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The Impacts of Formal and Informal Loans on Small and Medium Enterprises' Performance in Urban Areas, Cambodia

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Abstract

Credit was regarded as a very important factor for the small and medium firms' performance, yet whether the informal finance makes a main contribution to the performance is questionable. This study explored the impacts of formal and informal credit on small and medium enterprises (SMEs) in Phnom Penh. Ordinary least squares (OLS) regression was applied to see the impacts, and its results were reinforced by the borrowers' perception test. The empirical results demonstrated that it is advantageous to get a loan and that a one dollar increase of formal loans raised the revenue by about US$ 0.16, while a one dollar increase of informal loans raised the revenue by US$ 0.88. The difference of the impacts of formal and informal credit rooted in the characteristics of loans of this study. Specifically, the transaction costs of borrowers and the information gap for lenders explained the difference of the impacts.

Key words: formal loans, informal loans, SMEs

1. Introduction

At the high rate of growth and under the fierce competition in the global market, Cambodia has to boost the production of small and medium enterprises to achieve a sustained growth. Currently, the local enterprises need more finance to expand their transaction and production; however, the credit rationing remains the big challenge due to the high transaction costs. This issue concerns the policymakers in Cambodia, and they are working to achieve the financial integration by following the medium- and long-term financial blueprint. According to the "Financial Sector Development Strategy 2006–2015" conducted cooperatively between the Royal Government of Cambodia and the Asian Development Bank (ADB), "the overall objective of the Vision and Financial Sector Development Plan and Financial Sector Development Strategy is to support the development of a sound market-based financial system to support resource mobilization, effective financial resource allocation, and broad-based sustainable economic growth." They define a "sound market-based financial system" as one, which is competitive, efficient, and integrated (formal and informal sectors) (RGC 2006: 4–5).

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In the same blueprint matrix of priorities, one of the immediate priorities (within 3 years between 2006 and 2009) in the banking sector is "bringing moneylenders and changers into the formal regulatory framework, initially through registration and filing requirements." Furthermore, the intermediate and medium term priorities (2009–2012) for microfinance are "to develop a private sector wholesale market for loan financing for microfinance institutions (MFIs) linked to the commercial banking sector, to create links between microfinance market participants and organizations dealing with the destitute, and to develop programs and methodologies for destitute people to graduate into the microfinance market and become non-destitute."

The financial blueprint demonstrates that the government pays much attention to the financial integration of informal financial sector into formal financial sector; however, bringing moneylenders into the formal sector seems to undermine their important roles. This study, therefore, seeks to reveal the significance of the informal loans in Phnom Penh, Cambodia.

2. Background

Based on statistics compiled by the Central Bank of Cambodia, the total credits of the banking sector (commercial and specialized banks) increased from 28% (2004/2005) to 80% (2006/2007) but fell to 7% (2008/2009); meanwhile, the total loans of MFIs increased from more than 75% (2005/2006) to 83% (2007/2008) but decreased to 10% (2008/2009) (BSD 2008: 25–39 and 2009: 26–41). The banking sector's total loans and deposit to GDP (2007) were around 29% and 32% as of December 31, 2008 and both increased to 36% and 52% as of December 31, 2009. Meanwhile, the MFI's total loans and deposit to GDP were only 3.33% and 0.06% as of December 31, 2008, but increased to 4.34% and 0.14% as of the end of 2009 (see Table 1).

Table 1 Assets (TA), Deposits (TD), Loans, and Net Profits (NP) to GDP

	TA/GDP		TD/GDP		Loans/GDP		NP/GDP	
	2008	2009	2008	2009	2008	2009	2008	2009
Commercial Banks	49.47	71.68	31.52	51.58	28.6	35.85	1.44	0.90
Specialized Banks	0.59	0.98	0.01	0.02	0.36	0.66	0.01	0.02
MFIs	4.01	5.32	0.06	0.14	3.33	4.34	0.19	0.17

Source: Compiled by author using data from Banking Supervision Department's Annual Report 2008 and 2009.

As of December 31, 2009, the banking sector's total credit contributed mainly to retail trade (17%), hotels and restaurants (14%), wholesale trade (13%), manufacturing (9%), construction (9%), while transport and storage, utilities, and financial institutions contributed only 1% each. The MFI's total loans contributed to agriculture (43%), trade and commerce (36%), households (7%), and

construction (2%) (BSD, 2009).

There are 32,619 small and medium enterprises in Cambodia in 2007, which is defined in the small and medium enterprise development framework as the following:

- Micro: Less than 10 employees and capital less than US$ 50,000
- Small: Between 11–50 employees and capital between US$ 50,000–250,000
- Medium: Between 51–100 employees and capital between US$ 250,000–500,000
- Large: Over 100 employees and capital over US$ 500,000

Small and medium enterprises in Cambodia consist of six sectors: food, beverages and tobacco (Code: 31); textile, wearing apparel and leather (32); wood products, including furniture (33); paper products, printing and publishing (34); chemicals, petroleum, coal, rubber and plastic (35); non-metallic mineral products (36); manufacture of basic metals (37); fabricated metal products (38); other manufacturing (39). Among all the sectors, food, beverages and tobacco accounts for 80.9%, followed by fabricated metal products: 8.8% and textile, wearing apparel and leather: 4.5%.

Most enterprises are at the rapidly growing stage and in need of more credit. However, the high demand for credit is still rationed due to the banks' traditional transaction (based on collaterals and income) and the high transaction costs. The result of my previous study on SMEs' financing in Cambodia also shows that commercial banks tend to reject the loan request from the enterprises which do not have collateral and income (Ngoun, 2009). To solve this problem, some authors including Seibel (1997, 2006) recommends the linkage between the informal and formal financial sectors so that the transaction costs will be reduced.

