has been to increase the advantages that can be obtained by firms with access to offshore borrowing which, of course, are primarily the conglomerate units and foreign firms. The advantage of borrowing from abroad is particularly clear for exporters whose revenue is in foreign exchange. This has raised a hotly-debated issue in Indonesia of whether the reforms that have increased interest-rates have served to help or to disadvantage smaller and non-conglomerate firms which have less access to "cheap" offshore borrowing.

II. INDONESIA'S MANUFACTURING FIRMS AND THEIR ACCESS TO CREDIT MARKETS

Indonesian manufacturing has grown remarkably since the early 1970's, maintaining real growth rates of value-added in excess of 12 percent per annum. The best description of the changing structure of firms, by sector, size, and ownership is provided by Hill (1990,a,b). At the same time, Indonesian credit markets have been highly segmented, and different kinds of Indonesian firms have very different access to capital. The ability to obtain external funds in domestic credit markets differs between small and large firms, between Chinese and Non-Chinese firms, between private and public enterprises, between firms affiliated or owned by a group and independent firms, and between export-oriented and domestic-oriented firms. Moreover the lack of exchange-rate controls makes it possible for those firms which have established good reputations and close connections with the outside world to borrow money from offshore.

Since Indonesia has adopted a flexible-exchange-rate system, foreign exchange risk is an important consideration for those who want to make use of this opportunity, especially because US-dollar-denominated loans

usually carry a significantly lower nominal interest-rate than domestic loans denominated in rupiah. Unlike developed countries, there are no organized future exchange-rate markets in Indonesia. Instead, the central-bank does offer a swap facility so those who have access to off-shore loans can hedge the exchange rate risk by paying a certain margin. When it was introduced, the swap facility was very limited, with terms restricted to a maximum of six months, and with the option for privileged groups to have the facility extended once or twice. The financial institutions were free to set the premium charged to their customers, but the demand kept increasing due to exchange rate uncertainty. Since October 1982 a margin of 2% was set by the central-bank, and by February 1983 the financial institutions' premium was between 5% and 6% while the Bank Indonesia premium was between 4.25% and 4.75%.

With the average interest on rupiah loans near 22 percent per year, the swap facility made offshore borrowing cheaper and highly demanded. Established Indonesian firms could borrow at Sibor or Libor (Singapore or London inter bank offer rate, respectively) plus 0.5 to 2.0 percent risk premium, which resulted in nominal loan rates, ranging between 7.5 and 10 percent. Using the swap facility at premia between 4.5% and 6%, the implied rupiah interest-rate on foreign loans was between 12 and 16 percent. As far as exporters were concerned, borrowing off-shore was a source of cheaper funds, even without the swap facility, because their dollar-denominated export revenue could protect them from exchange rate risk. It is worth noting that after October 1988, limits on the swap facility were removed, its term was extended up to 3 years, but the premium was to be determined by the prevailing difference between Sibor and domestic rates, thereby reducing its attractiveness.

It is obvious that there are significant differences among firms in their access to foreign loans. Basically the foreign option was open to conglomerates, large Chinese firms with connections to the Singapore and Hongkong financial markets, to foreign firms, and to exporters with established overseas customer relationships.

Access to domestic credit also differs across firms. Although there were special credit schemes for small scale industries (KIK & KMKP), they represented only a very small part of the total implicitly subsidized credit from State Banks, as shown in Table 4.

Indeed, the bulk of State Bank credit extended prior to the 1983 reforms went to the larger firms who had the political connections, influence, and special channels to the banks due to their longtime relationships, coupled with their ability to provide collateralizable assets. Relatively new (young) independent firms, who had not built up their reputation and political connections faced highly constrained access to low-cost credit.

TABLE 4: SMALL SCALE CREDIT AND PERMANENT WORKING CAPITAL
(As a percentage of state-banks total credit)

Year	Small Scale Credit	Permanent Working Capital Credit	Total Credit to Small Industries
1981	0.05	0.09	0.14
1982	0.04	0.09	0.13
1983	0.03	0.07	0.10
1984	0.03	0.07	0.10
1985	0.02	0.06	0.08
1986	0.02	0.05	0.07
1987	0.01	0.04	0.05
1988	0.02	0.04	0.06

Source: Bank Indonesia weekly report,various issues 1980-1989.

Many Chinese-owned firms have close links with banks and financiers in Singapore and Hong Kong which allows them to borrow at competitive market rates using "reputation", rather than collateralizable assets, as collateral. While, firms owned by indigenous Indonesians (pribumi) generally lack access to such off-shore credit, many of the larger ones received preferential terms from state-owned banks. There is insufficient data to quantify the relative share of ownership held by indigenous persons and those of Chinese origin, but it is widely believed in Indonesia that Chinese-owned private capital had increasingly developed its dominance of the private sector during the period of controls and has been able to futher capitalize on its established base under deregulation. (Mackie and Sjharir (1989), Soesastro and Drysdale (1990).)

Firms producing goods for export are also treated differently. Prior to the 1983 banking deregulation, there were generous schemes for export credits carrying highly subsidized interest-rates, which were extended through 1989. In

addition, exporting firms found it relatively easy to borrow either offshore or domestically in US-dollar-denominated loans. Since their revenue was in US dollars, they were relatively insulated from the risk of exchange rate fluctuations.[2]

Private firms generally differ from public enterprises with respect to access to domestic finance. Before 1983, public enterprises had ready access to funds including a whole package of incentives such as increased government equity, subsidized interest-rates on loans, as well as two-stage loans from foreign donors carrying a high grant component.[3]

As far as private firms are concerned, many Indonesian Chinese firms and some of the big Indonesian firms were affiliated with, or belonged to, conglomerate groups which combine ownership of manufacturing establishments, trading companies, and banks. Most interesting from the point of view of this study is the role these groups play in reducing the financial constraints of the member firms. Establishments owned by a group usually receive loans on favourable terms from the bank owned by the group in addition to equity financing from the parent company. Certainly this close relationship not only gives ready access to finance but also mitigates information and incentive problems that typically arise in the presence of asymmetric information.

It is worth noting that most of the conglomerates in Indonesia belong to entrepreneurs of Chinese origin and have risen to prominence in industry as a result of a complex variety of factors. One was (and is) the company's attractiveness to foreign manufacturers as a reliable and efficient domestic partner which has given rise to establishment of numerous joint-venture subsidiaries. But corporate efficiency is not the only reason for their attractiveness to foreign partners. In addition to satisfying local-participation requirements, that were relaxed partly in 1986, potential local

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[2]Although Indonesian banks accepted deposits denominated in US$, they were reluctant to make domestic loans in US$ and generally held corresponding low-risk foreign assets. Their reluctance to lend in US$ against exporters anticipated revenues is difficult to understand in relation to experience elsewhere with open capital accounts - Edwards & Edwards (1991) analyze the Chilean experience. However, there was considerable change after 1989 as banks became more aggressively competitive but that follows the period being analyzed in this paper.

[3]Two-step loans are extended by donors to the Government of Indonesia for the purpose of on-lending for specified purposes (e.g. World Bank loans for small-scale industry credits). A number of such loans were specifically negotiated for expansion of public enterprises.

partners must first possess the capacity to obtain favorable domestic arrangements such as sole-agency contracts for supply to the government or monopoloy-importer licenses which places a premium on political connections in a situation in which access to licenses and contracts are so important (Robison, 1986). The second factor has been access to finance. As suggested above, most of the Chinese-owned conglomerates were also able to gain access to networks of credit which extended from Hong Kong to Singapore among the overseas Chinese. However, one should not neglect the fact that once in a joint venture - typically with big Japanese firms, and later with Korean and Taiwanese firms, - finance became a lesser problem. Prior to the 1983 deregulation, the magnitude of the funds mobilized in this way was well beyond the scope of the underdeveloped domestic capital-market. The amount of the unswapped foreign loans flowing through these channels far exceeded the value loans taking advantage of the swap facility provided by the central bank.

Although, small independent firms frequently find themselves rationed out of the formal credit market, they may still have access to other more costly sources of funds, such as suppliers credit and informal 'curb' markets. Even in the informal markets there are significant differences in access. For example, small non-Chinese firms are likely to face interest-rates as high as 60% per year from money lenders, while small Chinese-owned firms are more able to borrow from informal credit markets in a transaction known as "bon-putih" or literally "a piece of white note-pad". These carry significantly lower rates than the other curb market rates and are secured only by reputation. In fact, defaults are rare in this market, since the Chinese business community is very tightly knit and loss of reputation is a severe punishment and the threat of boycott is a credible enforcement mechanism.

Summarizing, there are profound differences among Indonesian firms in terms of their access to credit markets. The differences are not only in loan duration and interest-rates, but also in different currencies having different exchange rate sensitivities. Some of them (in particular small, non-Chinese, independent, and young firms) are likely also to face severe information problems and lack of political connections. This limits their ability to obtain funds from the formal credit markets (domestic or foreign), and forces them either to rely on internal finance or to raise funds from the informal markets. Other firms, in particular those which belong to conglomerates, large Chinese

firms, joint ventures with foreigners, and public enterprises are likely to have privileged access to the domestic credit market combined with the ability to borrow offshore. The differential access to, and cost of, external finance for different categories of firms is likely to have a profound effect on their investment choices.

III. ECONOMIC AND FINANCIAL DEVELOPMENTS: EVIDENCE FROM AN INDONESIAN PANEL OF MANUFACTURING ESTABLISHMENTS, 1981-1988

1. THE DATA AND SUMMARY STATISTICS

In this section we will focus on the evolution of the real and financial characteristics of a panel of Indonesian establishments for the 1981 to 1988 period.[4] The panel has been constructed by taking advantage of information from two main sources. The first source is the annual survey of manufacturing establishments conducted by the Central Bureau of Statistics since 1975, including financial data available only after 1981. The second source is the Census of Manufacturing Industry conducted in 1986 which contains a measure of the replacement value of the capital stock and a break down of sales between exports and sales in the domestic markets, data which are not available from the annual surveys.

After checking for the consistency of the data throughout the whole sample period, deleting establishments that have non-positive capital stock or value-added, and omitting outliers, we ended up with 1061 establishments that have at

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[4]The fact that our data are based on establishments presents a problem that we have been unable to overcome fully. Most of the analysis of credit market segmentation applies to firms. When firms own or control multiple establishments, the unit for which debt and interest payments is reported is arbitrary. This certainly applies to the establishment which we have identified as belonging to conglomerate groups. We believe that most of the establishments that we identify as non-conglomerate are single establishment firms and, if so, there should be no confusion on this account. However, it is possible that many are in fact units of family enterprises that may also be engaged in non-manufacturing activities. We have no way of controlling for this possibility.

Another feature to be kept in mind is that our sample is restricted to establishments that were in existence prior to 1981 and which experienced steady expansion. Thus we fail to identify financing for new start-up establishments. This may be particularly important for conglomerate groups which, having the requisite management structure, can readily expand via creation of new establishments as easily as by expansion of existing ones.

least three sequential year with positive investment. This preliminary report will be based on a balanced panel of 218 establishments, each of which has complete data and positive investment levels for all eight years. Detailed description of the selections of establishments and on the methods used for construction of variables is provided in Appendix I.

The key summary statistics for our balanced sample of 218 establishments are given in Tables 5 through 10.[5] These tables show the data for the entire sample as well as for sub-samples chosen according to size of the firm, status (conglomerate and non-conglomerate), and market (export or domestic). The size sub-samples were obtained by classifying firms into three categories according to the number of workers. The establishment is classified as small if the number of workers at the first year of observation was less than 100, medium if the number of workers was between 100 and 500, and large if the number of workers was greater than 500.[6] Furthermore, the establishments were also classified into conglomerate and non-conglomerate categories. Establishments that belong to a group of firms engaged in different types of activities are classified as conglomerates. The third categorization is by whether or not the establishment directly exported any of its output in 1985.

In order to see the effect of the 1983 financial liberalization on individual-establishment behavior, the sample period was also divided into two sub-periods: pre (1981-1984) and post (1985-1988) liberalization. The year 1984

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[5]These summary statistics are based on the selected sample of 218 establishments. There are several potential problems with these data that arise in various ways from sample-selection bias. The most important selection criteria, based on econometric requirements for estimation using balanced panel data, was that each of the establishments have positive investment levels in every period. Thus, establishments with data only for a subset of the years, or which carried out no investment in some years, are entirely excluded. There is, of course, reason to believe that establishments that do not expand in some periods are less profitable, or are more constrained in access to credit than are the others. In other analysis we have identified that such systematic variation exists. However, the comparable summary statistics including all 1,061 establishments, do not tell a substantively different story and further research is in progress that uses the more complete data set. Therefore, we prefer to present the summary data only for the establishments included in the later econometric work reported in this paper.

[6]We checked the change in number of workers for each establishments over the sample period, and found that only a few establishments reduced or increased their number of workers sufficiently to move them to a different size category. Therefore we decided to use the first-year number of workers for categorization.

was chosen as a cut-off to allow for the 1983 liberalization to take effect. In Tables 5 and 6 we report the investment rates (I/K); the ratio of gross cash flow prior to taxes (gross operating surplus) to capital (S/K); the ratio of gross profits (gross operating surplus net of interest payments) relative to capital (P/K); the ratio of gross cash flow to own equity measured as value of capital stock minus debt (S/EQ); the leverage ratio (D/K); and the output to capital ratio (Y/K). We also show the ratio between interest payments and total debt (excluding trade debt) as a measure of the average cost of borrowed funds for each establishment. The variations in this ratio should reflect in part differential access to types of external finance.

TABLE 5: SUMMARY STATISTICS FOR FIRMS DIVIDED BY SIZE & PERIOD
1981-1984 and 1985-1988

Size	Number of Firms	Period	I/K	S/K	P/K	S/Eq	D/K	i/D	Y/K
All Firms	218	81-84	0.098	0.416	0.519	0.775	0.463	0.171	1.534
		85-88	0.099	0.497	0.593	0.969	0.483	0.192	1.993
Small	46	81-84	0.070	0.193	0.227	0.215	0.103	0.263	0.900
		85-88	0.083	0.433	0.508	0.543	0.202	0.328	1.838
Medium	100	81-84	0.137	0.597	0.733	2.132	0.720	0.167	2.317
		85-88	0.118	0.633	0.763	1.783	0.645	0.178	2.563
Large	72	81-84	0.063	0.307	0.343	0.463	0.337	0.093	0.853
		85-88	0.065	0.350	0.410	0.623	0.438	0.125	1.300

S = operating surplus (after interest, before tax and depreciation)
K = capital stock (land, building, machineries, equipments & others), at replacement value
P = operating surplus before interest
Eq = capital stock minus debt
I = gross physical investment
VA = value-added
W = total wage bill
Y = total sales
i = interest payment
D = stock of debt, not including trade credit

The manufacturing sector in Indonesia was deeply affected by the 1983 deregulation along with the other structural reforms that were gradually implemented afterwards. The abolition of credit ceilings, the curtailment of liquidity credits, and the elimination of most interest-rate controls, had different effects on establishments depending upon their size as shown in Table 5.