The lending interest rate of MFIs (2.5%–3% per month) (CCRD, 2007) is higher than the rate charged by commercial banks (0.83%–around 2% per month) (BSD, 2009) but remains lower than that of the informal sector (5–10% per month) (Neav, 2006). However, interest rate is not the only determining factor for borrowers to get loans. Other transaction costs (the cost of certifying land title and house plan, information assessment cost, and group-loan cost) and the assessment requirements (collaterals and guarantors) put MFIs and moneylenders into more advantageous position in serving SMEs than the banks. Therefore, the partnership between MFIs and the informal financial sector (NGOs, associations) can increase numbers of loans and reduce the lending interest rate because more competition would exist in the banking system as confirmed by Varghese (2005).

In order to achieve the linkage between informal and formal financial sectors, the significant contribution of the informal sector to the performance of the small and medium enterprises has to be tested and verified. Therefore, the objective of this paper is to assess and compare the impacts of the formal and informal financing on SMEs' performance in the urban areas of Phnom Penh. To achieve this objective, the OLS regression is applied to see the impacts, and the result is reinforced by the

borrowers' perception test. The regression is conducted to respond to the question, "To what extents do the formal and informal loans have impacts on SMEs' performance?" The borrowers' perception test is done to answer the question, "How do the borrowers perceive the impacts of the formal and informal finance on SMEs' performance?" The author selects the urban areas including Steung Meanchey, Reussey Keo districts, 7Makara, Chamcarmon, Daun Penh, and Toul Kork since these areas consist of moneylenders, commercial banks, MFIs, and many enterprises (NIS, 2008).

The rest of the paper is organized as follows. In Sections 3 and 4, I discuss the previous studies on the impacts of finance and the significance of formal financial sector. Section 5 focuses on the impact assessment method and variables of the impact studies. Section 6 demonstrates the research method of this study, followed by the findings of the impacts of formal and informal loans on the SMEs' performance in Section 7. A brief conclusion is in the last section.

3. Impacts of Finance

Previous studies showed that microcredit leads to an enterprise's growth. For example, Dunn and Arbuckle (2001) used the household economic portfolio model to study the impacts of microcredit (in terms of enterprise revenue, enterprise fixed assets, employment and transaction relationships) on micro enterprises in Peru. The results showed that client enterprises performed better than non-client enterprises in terms of enterprise profits, fixed assets and employment.

According to Lapar (1994), the estimated switching regressions model was able to show that credit recipients obtain differential returns from credit arising from their latent productivity attributes (family workers, hired workers, total assets, working capital, number of operating years, and experiences of the entrepreneur). Apart from the attributes, the pure credit effect was quite substantial.

Kondo (2007), who studied the impacts of microfinance on rural households in the Philippines by using a quasi-experimental design to control for non-random program participation and fixed-effects estimation to correct non-random program placement, found that the impacts of the availability of program loans on per capita income was positive with mild level of significance. This was also true for per capita total expenditure and per capita food expenditure. Another significant impact of the program was that program clients were busier running more enterprises with a lot more employed workers.

Chen and Snodgrass (2001), who studied the impacts of the Self-Employed Women's Association (SEWA) bank in India, found that the impacts were less evident at the enterprise level, but there was evidence that participants gained larger revenues from sub-contracting enterprises and employment was expanded in such enterprises.

Not only does credit have impacts on the enterprise growth, but it also has effects at the

household level (poverty reduction, income, asset, and production). Khandker's (2003) research on micro-finance and poverty in Bangladesh revealed micro-finance benefited the poorest and had a sustained impact in reducing poverty among program participants. It also had positive spillover impacts, reducing poverty at the village level.

Park and Ren (2001) showed the positive effects of micro credit on income microfinance with Chinese characteristics. In addition, Mosley (2001), who researched about microfinance and poverty in Bolivia, stated that the growth of incomes and assets of borrowers always exceeded that of a control group. The study of Kaboski and Townsend (2002) on village-level microfinance institutions in Thailand indicated that production credit groups and women groups combined with training and savings had a positive impact on asset growth. Finally, Duong and Izumida (2002) in their study of rural development finance in Vietnam found that credit was shown to have a significant impact on household production.

4. The Significance of Formal Financial Sector

Many studies have pointed out the significance of formal finance. For example, Binswanger and Khandker (1992), who studied the impacts of formal finance on the rural economy of India, found out that the rapid expansion of commercial banks in rural areas had a substantially positive effect on rural non-farm employment and output. This was confirmed by the study of Cheng and Degryse (2007), which used the data of 27 Chinese provinces over the period 1995–2003 to study the impacts of banks and non-bank financial institutions on local economic growth in China. They ascertained that banks had a larger impact than non-banks on local economic growth as banks benefited earlier and more profoundly from China's financial reforms than their non-bank counterparts. Finally, Ayyagari, Demirgüç-Kun, and Maksimovic (2008) who looked at "formal versus informal finance in China" by using a database of 2,400 Chinese firms found that despite its weaknesses, financing from the formal financial system was associated with faster firm growth, whereas fundraising from alternative channels was not.

Moreover, a few studies have cast doubt on the importance of the informal finance. Mohieldin and Wright (2000) stated that the informal credit market was only an imperfect substitute for formal credit in rural Egypt. In addition, formal loans were almost entirely for production and asset accumulation, while informal loans were used for consumption smoothening (Barslund & Tarp 2008).

5. Impact Assessment Method and Variables of the Impact Studies

For impact analysis method, Hulme (2000) suggested multiple regression method and control group method; however, the former has rarely been used because of its enormous demands for data on

other possible causal factors and its assumption. He suggested that the impact studies increasingly seek to combine the strengths of different approaches: statistical and participatory approaches. However, combining the advantages of the two approaches depends on the level of resources available and the context.

Meanwhile, Kondo (2007), who studied the impacts of microfinance on rural households in the Philippines, used the regression framework because it could account for the differences in household and community characteristics, which could happen even with a well-designed sampling scheme in a quasi-experimental design. He used household outcome as an outcome variable and household characteristics, village characteristics, membership dummy, and treatment variable as independent variables.

By controlling for the endogeneity biases that have plagued other studies, Coleman (1999) conducted a study aiming to measure the outreach and impacts of village bank programs on the poor. He chose an outcome of each household in the selected village as a dependent variable, and household characteristics, village dummy variables, a membership dummy, and the number of months of the availability of village bank credit as independent variables. However, the average program impact was not significant when controlling for endogenous member selection and program placement. Therefore, Coleman (2006) did a more refined impact estimation by replacing a member dummy by a rank-and-file member dummy variable and a committee member dummy variable; and the number of months of the availability of village bank credit by months of rank-and-file membership and months of committee membership.

Cohen and Dunn (2002), who provided a research strategy for the AIMS core impact assessment, use t-tests, ANCOVA tests, and chi-squared tests (for comparing differences in the distribution of categorical data), gain score analysis, and multiple linear regressions.[1] They also used the case study data to understand the causes of the impacts.

Dunn and Arbuckle (2001) used a mixed method approach combining survey and case study data for their research on microcredit and micro enterprise performance (impact evidence from Peru). The survey (quantitative) data provided information on the direction and magnitude of impacts, while the case study (qualitative) data helped explain the pathways and processes by which changes may have occurred. The impact hypotheses were tested by estimation through an analysis of covariance (ANCOVA) model.

To implement the endogenous switching regression model, Lapar (1994) estimated the first stage credit status equation by using univariate probit. Credit status was specified as a function of variables that affected creditworthiness. These variables included the value of fixed assets, total assets, and financial assets owned by the entrepreneur, previous year's income, number of years of operation, age of the owner, number of years spent in school, household size, and a dummy variable for bank-client relationship, i.e., existence of a bank account which equals one if operator has a bank account and zero

otherwise. Dummies for type of activity undertaken and for the province where the enterprise operates were also included.

Pitt and Khandker (1998) estimated the impacts of participation by gender in the Grameen Bank and two other group-based micro credit programs in Bangladesh on labor supply, schooling, household expenditure, and assets. They used the quasi-experimental design of the survey and the credit programs to identify the effects of program credit by gender of the participant in a limited information maximum likelihood framework. A quasi-experimental survey design was used to correct for the bias from unobserved individual and village-level heterogeneity, and the impact was assessed using data from a special survey carried out in 87 rural Bangladeshi villages during 1991–92 and a double-difference approach between eligible and ineligible households and between program and non-program villages. After controlling for other factors, such as household characteristics, any remaining difference was attributed to the microfinance programs.

Park and Ren (2001) analyzed household survey data from three microfinance programs, all of which adopted the Grameen's model and which were located in poor countries. The programs differed in the degree of local government involvement: a nongovernmental organization program, an NGO-government program, and a government program. They used log of household income in a village as an independent variable, and a participation dummy, a vector of household characteristics, and village dummies as dependent variables. The equation followed Ordinary Least Squares (OLS) estimate. They also compared income in program versus non-program villages, controlling for household characteristics by adding a dummy variable for whether the village has the microfinance program and dropping village dummies. Finally, they utilized the eligibility criteria and data from control villages to estimate eligibility program effects by regressing log income on household characteristics, village dummy variables, and a program-eligibility interaction term which is equal to one if the household is eligible and is in a program village.

Duong and Izumida (2002) used Tobit regression model and cross-section data to estimate the borrowing functions (determinants of borrowing); the Probit model to estimate the determinants of credit rationing by the formal lending institution; and switching regression model with weighted least square for the impacts on output supply. They used amount of credit per household as the dependent variable and farm size, farm size squared, schooling of household head, age of head, family size, number of dependants, total production value of livestock, and dummy variable for each province as independent variables.

In conclusion, some authors suggested that both quantitative (sample survey and statistical approaches) and qualitative studies (participatory approaches or case studies) should be done to find out the real impacts of small credit on both household and enterprise levels. For quantitative studies, the previous studies tended to apply the DID (difference-in-difference method), which compared the treatment and the control groups. Many studies discussed the importance of panel and cross-section

data for the impact studies. While the former took more budget and time, the latter needed more controlled variables, efforts to reduce the bias. For cross-sectional data, the selection bias could be reduced through econometric estimation of the fixed effect model.

The authors used t-tests, for comparing two means; ANCOVA tests, for comparing three or more means; chi-squared tests, for comparing differences in the distribution of categorical data; gain score analysis, and multiple linear regressions. Regarding of regressions, various non-linear models were used for different categories of outcomes: probit for binary outcomes, tobit for truncated outcomes or poisson for count outcomes.

It is hard to apply the DID method in this study because there is no baseline data. The best way is to use cross-section data by employing a quasi-experimental design. The simple regression framework (OLS) used by Kondo (2007) will be applied to see the impacts.

For impact variables, Cohen and Barnes (1996) suggested assets or net worth as an important dependent variable category to study the impacts of microenterprise program services. The assets are significant because they are not only a stock of wealth, but also factors which produce flows of income and expenditures, and are the base for future potential wealth and consumption. They categorized assets into household and individual level, and enterprise level. For the latter, assets were classified into current assets, fixed assets, and human assets.

To examine alternative measures of the profits and net worth of micro enterprises, Daniels (1999) proposed four proxies for profits and four proxies for net worth. She tested the proposed eight proxies by conducting a field test on micro enterprises in Zimbabwe. The results showed that the second proxy, which was based on three questions that asked for the value of the product consumed by the household, money from the enterprise used by the household, and any money left over appeared to be the best measure of profits; and the third proxy which combined with the value of inventory, accounts receivable, and outstanding debt to estimate the third proxy shows the highest correlation with the full measure of net worth.