Overall, the financial reforms appear to have increased both the average interest-rates and leverage ratios of small firms quite dramatically and, to a much smaller extent, for the large firms. Medium firms, which were already the most highly leveraged, experienced a small increase in interest-rates and decreased levels of leverage. As one would expect, given the institutional structure of Indonesian manufacturing, conditions of access to credit vary considerably across these size classes. The interest-rates were highest for small firms and lowest for large firms both pre and post-liberalization, but the spread between these rates increased after the reforms. On the other hand, the small firms had the lowest levels of leverage throughout the entire period, but the differences narrowed after the reforms. At the same time, the rate of investment (I/K) increased for the small firms after reform while it fell slightly for medium firms and rose only marginally for the large firms. This picture is not inconsistent with one of small firms (less well connected) experiencing increased access to credit after reforms albeit at higher interest-rates, a result predicted by the conventional literature on financial repression and reform. (Fry, 1988, Chs 12-17).

The measure of total returns to capital (P/K) show a pre-liberalization pattern of highest returns for medium sized firms and the lowest returns to small firms. After the reforms, there were dramatic increases in (P/K) for small firms, a modest rise for large firms, and a small decline for the medium firms. After the changes, the medium-size firms continue to have the highest levels of returns but there was convergence among these rates with small firms experiencing rates that, on average, surpassed those of large firms. These should be thought of as measures of the relative productivity of assets employed. In order to translate these measures into real rates of return, they have to be adjusted for corporate taxes paid and real deprecition. Since the level of effective corporate taxation has been relatively low, and real depreciation rates are likely to be fairly similar across size classes of firms, the patterns of relative returns to assets appear to be fairly robust

to alternative assumptions.[7]

Table 5 graphically portrays the benefits accruing to firms that were able to obtain high leverage through debt. The measure of return to owned assets is S/EQ. The numerator of this ratio is gross cash flow (operating surplus) which is measured net of interest payments (again including depreciation and corporate taxes). This is profit accruing to firms after they have serviced debt and is therefore the returns to their own equity. The denominator, EQ is the value of the capital stock less debt which is the definition of own equity. Since the returns to capital are all considerably higher than interest-rates (even after reforms), the most highly leveraged establishments appear to be very profitable indeed which accords with individual entrepreneurs' statements that they consider only projects with payback periods of less than two and a half years.[8] Note particularly the increase of S/EQ for small firms from .22 to .54 after liberalization when they appear to have borrowed substantially larger amounts at substantially higher interest-rates. The level of S/EQ is extremely high for medium firms and fell marginally from 2.13 to 1.78 which was explained primarily by their decline in leverage ratios. These data suggest that access to credit is more important for previously-constrained firms than are the interest-rate levels per se. Also, the increased ratios of S/K, particularly for small firms, demonstrates that the increased rates of profitability substantially increased the capacity of firms to expand investment though self financing.

If the sample is divided further between establishments that belong to a conglomerate and those that do not, then more striking results appear in Table 6. None of the small establishments belong to conglomerates so it is not useful to try to distinguish among them. The pattern of high profitability and high leverage among medium establishments is very similar whether or not the establishments are members of conglomerate groups. However, among large establishments, there are striking differences between conglomerate and non-conglomerate

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[7]Accounting measures of depreciation, which are available only for 1985 need bear little, if any, relationship to real economic depreciation. While we have used estimated rates of depreciation in constructing the series for capital (K), there is insufficient systematic differences in capital structure across establishment categories to modify our conclusions. In interpreting (P/K) ratios, one might guess real depreciation to be in the range of 15-20 percent and corporate taxes paid to be in the range of 0-15 percent.

[8]Interviews by J. R. Harris and World Bank Staff with selected industrial establishments in Jakarta in July 1988 and by M. Siregar in 1991.

members. The conglomerates face lower interest-rates which we conjecture arose partly as a result of preferential access to priority credits in the pre-reform period and partly as a result of better access to cheaper offshore borrowing in the later period. They also have much higher rates of leverage and higher returns to assets. As a result, their return to equity is approximately six times as high (3.2 vs. .51 in the recent period) as for the non conglomerate establishments. As the figures indicate, the highest increases in post-reform return to capital were experienced by the small firms and large conglomerates although all medium firms continued to enjoy the highest absolute returns. These differences among large firms are also reflected in the differential rates of capital expansion through investment which quite closely parallels the rates of profitability. It is worth noting that these results are robust to the denominator chosen (capital or own equity).

Before 1984, small establishments - those that we hypothesize were more likely to face financial constraints - indeed had leverage ratios (defined as the ratio of stock of debt to stock of capital) much lower than did the medium and large firms. Small firms are characterized by relatively volatile earnings as well as a lack of access to formal credit markets, and therefore are likely to pay higher interest-rates in financially repressed economies.[9] This hypotheses is confirmed for the small firms in the sample which have the highest average nominal cost of debt, defined as total interest payment divided by the stock of debt. The large cost of debt (0.26) compare to the average bank lending rate (0.17) is probably the sign of the high share credit obtained in the informal credit markets.

What happened after 1984? The data indicate that the elimination of controls on many types of interest-rates had indeed increased the average cost of debt, as many other empirical studies have found. Small firms suffered most, followed by the large firm, then the medium firms which experienced the smallest increase. What is most striking is that, despite the increase in interest-rate, small firms have been able to nearly double their leverage from .103 to .202. This may suggest that small firms were more rationed before liberalization. Medium firms did not experience a large increase in the cost

[9]This reflects the conventional wisdom - e.g. Fry (1988). We have not yet analyzed systematically the volatility of earnings in this sample but intend to in future research.

of borrowing but had to reduce their leverage from 0.720 to 0.645, while large firms still increased their degree of leverage from 0.337 to 0.438. Reduction of the availability of subsidized credits and changes in swap policy were plausibly the main reasons for the decrease of leverage of medium firms, as will be discussed later.

TABLE 6: SUMMARY STATISTICS FOR FIRMS DIVIDED BY SIZE, PERIOD AND GROUP: 1981-1988

Group	Size	Number of Firms	Period	I/K	S/K	P/K	S/Eq	D/K	i/D	Y/K
Non-Conglom										
	Small	46	81-84	0.070	0.193	0.227	0.215	0.103	0.263	0.900
			85-88	0.082	0.432	0.508	0.543	0.203	0.328	1.838
	Medium	88	81-84	0.137	0.593	0.727	1.977	0.700	0.170	2.523
			85-88	0.118	0.630	0.763	1.775	0.645	0.183	2.673
	Large	61	81-84	0.060	0.278	0.313	0.403	0.310	0.130	0.757
			85-88	0.065	0.305	0.355	0.510	0.402	0.168	1.123
Conglomerate										
	Medium	12	81-84	0.143	0.610	0.750	2.864	0.787	0.160	1.587
			85-88	0.105	0.650	0.780	1.395	0.534	0.178	2.125
	Large	11	81-84	0.080	0.557	0.653	1.653	0.663	0.090	1.917
			85-88	0.078	0.758	0.830	2.800	0.765	0.118	2.945

S = operating surplus (after interest, before tax and depreciation)
K = capital stock (land, building, machineries, equipments & others), at replacement value
P = operating surplus before interest
Eq = capital stock minus stock of debt
I = gross physical investment
VA = value-added
Y = total sales
i = interest payment
D = stock of debt, not including trade credit

By further dividing the establishments into conglomerate and non-conglomerate, we can obtain a clearer picture of the nature of the changes. As emphasized in Hoshi et. al (1988), one way to mitigate informational problems is through grouping of firms, such as Keiretsu in Japan. And if the group owns or has a special network including a bank, then this will tend to reduce the wedge between the costs of internal and external finance. As a consequence

large establishments which are part of conglomerates tend to have much higher debt-to -equity and debt-to-capital ratios than do unaffiliated large establishments. Several studies of the Indonesian Economy (Nasution (1982), Ramli(1988)) have indeed found that the low interest-rates and generous credit policies prior to 1983 made Indonesian companies in general have very high debt/equity ratios. We find that this is particularly true for all medium establishments and large ones belonging to conglomerates.

TABLE 7: SUMMARY STATISTICS FOR FIRMS DIVIDED BY MARKET, SIZE & PERIOD: 1981-1988

MARKET	Size	Number of Firms	Period	I/K	S/K	P/K	S/Eq	D/K	i/D	K/VA
Non-Export										
	Small	43	81-84	0.061	0.183	0.213	0.197	0.073	0.290	3.030
			85-88	0.078	0.378	0.445	0.454	0.168	0.338	1.700
	Medium	76	81-84	0.140	0.640	0.787	2.490	0.743	0.160	1.393
			85-88	0.118	0.615	0.755	2.085	0.705	0.170	1.323
	Large	46	81-84	0.070	0.387	0.420	0.539	0.283	0.163	2.067
			85-88	0.068	0.445	0.493	0.683	0.348	0.160	1.673
Export										
	Small	12	81-84	0.110	0.560	0.683	0.757	0.260	0.167	1.750
			85-88	0.100	0.650	0.750	1.022	0.334	0.270	0.585
	Medium	14	81-84	0.110	0.460	0.560	0.885	0.533	0.177	1.817
			85-88	0.145	0.690	0.800	1.650	0.448	0.210	1.163
	Large	26	81-84	0.053	0.253	0.300	0.442	0.427	0.077	3.573
			85-88	0.063	0.290	0.370	0.690	0.580	0.113	2.710

Note: Export refers to establishments that produce for export markets.
S = operating surplus (after interest, before tax and depreciation)
P = operating surplus plus interest
Eq = capital stock - stock of debt
K = capital stock (land, building, machineries, equipments & others), at replacement value
I = gross physical investment
VA = value-added
i = interest payment
D = stock of debt, not including trade credit

Not all of these changes in profitability of assets, borrowing, and investment rates can be attributed solely to the program of financial reform.

As was pointed out in previous sections, much of the impetus for the entire package of reforms was to increase incentives for non-oil exports. These measures included exchange-rate realignments, special categories (and interest-rates) for export credits, trade reforms, and changed administrative procedures for customs and ports. Therefore, it is useful to further categorize the establishments in our sample by export orientation and size. This is done in Table 7 which reports the same measures that appeared in Tables 5 and 6.

Among small establishments there is a dramatic difference between exporters and non-exporters. In both periods, the exporters faced lower interest-rates, achieved higher leverage ratios, and had much higher returns to assets. The result is that return to own equity is quite high (0.757 pre reform rising to 1.022 post reform while the comparable figures for non-exporters are .20 rising to .45). On the other hand, among large establishments, the lower interest-rates and higher leverage do not translate into higher returns to own equity because of the considerably lower returns to capital for these units. Although both types of establishments experienced higher interest-rates, leverage ratios, and returns to capital after the reforms, the domestically-oriented units continued to be more profitable by either measure.

Among medium establishments, the domestically-oriented units perfomed much better prior to reforms while the exporters improved their absolute and relative profitability after the reforms. Both groups faced higher interest-rates after reform and reduced their leverage ratios. Profitability of the units serving the domestic market decreased only slightly (from very high levels) while the exporters experienced the most rapid increase in profitability after the reforms (P/K rose from .56 to .80 while while S/EQ almost doubled from 0.88 to 1.65). Clearly, the changes in fortunes of these exporting firms owed more to the reforms, which substantially increased the relative profitability of exporting, than to the financial reforms per se. The aggregate data on non-oil export expansion confirms the response of Indonesian industry, particularly after 1988. (Parker (1991) pp 12-14 and Hill (1990)). The small exporting establishments, which performed so well, seem to have continued to enjoy greater access to credit at lower rates than did non-exporters in both periods although it can be argued that increased access to

credit at higher rates probably allowed previously-constrained small exporters to expand and increase their profitability.

2. THE DISTRIBUTION OF DEBT AND PRODUCTION

Finally, it is interesting to see how the liberalization affected the distribution of debt across different types of firms in our sample and how the production was affected by the changing financial conditions. Tables 8, 9 and 10 provide data on establishments' shares of the stock of debt, new debt and value-added. The tables also show the different shares of the stock of domestic and foreign deot across different groups classified according to size, organizational, and market orientation both pre and post-liberalization. In organization, these tables parallel tables 5-7.

TABLE 8: SHARE OF DEBT AND VALUE-ADDED
By Size & Period

Size	Number of Firms	Period	TDi/TD	NDi/ND	VAi/VA	DDi/DD	FDi/FD
Small	46	81-84	0.009	0.013	0.014	0.008	0.001
		85-88	0.014	0.026	0.022	0.015	0.001
Medium	100	81-84	0.395	0.569	0.249	0.383	0.456
		85-88	0.356	0.426	0.293	0.325	0.386
Large	72	81-84	0.596	0.418	0.737	0.609	0.543
		85-88	0.630	0.548	0.685	0.660	0.613

Note:
TDi/TD = share of total debt of firms of size i to total debt for the period
NDi/ND = share of new debt of firms of size i to total new debt of the period
VAi/VA = share of value-added of firms of size i to total value-added for the period
DDi/DD = share of domestic debt of firms of size i to total domestic debt
FDi/FD = share of foreign debt of firms of size i to total foreign debt

Column 1 of Table 8 gives a striking picture of how concentrated the credit distribution is in Indonesia. Large firms represent one third of the sample, and yet around two-thirds of the credit was chanelled to them. However this is

quite misleading and it would be more appropriate to compare shares of credit with shares of value-added. In comparing columns 1 and 3 of the table, it is evident that in the prereform period both small and large firms received smaller shares of credit relative to their value-added than did medium firms. After reform, there was a relative decline in the proportions going to medium firms while both small and large increased their relative shares. However, it may be more revealing to examine the relationship between new flows of debt and value-added in the two periods. Again, the relative increases by large establishments at the expense of medium ones is clear, while the ratios between value-added and new debt remain close to unity. It is also evident that large firms disproportionately gained access to offshore credit in the post-liberalization period as might have been expected, and it is clear that small establishments have virtually no access to offshore credits.