According to Kondo (2007), who did research on the impacts of microfinance on rural households in the Philippines, the outcome variables included basic household welfare measures (per capita income, per capita expenditures, per capita savings, and food expenditures), other financial transactions (other loans and personal savings stock), household enterprises and employment, household assets, and human capital investments (education and health).

Hulme (2000) divided the outcome variables into three categories: economic indicators (changes in income), other popular variables (levels and patterns of expenditure, consumption and assets), and social indicators (educational status, access to health services, nutritional levels, anthropometric measures and contraceptive use).

Dunn and Arbuckle (2001), researching the impacts of microcredit and micro enterprise performance in Peru, used enterprise revenue, enterprise fixed assets, employment and transaction

relationships as outcome variables.

According to Kondo (2007), there were four possible treatment variables that could be used to assess the impacts of microfinance on household welfare: (1) availed program loan (1＝yes, 0＝otherwise), (2) number of months the program is available to the village (based on first loan released for the village), (3) value of loans (cumulative total amount of loans), and (4) number of loan cycles. Treatment variables (2)–(4) were considered better in representing program availability. Treatment variables (3) and (4) would fail the ignorability condition and would thus, require instrumental variable estimation.

In this study, some selected variables will be used. The dependent variables include the enterprises' monthly revenue, business expenditure, income, and profit. The independent variables include the entrepreneurs' age, gender, level of education, experiences, initial capital, family members, number of employees, social capital, the amount of cash, and region. The treatment variables include dummy variables and amount of formal and informal loans.

6. Research Method of this Study

I use a one-time survey, employing a quasi-experimental design because it is an ex-post study and has no baseline data. For the analyses, I adopt and modify the simple regression framework (OLS) used by Kondo (2007) as shown below. There are three kinds of variables for the analysis: dependent variables (outcome), treatment variables, and controlled variables (Table 2).

The modified OLS equation:

$$Y_i = \beta_0 + \beta_1 X_i + \beta_2 V_i + \beta_3 T_i + \varepsilon_i$$

Where:

i＝enterprise, Y_i＝the enterprises' outcome (outcome variables), X_i＝the enterprises' and entrepreneurs' characteristics (controlled variables), V_i＝village characteristics (controlled variables), T_i＝treatment variable

6.1 Data Collection and Region Selection

Based on Steel's segregations of financial institutions in 2006, I divided the financial systems in Cambodia into formal and informal segments. As of December 31, 2009, the formal financial sector consists of twenty-seven commercial banks, six specialized banks, and twenty licensed MFIs which obtain licenses from the central banks. The informal sector includes 26 registered and around 60 unregistered NGOs, moneylenders, family, and friends.[2]

For the primary data collection, five research assistants who had experiences in collecting data

Table 2 List of Variables

Variables	Explanation of Variables
Dependent/Outcome Variables	
Rev	The monthly revenue of the enterprises (the gross sales of goods and services or the revenue of trading)
BE	The monthly business expenditure of the enterprises
Inc	The difference between monthly revenue and monthly business expenditure
Pro	The monthly net profit of the enterprises (the entrepreneurs were asked to provide their monthly "profits")
Treatment Variables	
Df	A dummy variable: 1 for formal loans and 0 for informal or no loans
Dinf	A dummy variable: 1 for informal loans and 0 for formal or no loans
Lf	The cumulative number of loans (0 for informal or no loans)
Linf	The cumulative number of loans (0 for formal or no loans)
NL	An amount of loans including both formal and informal loans
Other controlled variables	
Age	The age of the entrepreneurs at the time of the interview
Gen	Dummy variable: 1 for Male and 0 for Female
Edu	The level of education of the entrepreneurs
Exp	The number of years in business
IniF	The start-up capital of the entrepreneurs
Fam	The number of family members of the entrepreneurs
Emp	The number of hired workers within the enterprises
SC	The number of years of the entrepreneur living in the villages
RC	The amount of cash held by the entrepreneurs
Outskirt	The outlying region of Phnom Penh city

were hired and trained to do the collection under my direct and strict observation. On the first day, we started to do the pilot survey at Steung Meanchey area by using the well-prepared questionnaire, and it was revised to fit with the situation of the enterprises and location.

Thereafter, the actual data collection was conducted twice based on target random sampling. The first data group was collected at Steung Meanchey and Reussey Keo districts, which are the outskirts of Phnom Penh city and consist of moneylenders, commercial banks, and MFIs. About 160 samples including 40 enterprises obtaining formal loan, 40 obtaining informal loans, and 80 no-loan enterprises were collected. The samples of no-loan enterprises were collected in the same villages and have

Table 3 Distribution of Sample Enterprises

Types of loans	Numbers of Loans	Percentage of Loans
Informal loans	90	36.0%
Formal loans	41	16.4%
No loans	119	47.6%
Total	250	100.0%

Source: Compiled by author

similar characteristics with the ones, which receive loans from formal and informal institutions. The second sample size is around 90 enterprises: 51 with loans and 39 without loans (Table 3).3 I selected the main urban areas of Phnom Penh city including 7Makara, Chamcarmon, Daun Penh, and Toul Kork because there are many enterprises in these areas (NIS, 2008).

7. Findings of Impacts of Formal and Informal Loans on SMEs' Performance

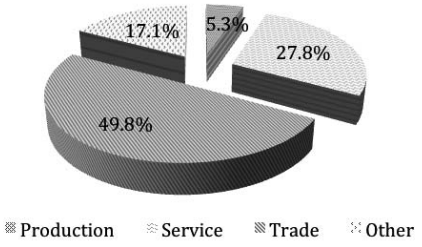
This section includes descriptive analysis, regression results, the reasoning of the results, and the borrowers' perception test. OLS regression was applied to see the impacts of loans. The regression result shows a similar result to the answers of the interviewees as the informal loan leads to higher revenue of small and medium enterprises.

7.1 Descriptive Analysis

The total sample size is 250 but only 245 enterprises are valid, of which 95% of them are family businesses. Among the total samples, 90 enterprises receive informal loans; 41 formal loans; and 119 no loan (Table 3). 49.8% of them are involved in the trade sector, 27.8% in service, 5.3% in production, and 17.1% in other sectors (Figure 1).

According to the sample, the maximum loan size is US$ 40,000 while the average size is US$

Figure 1 Type of Sample Enterprises



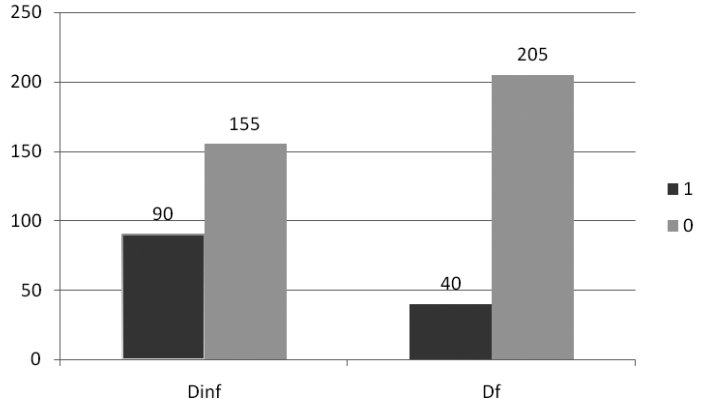
Note: The total number of valid sample is 245.
Source: This figure is compiled based on the data from the survey in Phnom Penh.

1,084. The maximum loan size of the formal loan (mainly from Acleda Bank and MFIs) is US$ 40,000, and its average loan size is only US$ 621. The highest loan size of the informal loan (mainly from relatives and moneylenders) is US$ 10,000 and the average loan size is US$ 462 (see Annex 1).

The minimum revenue of the total sample of small and medium enterprises is US$ 75 per month while the maximum is US$ 21,000. The average revenue is US$ 2,319 per month. There is a large difference in the revenue of the outskirt and urban enterprises.

Df and Dinf are the dummies of formal and informal loans used as treatment variables in this study. 90 of Dinf and 40 of Df are dummied as 1 (see Figure 2).

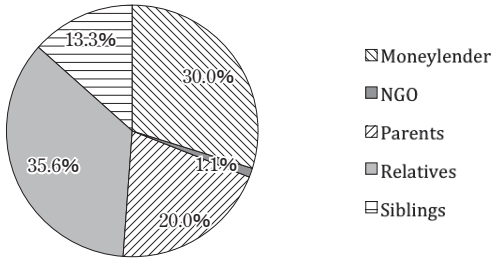
Figure 2 Dummies of Informal and Formal Loans



Note: This figure shows the dummy variables (Dinf and Df) to be used as treatment variables.
Source: This figure is compiled based on the data from the survey in Phnom Penh.

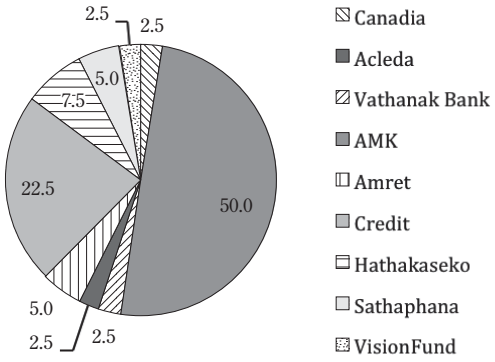
Figure 3 shows the sources of the informal loans to the enterprises. Out of 90 enterprises, 30% gets loan from moneylender; around 68.9% from relatives, parents, and siblings; and 1.1% from NGOs. This emphasizes the dependence of the small and medium enterprises on the family members and

Figure 3 Sources of Informal Loan (%)



Source: This figure is compiled based on the data from the survey in Phnom Penh.

Figure 4 Sources of Formal Loans (%)



Source: This figure is compiled based on the data from the survey in Phnom Penh.

moneylenders.

Figure 4 shows the sources of the formal loans to the enterprises. Among 40 samples of the enterprises, 50.0% get loans from Acleda Bank; around 22.5% from Credit MFI; 7.5% from Hathakaseko; 10.0% from Amret and Sathaphana; and the rest from Canadia Bank, Vattanak Bank, AMK, and VisionFund. This reflects the fact that Acleda Bank is the leading bank providing loan to small and medium enterprises, whereas other banks, such as Canadia Bank and Vattanak Bank, prefer to focus on large enterprises.

7.2 Regression Results

The following is the result of the regression analysis using the same data sample. The model is taken from the research in the Philippines done by Kondo (2007). There are three kinds of variables in the analysis. The first group of the variables is dependent variables including revenue *(Rev)*, business expenditure *(BE)*, income *(Inc)*, and profit *(Pro)*. The second group of variables is treatment variables: dummy of formal loans *(Df)*, dummy of informal loans *(Dinf)*, amount of formal loans *(Lf)*, and amount of informal loans *(Linf)*. The third group of variables is age of the entrepreneurs *(Age)*, gender of the entrepreneurs *(Gen)*, level of the entrepreneurs' education *(Edu)*, years of experience of the entrepreneurs *(Exp)*, start-up capital *(IniF)*, number of family numbers *(Fam)*, number of hired workers *(Emp)*, social capital *(SC)*, amount of real cash *(RC)*, the outlying region of Phnom Penh city *(Outskirt)* (Table 2).

In Model 1, the dependent variable is *Rev* and the treatment variables are *Df and Dinf*. The other variables are *Age, Gen, Edu, Exp, IniF, Fam, Emp, SC, RC, Outskirt*. The result shows that *Exp, IniF, and Fam* positively contribute to the high level of revenue of the enterprises with a level of significance of 1%. However, *Emp* negatively contributes to the revenue with 5% level of significance.