TABLE 9: SHARE OF DEBT AND VALUE-ADDED
By Size, Conglomerate & Period

Size	Group	Number of Firms	Period	TDi/TD	NDi/ND	VAi/VA	DDi/DD	FDi/FD
Small	Non-Congl	46	81-84	0.009	0.013	0.014	0.008	0.001
			85-88	0.014	0.026	0.022	0.015	0.001
Medium	Non-Congl	88	81-84	0.306	0.319	0.197	0.274	0.360
			85-88	0.270	0.270	0.128	0.226	0.232
	Conglomerate	12	81-84	0.089	0.250	0.052	0.109	0.096
			85-88	0.086	0.156	0.165	0.099	0.154
Large	Non-Congl	61	81-84	0.443	0.210	0.629	0.394	0.365
			85-88	0.478	0.280	0.449	0.417	0.308
	Conglomerate	11	81-84	0.153	0.208	0.107	0.215	0.178
			85-88	0.152	0.268	0.236	0.243	0.305

Note:
TDi/TD = share of total debt of firms of size i to total debt for the period
NDi/ND = share of new debt of firms of size i to total new debt of the period
VAi/VA = share of value-added of firms of size i to total value-added for the period
DDi/DD = share of domestic debt of firms of size i to total domestic debt
FDi/FD = share of foreign debt of firms of size i to total foreign debt

Did these patterns apply both to the non-conglomerate and conglomerate establishments? Table 9 reveals striking differences. Since there are no conglomerate small establishments, the relevant differences are within the medium and large categories. The most dramatic data in this table concern the large shift of share of value-added from large non-conglomerates to medium conglomerate establishments. The increase is from 5.2% to 16.5% for medium conglomerates while large non-conglomerates exhibited a decline from 62.9% to 44.9%. At the same time, the share of new debt flowing to medium conglomerates fell from 25% to 15.6% while both categories of large establishments increased

TABLE 10: SHARE OF DEBT AND VALUE-ADDED
By Size, Market & Period

Size	Market	Number of Firms	Period	TDi/TD	NDi/ND	VAi/VA	DDi/DD	FDi/FD
Small	Non-Export	43	81-84	0.006	0.009	0.012	0.007	0.000
			85-88	0.012	0.015	0.014	0.009	0.000
	Export	12	81-84	0.003	0.004	0.002	0.001	0.001
			85-88	0.002	0.011	0.008	0.006	0.001
Medium	Non-Export	76	81-84	0.330	0.468	0.187	0.176	0.120
			85-88	0.290	0.308	0.206	0.126	0.039
	Export	14	81-84	0.065	0.101	0.062	0.207	0.336
			85-88	0.066	0.118	0.087	0.199	0.347
Large	Non-Export	46	81-84	0.243	0.107	0.367	0.287	0.263
			85-88	0.203	0.172	0.349	0.255	0.271
	Export	26	81-84	0.353	0.311	0.370	0.322	0.280
			85-88	0.427	0.375	0.336	0.405	0.342

Note:
TDi/TD = share of total debt of firms of size i to total debt for the period
NDi/ND = share of new debt of firms of size i to total new debt of the period
VAi/VA = share of value-added of firms of size i to total value-added for the period
DDi/DD = share of domestic debt of firms of size i to total domestic debt
FDi/FD = share of foreign debt of firms of size i to total foreign debt

their shares. Looking back at Table 7, it is curious that the medium conglomerates actually reduced their proportional investment rates. Certainly,

their high and expanded profit and cash flow rates, allowed them to expand while reducing their leverage ratios through self financing.

Another feature that is surprising is the much smaller participation of conglomerates in off-shore borrowing despite the increasing cost advantage of doing so. One possible reason for this apparent anomaly may be that borrowing, both domestic and abroad, is done by the conglomerate group and is not reported as debt incurred by the individual establishment. Therefore, the transfer of such borrowed funds to the operating units may be disguised as self finance, but further research is needed to understand better these changing patterns of finance at the level of the firms rather than the establishment.

Table 10 contains the same data organized by size of firm and export orientation. The most surprising feature is the small increase in the share of value-added contributed by medium exporters — it rose only from 6.2% to 7.7% between the periods. In fact there was a slight overall decline in the share of value-added by exporters from 43.4% to 43.1% between these periods. (The share of exporters must certainly have increased sharply after 1988, but unfortunately our data do not yet extend that far. Parker (1991)). The relatively constant ratios of new debt to value-added of exporters is fairly striking while the dominant allocation of new debt to medium non-exporters pre-liberalization and its relative decline in the later period is of interest. Finally, as one might expect, the ratio between foreign-borrowing and value-added is high for the exporting firms, although the ratio is also relatively high for the large non-exporters.

These tables shed more detailed light on the patterns of credit-allocation among establishments with different characteristics, but in general are consistent with the observations we obtained from the first set of tables.

Up to this point, the analysis on real and financial indicators for our panel of manufacturing establishments can be summarized as follows. For small establishments, the economic reform had a positive effect on their overall performance. And indeed, liberalization has helped to redistribute credit toward small firms. Moreover, some firms benefited by substituting the more expensive domestic credit with cheaper foreign credit (sometimes using the swap facility). These are the firms which were unlikely to face informational asymmetries, namely large conglomerates that own banks and enjoy direct relations with the off-shore Singapore or Hongkong credit markets. Medium firms may have been severely affected by the liberalization, and so their share of new debt

decreased. However, one must be cautious about this conclusion. Medium firms were already highly leveraged and were enjoying large cash flows in the later period. It may also have been rational decisions by entrepreneurs to reduce the risk of high leverage although the evidence is incontrovertible that returns to own equity were extremely high as a result of leverage. The interplay between bank's prudential behavior and the demands for credit by highly profitable and rapidly-expanding medium-sized firms cannot be fully analyzed at this point. However, that is the set of questions we will turn to in the econometric sections of this paper.

However, the investment data suggests that both small and large conglomerate establishments - those which increased their share of debt - were able to increase their investment rates. On the other hand, the reduction of medium firms' share of debt has been accompanied by a reduction in their investment rate despite their absolutely high rates of return. Medium establishments were also the ones which showed little improvement of their average capital productivity, while the other firms nearly doubled theirs, albeit from much lower initial levels. Therefore, in the post-liberalization period, there was a process of convergence of productivity levels among the various categories of establishments, a feature that may suggest increasing economy-wide efficiency (Cho, 1988).

IV. EFFECTS OF FINANCIAL LIBERALIZATION:

A Preliminary econometric analysis

Our basic theoretical view is that Indonesian manufacturing establishments increase their capital stock through investment in response to potential profit-earning opportunities. Desired investment can be financed in a number of ways, with borrowing from credit markets and retention of cash flow (internal finance) the two most important sources for expansion of existing firms. If capital-markets are perfect and taxes are absent, firms finance investment to the point that the marginal cost (or opportunity cost) of finance is equalized from all sources and are in turn equated with the expected marginal return to investment. In such a world, only the constant marginal cost of funds and rate of return to investment are important for the investment decision and the former should be closely related to the risk-free market interest-rate.

However, even in perfect markets, there will be constraints to borrowing as a result of asymetric information, monitoring costs, and potential moral hazard, which make fixed-interest-rate lenders willing to lend a higher proportion of the costs of proposed investments only at increasing interest in order premia to compensate for increased risk. This is referred to in the literature as agency costs. Therefore, we expect there to be increasing divergence between average and marginal interest-rates for individual borrowers firms as the degree of financial leverage increases.[10]

If markets are segmented, so that some classes of firms have limited access to borrowing, they will be forced to rely on internally-generated funds and may have to forego some desired investment because of financial constraints. In such cases we expect levels of investment to be positively related to measures of cash flow.

In carrying out an empirical investigation of the importance of market segmentation, it is natural to estimate investment levels as determined by expected profitibility, risk-free market rates of interest, and by the degree of financial leverage. The first should have a positive effect and the other two a negative effect on the level of investment. If, in addition, a measure of cash flow has a positive effect on investment, it suggests the existence of constrained access to credit markets — otherwise firms would borrow as much as needed to maximize profits and cash flow would not be constraining. However, there is one major problem with this approach in that current cash flow is highly correlated with current profit rates which in turn are likely to be positively associated with expected future profits. Thus it is difficult to disentangle the effects of liquidity constraints on investment from those arising from anticipated profits.

We conduct our empirical analysis by estimating an unrestricted investment equation of the general accelerator type, to which we have added cash flow, S_t/K_{t-1}, and the leverage ratio, D_{t-1}/K_{t-1}, as additional regressors.

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[10]This view is consistent with the framework articulated by (Gertler and Rose, 1991).

The general specification for our regression equation is:

$$(1)\quad I_{i,t}/K_{i,t-1} = \alpha_0 + \alpha_1 (I_{i,t-1}/K_{i,t-2}) + \alpha_2 (\Delta Y_{i,t}/K_{i,t-1}) + \alpha_3 (S_{i,t}/K_{i,t-1}) + \alpha_4 (D_{i,t-1}/K_{i,t-1}) + \nu_t$$

$$\text{where } \nu_{i,t} = \xi_{i,t} + \lambda_i + \eta_t$$

λ_i is a time invariant firm specific effect and η_t is a common time effect. The equations have been estimated in first differences in order to control for the firm specific effects and the Generalized Method of moments has been used to allow for the potential endogeneity of the regressors (See Arellano and Bond, 1991).[11] Appropriately lagged values of the included variables are used as instruments (see Table 11 footnotes). The inclusion of the output term is meant to capture the expected change in demand for the firm's product. Cash flow acts as a measure of a firm's liquidity and of its ability to finance investment internally. The debt-to-capital ratio is included because it is likely that the cost of outside finance is positively correlated with the degree of leverage, an effect referred to in the literature as "agency cost." The equation was initially estimated for the whole sample of 218 firms, assuming that the slope coefficients are the same for all firms. We have also included year and industry dummies. The year dummies might capture, among other factors, changes in the risk free interest-rate.

In an attempt to investigate the effects of differential access to external finance, we then allow the slope coefficients on cash flow and the debt-to-capital ratio to differ across groups of firms with different characteristics (small and large firms, for the time being).[12] In order to examine the effects of liberalization we also allow the coefficients to differ before and after liberalization. The results of several regressions are presented in Table 11 below.

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[11]The program DPD (dynamic panel data) has been used in the estimation (see Arellano and Bond, 1988). It is important to note that by using this procedure, effects of changes in the basic risk-free interest rate are captured, along with all other variables that vary over time in the same way for all firms, by the year-specific dummy variables.

[12]See Fazzari et.al (1988), Devereux and Schiantarelli (1989), Hoshi (1989) et.al, and Blundell et.al, for evidence on the differential affect of cash flow in developed countries; and Tybout (1988) and Nabi (1983) for the same evidence from developing countries.

Table 11 : INVESTMENT EQUATION
Size,Group and liberalization effects

Dependent Variable: I_t/K_{t-1}	Equation 1	Equation 2	Equation 3	Equation 4
I_{t-1}/K_{t-2}	- 0.018	0.018	0.017	0.002
	(2.171)	(2.295)	(2.082)	(1.214)
$\Delta Y_t/K_{t-1}$	0.059	0.021	0.055	0.086
	(2.361)	(1.589)	(3.973)	(4.684)
S_t/K_{t-1}	0.132			
	(2.366)			
D_{t-1}/K_{t-1}	0.156			
	(5.182)			
S_t/K_{t-1} small		0.519	0.897	0.858
		(3.212)	(4.542)	(3.697)
$DumS_t/K_{t-1}$ small			- 0.508	-0.406
			(2.361)	(2.539)
S_t/K_{t-1} large		0.013	0.075	0.057
		(3.586)	(1.792)	(1.850)
$DumS_t/K_{t-1}$ large			- 0.012	0.039
			(0.286)	(2.830)
D_{t-1}/K_{t-1} small		- 0.018	- 0.204	-0.142
		(1.807)	(2.806)	(1.528)
$DumD_{t-1}/K_{t-1}$ small			0.218	0.091
			(2.727)	(3.583)
D_{t-1}/K_{t-1} large		0.201	0.189	
		(2.706)	(4,758)	
$DumD_{t-1}/K_{t-1}$ large			0.0001	
			(0.009)	
D_{t-1}/K_{t-1} large, non-conglomerate				-0.056
				(2.985)
$DumD_{t-1}/K_{t-1}$ large, non-conglomerate				-0.016
				(1.407)
D_{t-1}/K_{t-1} large & conglomerate				0.258
				(2.202)
$DumD_{t-1}/K_{t-1}$ large & conglomerate				0.018
				(0.436)
M1	- 3.864	- 3.234	- 4.224	- 2.566
M2	- 0.609	- 0.007	- 0.752	- 0.015
Sargan test	32.659	28.075	35.426	56.241
	(23)	(33)	(32)	(48)

1. Instruments: Year dummies 1985 through 1988 (not reported) and constants. Eq 1: gmm(I/K)-*2*,gmm(δY/K)-*2*, gmm(S/K)-*2*,gmm(D/K)-*2*,dumSize-*2*. Eq 2 & 3: gmm(I/K)-*2*,gmm(δY/K)-*2*,gmm(S*s*/K)-*2*,gmm(S*l*/K)-*2*, gmm(D*s*/K)-*2*,gmm(D*l*/K)-*2*,dumSize-*2*. Eq 4: gmm(I/K)-*2*,gmm(δY/K)-*2*,gmm(S*s*/K)-*2*,gmm(D*s*/K)-*2*, gmm(S*l*/K)-*3*,gmm(D*nc*/K)-*2*,gmm(D*c*/K)-*2*,dumSize-*2*,dumCongl-*2*.
2. t-statistics appear in parentheses.
3. M1 = test for first order serial correlation, n(0,1)
4. M2 = test for second order serial correlation, n(0,1)
5. Sargan test, distributed $X^2(p)$

The regression reported in the first column of Table 11 examines whether the cash flow and debt variables have significant effects on investment when the equality of slope coefficients is imposed across firms and over time. The large positive and significant coefficient of the cash flow variable suggests that cash flow strongly affects investment, a result which is consistent with the existence of a financing hierarchy. However the sign of the coefficient on the debt-to-capital ratio is positive, contrary to what one would expect based on agency-cost arguments in the presence of asymmetric information. The source of this positive sign is explored in detail below.

Column 2 of Table 11 presents the estimated equation we obtain if we allow the effect of cash flow and debt to differ between small firms (employment less than 100) and larger firms (employment more than 100).[13] The results support the notion that investment behavior differs substantially across different categories of firms. The small firms appear to rely more on internal funds as shown by the larger and significant cash flow coefficient, a result which is consistent with the view that small firms are liquidity constrained.

The lack of access to credit and a large premium to external finance due to asymmetric information appears to describe well the situation faced by small firms, whose coefficient of the debt-to-capital ratio is negative and significant. The cash flow coefficient for larger firms is small and insignificant, a strong indication that internal funds are less important for larger firms. Note also that the debt-to-capital ratio coefficient is positive and significant for larger firms, contrary to what one would expect. This seems to suggest that for larger firms, having a higher degree of leverage increases their ability to raise external funds. Having obtained debt in the past may act as signal to financial intermediaries of firms' credit worthiness. We discuss this issue in greater detail below.