Table 4 Regression Result (Treatment Variables: Df and Dinf)

Independent Variable	Dependent Variable: Rev		Dependent Variable: BE		Dependent Variable: Inc		Dependent Variable: Pro	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
Constant	−85.40	−0.05	−1334.68	−1.07	1249.28	1.45	195.25	0.43
Age	4.25	0.18	22.62	1.27	−18.37	−1.51	−2.49	−0.39
Gen	280.40	0.64	545.87	1.64	−265.46	−1.16	−184.93	−1.53
Edu	74.92	1.31	48.39	1.11	26.54	0.89	7.13	0.45
Exp	79.27***	2.62	37.33	1.62	41.94***	2.65	10.61	1.27
IniF	0.12***	3.01	0.03	0.86	0.09***	4.47	0.07***	6.39
Fam	324.02***	3.31	143.73*	1.92	180.30***	3.51	112.97***	4.16
Emp	−367.24**	−2.46	−207.50*	−1.82	−159.74**	−2.04	−32.38	−0.78
SC	−10.96	−0.51	3.88	0.24	−14.84	−1.31	−4.71	−0.79
RC	0.03	1.07	0.01	0.39	0.02	1.46	0.01	0.98
Outskirt	−1911.38***	−4.22	−1205.84***	−3.49	−705.53***	−2.97	−267.15**	−2.13
Df	939.22*	1.73	920.94**	2.22	18.28	0.06	90.40	0.60
Dinf	1105.59***	2.65	1067.93***	3.35	37.66	0.17	110.20	0.95
	Number of obs=245 F (12, 232)=8.367 p-value of F=.000		Number of obs=245 F (12, 232)=5.245 p-value of F=.000		Number of obs=245 F (12, 232)=7.659 p-value of F=.000		Number of obs=245 F (12, 232)=9.699 p-value of F=.000	

Note: −These analyses were done by the author using SPSS packages and the primary data collected in Phnom Penh. -***significant at 1%. -** significant at 5%. -* significant at 10%.

The same set of results also indicates that *Dinf* does contribute to the higher revenue of the enterprise as well at 1% level while *Df* is significant only at the 10% level. The enterprises, which get the informal loans, have revenue of US$ 1,105 per month higher than formal and no-loan groups (Table 4). The result of the same analysis with *Rev* as a dependent variable but *Lf* and *Linf* instead of *Df* and *Dinf* as treatment variables shows the similar results. The result shows that a one dollar increase of formal loans makes the revenue increase US$ 0.16; meanwhile, a one dollar increase of informal loans makes the revenue increase by US$ 0.88 (Table 5).[4]

The second Model has *BE* (the general business expenditure of the enterprise) as a dependent variable. The result shows that the informal loan positively contributes to overall expenditure of the enterprises. This means the enterprises, which get the informal loans, have overall expenditure of US$ 1,067 per month higher than formal and no-loan groups (Table 4). For the same model with *Lf* and *Linf* as treatment variables, the result shows that an increase in 1 dollar of informal loan can lead to an increase US$ 0.53 of business expense of the enterprises while 1 dollar of formal loan leads to an increase of US$ 0.11 of business expense (Table 5).

For the third model with *Inc* as a dependent variable and *Df* and *Dinf* as treatment variables, the result shows that the experiences of the entrepreneur, initial fund, and family member positively

Table 5 Regression Result (Treatment Variables: Lf and Linf)

Independent Variable	Dependent Variable: Rev		Dependent Variable: BE		Dependent Variable: Inc		Dependent Variable: Pro	
	Coef.	t-value	Coef.	t-value	Coef.	t-value	Coef.	t-value
Constant	306.03	0.20	−852.23	−0.70	1158.25	1.41	142.46	0.35
Age	0.38	0.02	18.63	1.07	−18.25	−1.56	−2.30	−0.39
Gen	194.84	0.47	464.79	1.41	−269.95	−1.22	−192.35*	−1.73
Edu	62.29	1.14	36.17	0.84	26.12	0.90	5.43	0.37
Exp	80.78***	2.81	42.39*	1.87	38.39**	2.52	8.22	1.07
IniF	0.08**	2.16	0.01	0.31	0.08***	3.62	0.06***	5.44
Fam	311.18***	3.32	146.22**	1.98	164.96***	3.32	101.76***	4.07
Emp	−324.10**	−2.29	−177.14	−1.59	−146.96*	−1.96	−19.36	−0.51
SC	−8.06	−0.39	5.23	0.32	−13.28	−1.21	−3.55	−0.64
RC	0.00	0.08	−0.01	−0.21	0.01	0.47	−0.00	−0.50
Outskirt	−1738.46***	−4.16	−1122.75***	−3.41	−615.71***	−2.78	−173.01	−1.55
Lf	0.16***	2.91	0.11**	2.44	0.06*	1.86	0.03**	2.25
Linf	0.88***	4.87	0.53***	3.71	0.35***	3.66	0.30***	6.29
	Number of obs=245 F (12, 232)=10.844 p-value of F=.000		Number of obs=245 F (12, 232)=5.746 p-value of F=.000		Number of obs=245 F (12, 232)=9.473 p-value of F=.000		Number of obs=245 F (12, 232)=14.813 p-value of F=.000	

Note: −These analyses were done by the author using SPSS packages and the primary data collected in Phnom Penh. -*** significant at 1%. -** significant at 5%. -* significant at 10%.

contribute to the income of the enterprises. However, although there is no impact from either formal or informal loan (Table 4), the same model with *Lf* and *Linf* used as treatment variables show the impacts on the income. An increase of one dollar in formal loan contributes to 0.06 dollar of real income, and an increase of 1 dollar in informal loan leads to 0.35 dollar in real income of the enterprise (Table 5). This result means that the status of loans as formal and informal is not significantly important for income improvement of the enterprises.

For the fourth model with *Pro* as dependent variable and *Df* and *Dinf* as treatment variables, the result shows no impacts of both treatment variables on the net profit of the enterprises besides the impacts of initial fund and family member (Table 4). However, the result of the same regression with *Lf* and *Linf* as treatment variables shows that an increase in US$ 1 of informal loan leads to an increase of 0.30 dollar in net profit, and an increase in 1 dollar of formal loan leads to 0.03 dollar increase in net profit of the enterprise (Table 5).

Summarily, the result of regression shows clearly the importance of the informal loan to the expansion of small and medium enterprises. The enterprises, which receive the informal loans, have revenue of US$ 1,105 per month higher than formal and no-loan groups. The result also shows that a one dollar increase of formal loan makes the revenue increase by US$ 0.16, and a one dollar increase

of informal loan leads to a revenue increase of US$ 0.88 per month.

To test whether the impacts of the informal loans are different from the impacts of formal loans on SME's performance, the author uses F-test by applying the restricting model. According to Wooldridge (2009), we have the unrestricted model with k independent variables as:

$$y=\beta_0+\beta_1 x_1+...+\beta_\kappa x_\kappa+u; \quad (1)$$

The number of parameters in the unrestricted model is k+1. Suppose that we have q exclusion restrictions to test. Assume that it is the last q variables in the list of independent variables: x_{k-q+1}, ..., x_k. The null hypothesis is stated as H_0: $\beta_{k-q+1}=0$, ..., $\beta_k=0$, (2) which puts q exclusion restrictions on the model (1). The alternative to (2) is simply that it is false; this means that at least one of the parameters listed in (2) is different from zero. When we impose the restrictions under H_0, we are left with the restricted model:

$$y=\beta_0+\beta_1 x_1+...+\beta_{\kappa-q} x_{\kappa-q}+u;$$

We look at the relative increase in the SSR when moving from the unrestricted to the restricted model and it should be informative for testing the hypothesis (2). The F statistic (or F ratio) is defined by:

$$F\equiv\frac{(SSR_r-SSR_{ur})/q}{SSR_{ur}/(n-k-1)} \quad (3)$$

Where SSR_r is the sum of squared residuals from the restricted model, and SSR_{ur} is the sum of squared residuals from the unrestricted model.

The difference in SSRs in the numerator of F is divided by q, which is the number of restrictions imposed in moving from the unrestricted to the restricted model (q independent variables are dropped). Therefore, we can write q=numerator degrees of freedom=df_r-df_{ur}, which also shows that q is the difference in degrees of freedom between the restricted and unrestricted models.

The SSR in the denominator of F is divided by the degrees of freedom in the unrestricted model: n−k−1=denominator degrees of freedom=df_{ur}.

With (3), the author builds the restricted model with the null hypothesis of H_0: $\beta_{Lf}=\beta_{Linf}$ where Lf is the cumulative number of loans (0 for informal or no loans) and Linf is the cumulative number of loans (0 for formal and no loans). The result of F-test of the independent variables (revenue, business expenditure, income, and profit) is shown in Table 6.

The value of F-test is higher than the critical value of 1% probability (6.63). With the value of F-value, we can reject the null hypothesis so the distribution of the informal loans on SMEs' performance is different from the distribution of the formal loans on SMEs' performance.

Table 6 F-value from Restricted and Unrestricted Model

	SSR_r	SSR_{ur}	n−k−1	q	F-value
Rev	1.731E9	1.625E9	232	1	15.13***
BE	1.049E9	1.013E9	232	1	8.24***
Inc	4.750E8	4.569E8	232	1	9.19***
Pro	1.309E8	1.158E8	232	1	30.25***

Note: ***Significant at 1%
Source: Compiled by author

7.3 Reasoning of Results

The higher contribution of informal loans to SMEs' performance compared to formal loans can be first explained by the nature of loans in this study. The informal loans are mostly from the moneylenders and families whereas the formal loans are mainly from ACLEDA bank (50%) and MFIs (nearly 50%). The transaction costs to get access to both formal and informal loans vary. Transaction costs are defined by Guia-Abiad (1993) as the non-interest expenses incurred by borrowers in applying, getting approval for, and repaying their loans, and by lenders in evaluating, disbursing, and collecting loans. These costs are largely associated with the information-gathering procedures banks need to carry out to determine borrower creditworthiness.

The transaction costs for borrowers are made up of the actual expenditure and the opportunity cost of time spent in applying for a loan. The longer the time taken to evaluate and process a loan, the greater the transaction costs for the borrowers, for example the longer hours spent in the bank premises, more frequent trips to the bank, greater outlay for transportation and food, and higher fees.

In Phnom Penh, the enterprises that get loans from the bank have to spend more on the document-processing fees, legal fees, transportation fees, title-deed application fees, and penalty fees for late repayments compared to the enterprises that get the informal loans. The ratio of the net fee and commission income to profit before income tax of ACLEDA bank in 2010 is 62%, which is profitable for the bank (ACLEDA Bank's report, 2010). The explanation of the transaction costs is confirmed by the previous studies. Germidis, Kessler, and Meghir (1991) present the characteristics of the formal finance as having rigid and bureaucratic procedures, cumbersome paperwork, high transaction costs and the characteristics of the informal finance as having the flexibility of operations and loan terms, rapid processing of requests and delivery of credit, minimal red tape involved in transactions, and low transaction costs.