If we analyze further how firms' behavior has been affected by financial deregulation in 1983, the story becomes even more interesting. Column 3 of table 11 displays the estimates of the effects of financial reform for different categories of firms. The variable of $DumS_t/K_{t-1}$ is zero pre-liberalization and equal to S_t/K_{t-1} post-liberalization. Its coefficient therefore reflects the change in the importance of cash flow relative to the pre-liberalization period.

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[13] We decided to classify the firms in only two size categories because a three way split was making the equation too complex, given the small number of observations in each cell.

The same applies to the $DumD_{t-1}/K_{t-1}$ variable.

Pre-liberalization, the extremely large and positive cash flow coefficient for the small firms supports the hypothesis that they depended more

Table 12 : INVESTMENT EQUATION:
Size,Group and liberalization effects

Dependent Variable: I_t/K_{t-1}	Regression 5
I_{t-1}/K_{t-2}	0.018
	(1.479)
$\Delta Y_t/K_{t-1}$	0.008
	(0.436)
S_t/K_{t-1} small	0.141
	(2.625)
$DumS_t/K_{t-1}$ small	0.074
	(0.507)
S_t/K_{t-1} large	0.003
	(0.078)
$DumS_t/K_{t-1}$ large	0.075
	(3.528)
(P_{t+1}/K_t) small	0.242
	(4.096)
$(DumP_{t+1}/K_t)$ small	0.077
	(0.941)
(P_{t+1}/K_t) large	0.517
	(4.656)
$(DumP_{t+1}/K_t)$ large	-0.192
	(2.196)
D_{t-1}/K_{t-1} small	-0.092
	(2.541)
$DumD_{t-1}/K_{t-1}$ small	0.097
	(1.914)
D_{t-1}/K_{t-1} large	0.165
	(2.336)
$DumD_{t-1}/K_{t-1}$ large	-0.026
	(0.743)
M1	- 2.594
M2	- 1.396
Sargan test	30.464
	(34)

1. List of instruments: constant, gmm(I/K), gmm(δY/K), gmm(S/K)*small*, gmm(S/K)*large*, gmm(D/K)*small*, gmm(D/K)*large*, gmm(P/K)*small*, gmm(P/K)*large*, Size dummies, all lagged twice; and year dummies 1985 through 1988 (not reported).
2. t-statistics appear in parentheses.
3. S = cash-flow net of interest payments
4. P = operating profits
5. M1 = test for first order serial correlation, distributed n(0,1)
6. M2 = test for second order serial correlation, distributed n(0,1)
7. Sargan test, distributed ¿(p)

heavily on internal funds to finance their investment. They were also facing an increasing cost of external funds as their leverage was increasing, as suggested by the negative sign of the leverage coefficient. After liberalization, small firms relaxed their dependence on internal funds. The cash-flow coefficient decreases significantly from 0.897 to 0.389. The coefficient of the debt-to-capital ratio, instead, declines almost to zero for the post-liberalization period. On the other hand, liberalization does not seem to have similar effects on large firms' financing behavior. The coefficient of cash-flow is small and insignificant pre-liberalization and remains so afterwards. The debt-to-capital coefficient is positive and does not change between the two periods for these large establishments.

In order to better undestand why the coefficient on the degree of leverage is positive for larger firms, we allow it to differ between larger firms that belong to a conglomerate group and those which do not (none of the small firms belongs to a conglomerate). In column 4 of Table 11, as we would expect in a world of asymmetric information, the leverage coefficient is negative and significant for larger individual firms. It is, however, positive and significant for larger firms which are parts of conglomerates. It is unclear whether the degree of leverage reported for an individual subsidiary unit of a conglomerate should indeed increase the cost of borrowing since assignment of a particular liability to a specific unit is arbitrary and should be recognized as such by lenders.

One could argue that the cash flow variable captures not only liquidity considerations, but also prospects for future profits. For this reason, in regression 5 in Table 12 we have included as an additional regressor, the future value of operating profits relative to the capital stock, a specification which implicitly assumes that agents hold rational expectations. The equation has again been estimated in first differences, using the GMM method with appropriately lagged values of the variables as instruments. Furthermore, since future profit rates and current cash-flow rates are not perfectely correlated, the specification may allow us to distinguish between the two effects embodied in the cash-flow variable when it is used alone. In this specification, after controlling for future profit, the cash flow variable is more nearly a measure of liquidity and should enter only for firms with constrained access to credit markets. However, since the current cash flow and future profitability variables are significantly positively

correlated, we cannot be too certain about the statistical precision with which the two effects have been disentangled.

Under this specification, it remains true that cash flow is significant only for small firms. However, its coefficient is now smaller (0.141), and it does not change significantly after liberalization. For large firms the coefficient is not significant before liberalization. It become significant afterwards, but it remains rather small (0.078).

The response to future profit is extremely high for large firms in the first period (0.517), but it decreases significantly after reforms. For small firms the coefficient of future profit is approximately half the size (0.242) of the one for large firms, and it increases, although not significantly, after liberalization.In the latter period, the coefficient of future profit for both large and small firms is approximately equal to 0.3.

The substantial variability of these coefficients under alternative specifications, reminds us that these variables are highly collinear and are probably not estimated with utmost precision. Nevertheless, they seem to contain information and are not grossly inconsistent with the findings from the earlier equations. The fact that small firms were less responsive than large firms to future profits in the earlier period , while their behavior is quite similar after reforms, is consistent with relaxation of financial constraints on small firms and reduction in the degree of market segmentation after liberalization.

V. CONCLUSION

What general conclusion can we draw at this stage about the effects of financial liberalization on Indonesian firms? The overall impression one obtains from the analysis of the real and financial indicators for the establishments in our panel is that the economic reforms had a favorable effect on the performance of smaller firms. On the financial side, liberalization has helped to reallocate domestic credit towards small firms to a level roughly proportional with their contribution to value-added. Moreover, other firms were successful in substituting the more expensive domestic credit with cheaper foreign credit, thereby releasing some domestic credit to establishments lacking such access. Although nominal and real

interest rates have risen to very high levels, real returns to capital assets remain high and have increased substantially for small and medium exporting establishments. For all groups, higher rates of financial leverage have given rise to extremely high returns to owned equity. Medium-sized firms, both conglomerate and non conglomerate, have had the higest rates of returns to capital, financial leverage, and returns to equity. However, after liberalization these highly profitable firms suffered a drop in their share of new credits and reduced slightly their rate of investment. However, one must be cautious in inferring causality since the rates of cash flow remained high relative to the rate of investment and it is possible that many of these firms grew through formation of new establishments in addition to expanding existing units.

The econometric results obtained from the estimation of investment equations, also suggest that in the pre-liberalization period small firms were facing capital-market imperfections in the form of liquidity constraints and/or a rising cost of external funds schedule and that such financial constraints were somewhat relaxed after liberalization. The cash-flow variable became less important and the premium on external finance appears to have decreased. When future profits are included as an additional explanatory variable, the coefficient for cash flow decreases in size, as one would expect. However, it remains significant for small firms. Large firms are more responsive to future profits before liberalization, but the response of firms of all sizes becomes quite similar after financial reform.

All these results should be treated with caution and a few caveats are in order. Our sample of firms is not a representative one and care must be taken in extending the conclusion to the entire population of Indonesian manufacturers. Moreover, financial liberalization is an ongoing process that accelerated at the end of the 80's and, given the time dimension of our panel, we are not able to evaluate the effects of these most recent developments. More definite conclusions may be reached when investigators have access to data covering a longer period after the implementation of reform measures of late 1988, but this will have to be left for future research.

However, the conclusions that can be drawn from our preliminary investigation is that financial reforms have had a significant impact on firms' real and financial choices. The process of shifting from administrative allocations of credit towards market-based allocations has

increased borrowing costs, particularly for smaller firms but, at the same time, widened access and finance. The net effect appears to have been positive from the standpoint of investment and rates of profit. These data suggest that the degree of market segmentation has been diminished by reform.

APPENDIX: DATA CONSTRUCTION

1. Data construction.

The data were taken from the Annual Survey on Manufacturing Establishments conducted by the Central Bureau of Statistics since 1975. An additional data set which proved itself very useful because it contained data on capital stocks and exports was the 1986 Census of Manufacturing Establishments. The number of establishments in the annual survey varied from 8300 establishments in 1975 to around 14,000 in 1988, and 5830 establishments with complete capital stock data in the 1986 census.

We have selected a sample of firms from the two sources as follows. Prior to 1981, data on financial sources was not available. For this reason we will only use a sample period which runs from 1981-1988. The 1981-1988 survey data has 4,400 firms with complete data for at least three sequential years of output, and the census data covers 5,430 firms. Merging the 1981-1988 survey with the 1986 census, left 2,229 firms with observations in both data sets. We then constructed capital stock estimates by backcasting and forecasting the capital stocks, using the capital stock from the 1986 data as a benchmark (see below for details). Deleting establishments that had estimated negative or zero capital stocks, we were left with 1992 establishments that were continuously producing output throughout the sample period. Furthermore, we deleted all observations with non-positive figures for investment purchases; and we kept only those firms that have at least three sequential years of positive investment.

# of years	# of observations	# of establishments
3	1614	538
4	408	102
5	325	65
6	486	81
7	182	26
8	1992	249

A very large number of firms report zero investment in many years. We are unable at this time to determine whether reporting of zero investment is in fact a non-response or if it represents a real observation of very low investment. Since there are econometric problems associated with estimating

panel-based investment functions with observations of zero investment, we have chosen for this preliminary analysis to include observations only if the Investment level is positive. By following this practice, we are left with unbalanced panel of 1061 establishments which has the following structure:

2. Capital Stock Construction.

The following explains how we constructed the real capital stock variable based on 1986 prices. We were quite fortunate that the 1986 census data provide the replacement value of capital stock. We then use the data on annual investment purchases, I_t, obtained from the annual survey and use an investment-goods deflator to convert the investment to a real level based on constant 1986 prices. We then calculate the estimated capital stock for the rest of the period using the perpetual inventory method. Our task was simplified because both sources have the data broken-down into five components — land, building, machinery, vehicles and other capital goods. The main advantage of this breakdown is that it enables us to assign different physical depreciation rates to each asset type while constructing the capital stock estimates. The total capital stock datum used in our analysis is the summation of those five variables, net of assets sold during the period, IS_t. For each type of asset, capital stock estimates was constructed by the perpetual inventory method, where:

$$K_{it} = I_{it-1} + (1-\delta_i)*K_{it-1} - IS_{it}$$

where i is the i^{th} type of capital good and t is the time period. In choosing the real depreciation rates to be used, (δ_i), we made use of information from an informal survey we conducted in 1990. On the basis of the information collected we have assumed that buildings depreciate by 0.033 annually, machinery by 0.10, vehicles by 0.20, and other equipments by 0.20. Land was not depreciated. Aggregating across the i types of capital goods. we obtain the establishment-specific capital stock measure $K_t = \sum_i K_{it}$.

This method of back casting and forecasting the capital stock had one important weakness in that it is possible to estimate a negative capital stock value whenever the investment at that particular year is much larger than the previously-estimated capital stock. We have eliminated all firms in which the capital stock estimate becomes negative in any year since that is a physical

impossibility and can arise only from data errors or gross deviation of estimated firm actual physical depreciation rates.

3. Stock of Debt Variable

This preliminary report will only make use of the balanced panel of 249 establishments for the 1981-1988 period. The first step we took to get reasonable sample values, was to check for outliers. We found that some firms reported extremely low or high capital to value-added ratios. We believe that a K/VA ratio of less than 0.30 or more than 6.00 is a sign of misreported or mismeasured Capital or value-added. By only keeping firms with K/VA of 0.30 to 6.00 in the sample, we are left with 218 establishments to work with.

In the construction of the debt variable we have again used the information collected in our 1990 informal survey. This suggested that most of the firms replied to the question concerning the flow of new debt for a certain year, by giving the figure for the stock of debt outstanding, which was in fact easier to find in their balance sheet. Moreover, by checking the debt-to-capital ratio, interest to debt ratio, interest to value-added ratio and capital to value-added ratio, we concluded that indeed it was very likely that most of the establishments provided stock instead of flow measures of debt. Moreover, on the basis of these ratios it was possible to identify firms which in fact provided data on flow of debt in any year. And for these observations we converted this flow data to stock of debt by cumulating the flows.

Finally, approximately 20% of the establishments did not provide the debt figures although they almost always provided data on interest payments. Again from the informal survey we conducted, we found that some multi-plant establishments did not have the debt figures in their book-keeping although they did have the interest payments, mainly because all loans were handled by the head office while the interest payments are charged to establishments. To obtain an estimate of the stock of debt for these establishments, we first had to decide which interest rate should be used to impute the level of debt. Considering that the average annual interest rates range from 5% for priority sector to as high as 45% in the informal credit market, we decided to calculate the median interest rate of firms reporting interest rates within that range, calculated yearly for different sizes of firms. We then use this median rate to impute the debt levels for those years in which the debt figure was missing, but interest payments were reported. Finally, for the firms that

have an interest to debt ratio outside the 0.050 - 0.450 range, we used interest payments and the median rates in their year-size class to impute the debt figure.

4. Number of firms in the unbalanced and balanced panel

After going through all the three steps described above, we are left we a set of 1061 firms in the unbalanced panel with at least three years of complete information, and 218 firms in the balanced panel with eight years of complete data. The following table is presented to show the distribution of the balanced panel across different categories.

NUMBER OF FIRMS BY DIFFERENT CATEGORIES

CATEGORY OF FIRMS	Balanced Panel	
	# of firms	%
1. BY SIZE		
Small	46	20.7
Medium	100	46.1
Large	72	33.2
2. BY GROUP		
Non-Conglomerate	194	89.4
Conglomerate	24	10.6
3. BY AGE		
Young	117	53.9
Old	65	30.0
Very old	36	16.1
4. BY MARKET		
Non-Export	166	76.0
Export	52	24.0
5. BY STATUS		
Domestic	170	78.3
Foreign/Joint Venture	48	21.7
6. BY TYPE		
Private	184	84.3
Public Enterprise	34	15.7

Note:

1. Small (<100 workers), Medium (100-<500workers), Large (>500 workers)
2. Non-conglomerate refers to individual establishments
3. Age refers to year start of production. Young (>1975), Old (1965-1975), Very Old(<1965)
4. Export market refers to firms whose product exported directly
5. Domestic refers to firms with 100% domestic equity, foreign/joint-venture refers to firms with any level of foreign equity participation
6. Private refers to firms with 100% private (non-government) equity, while public enterprise refers to firms with any level of central or regional government equity participation.

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