In addition, the regression result can be explained by the information gap between the formal and informal financial institutions. The information-gathering processes are more costly for the bank and MFIs than the moneylenders. ACLEDA bank, for example, uses the traditional tools of five C's (character, capacity, capital, collateral, and conditions) to evaluate their clients. The credit officers and/or credit supervisors have to travel to the community where the clients live to get such

information. Based on the survey data, the average distance from the formal lenders to the clients is one kilometer farther than the distance from the moneylenders to the clients, and the credit officer of formal loans visit the clients two times in average (at most four times) before and after disbursing loans whereas the moneylenders rarely do.

The informal lenders usually live near the borrowers; therefore, they can get the information from the clients easily and they do not need to charge fees from the borrowers. Moreover, since the informal lenders seem to know better information of the local businesses, they tend to choose the businesses with better protection; whereas, the banks which do not know the information of the business well are likely to choose businesses with poorer protection.

7.4 Borrowers' Perception Test

The regression result shows that the informal loan group contributes more to the performance of small and medium enterprises than the formal loan group. To prove this result, the borrowers' perception test is applied in this study.

When asked whether loans could help their businesses grow, 85.0% of the enterprises which got formal loans responded "Yes" and 15.0% said "No". A similar response was seen from enterprises which got informal loans: 95.35% of such enterprises said loans could help their businesses grow, 4.65% said the loans were of no help (Table 7). The result of statistical test (test of difference of the ratios of two populations) showed the different answers between the two groups at 5% significant level. The informal-loan groups perceived the importance of loans more than the formal groups.

Table 7 Borrowers' Point of Views on Loans

	After getting a loan, do you think it helped your business grow?	
	Yes	No
Formal-loan group	85.00%	15.00%
Informal-loan group	95.35%	4.65%

Source: This table is done based on the data from the survey in Phnom Penh.

When asked why they stopped taking out loans, most of the informal-loan groups said they had enough capital and savings to feed their family. Some of them said they do not need money to buy any more goods. Only few of them said they are afraid of not being able to pay back both principle and interest. Since the interest rate of the moneylender is from 5–10% per month (Neav, 2006), it is hard for the minority of small family businesses to pay the interest; therefore, they cannot expand their businesses.

The formal-loan group offered a similar response; that is, their businesses are good so they do not need loans, although a few of them said they are afraid of paying because their businesses are not so

good. In this case, some clients of both formal and informal financial sectors are still concerned about the high level of interest rate after experiencing getting loans for some time.

Summarily, the result of perception test is parallel with the regression result because the interviewees of both the formal-loan and informal-loan groups respond that having loans is better than not having loans. Moreover, about 95% of informal-loan group compared to 85% of formal-loan group reply that credit was an important factor contributing to the performance of their businesses.

8. Conclusion

This study is done to assess and compare the impacts of the formal and informal financing on SMEs' performance in Phnom Penh. The regression and the borrowers' perception test are used to meet the objective and answer the research questions. As a result, the regression result clearly shows the importance of both formal and informal loans to the performance of small and medium enterprises. In comparison, the result reveals that enterprises with the informal loans make more revenues than those with the formal and no loans and that a one dollar increase of the formal loans raises the revenue by about US$ 0.16, while a one dollar increase of the informal loans raises the revenue by US$ 0.88. The result matches with the findings of the perception test and the findings of Kondo (2007) (revenue and total expenditure), Chen and Snodgrass (2001) (revenue), and Dunn and Arbuckle (2001) (profit).

The reasons that the enterprises with informal loans have higher revenues than those with formal loans are explained by the transaction costs and the information gap between the formal and informal financial sectors, which are backed up by the previous studies of Germdis, Kessler, and Meghir (1991). It is more costly for small enterprises to get access to the bank's loan than to get the moneylender's credit. Meanwhile, the bank has to spend more money to collect small enterprises' information than the moneylenders do.

In consequence, both formal and informal loans contribute to the performance of SMEs, emphasizing that the small enterprises need both sources of loans for the expansion. However, the contribution of the moneylenders and families are more significant than the bank and MFIs in such a niche market.

Annex 1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Age	245	16	75	35.74	10.032
Gen	245	1	2	1.73	.447
Edu	245	0	17	7.84	3.824
Exp	245	0	32	7.90	7.481
IniF	245	5	50000	2393.44	5133.344
Fam	245	1	14	5.68	2.159
Emp	245	0	8	2.20	1.432
SC	245	0	53	13.94	10.750
TA	245	90	500000	5.31E4	62478.189
FA	245	0	490000	4.82E4	59500.017
Rev	245	75	21000	2319.51	3223.828
BE	245	5	16500	1350.35	2320.172
Inc	245	−11200	10000	969.16	1670.373
Pro	245	0	7000	498.66	915.642
Df*	245	0	1	.16	.370
Dinf*	245	0	1	.37	.483
CL**	245	0	5	.69	.796
NL**	245	0	40000	1084.23	3198.231
Lf**	245	0	40000	621.33	3106.685
Linf**	245	0	10000	462.91	1074.608
RC	245	0	80000	1779.25	6036.708
Valid N (listwise)	245				

Note: *Df and Dinf are dummy variables. ** CL, NL, Lf, and Linf in the analysis include no-loan groups; therefore, the minimum value is 0. Please refer to the Research Method section of this study for the abbreviation explanation.

Notes

1 It stands for Assessing the Impact of Micro enterprise Services. The AIMS project is one of the USAID's projects studying the impacts of micro enterprise programs (http://www.usaid.gov/our_work/economic_growth_and_trade/micro/how_we_work.htm)

2 The microfinance institution (MFI) is a formal financial institution; however, NGOs (sometimes called MFI NGOs), which are involved with credit transactions, are in the informal financial sector.

3 Thirty out of 131 enterprises get more than one source of loans and/or more than one cycle of loan. However, I decided to choose the latest source of loan and/or the latest cycle for this study.

4 Regarding this result, the interest rate is not taken into consideration. The amount of interest for one dollar is far smaller than US$ 0.16 or US$ 0.88.

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