

Credit, Intermediation and Poverty Reduction

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1. Introduction

The purpose of this essay is to show how credit markets influence development and to argue that the impact of improvements in credit markets is quantitatively significant. The essay first establishes the fact that access to credit is limited, emphasizing the magnitudes. It then goes on to the potential importance of financial sector development, again quantifying the impact. Toward the end of the essay there is a discussion of the merits of different interventions.

The policy recommendations in this essay are based on estimated versions of the Thai reality, filtered through the lens of artificial environments, or what economists call models. For example to understand what the effect of financial development we create an artificial environment that is structured to imitate key aspects of Thailand in this period, where we let financial development take place. Further, as the logic of the model is made explicit, one can trace a particular recommendation to a given set of assumptions or rules. In Thailand, where this research is being conducted, with the aid of much data gathered in field research, specific and concrete policy advice can be given.

2. Credit is Limited: A Quantification

There is strong evidence from Thailand that credit markets and institutions do not function well, that limited credit is a big constraint on the small business sector. That is, despite systematic and evident efforts on the part of the Thai government to solve the problem of imperfect and limited credit, through the joint-liability groups of the government's Bank for Agriculture and Agricultural Cooperatives, the BAAC, and through village-level institutions such as Production Credit Groups and Poverty Eradication Funds, for example, many rural and semi-urban households still face a simple, mechanical relationship between their accumulated wealth and the amount of overall credit they have access to.

The extent of the problem, and indeed the underlying constraint which is causing the problem, may vary with wealth or region. On the very low end of the wealth spectrum, a virtual absence of credit is not a bad approximation to the survey data. More generally in the Northeast and among households with below average wealth, the higher is wealth, the greater the magnitude of overall credit. The main determinant of lending seems to be whether the household has land and other assets,

either as predictors of the magnitude of crop income or as collateral for the lenders who remain worried about eventual default – thus the low levels of wealth in this part of the sample condemn these households to an astounding low level of credit, and there are few formal or informal alternatives. In contrast, though still restricting attention to households in semi-urban and rural areas, higher wealth households and households in the Central region are more able, apparently, to roll over loans when they face serious and genuine difficulties in repayment, either because the type of lender explicit allows this to happen, as for the rather substantial level of lending from family, friends, money lenders, and the informal sector, or because formal lenders such as the BAAC and commercial banks are afraid to lose customers or to foreclose. The overall level of credit is still determined by the level of loan recovery, but the higher is wealth, the more these households invest in their own businesses, the more they bear the fruit of their own effort, and the less is the overall level of credit.

More analysis is needed to determine for sure the underlying problem. But there is little question that credit markets are far from perfect. For business owners collateral values average 9 times the amount of the loan, and for other households the ratio is almost twice as high, at 17. Restricting attention to those with the median level of education (in the sample, four years) and comparing the number of households running businesses in the lowest wealth quartile to those in the highest wealth quartile, the fractions of those in business rises from 26% to 43% in the central region and from 8% to 16% in the Northeast. Similarly, controlling for demographic and geographic variables at the time of the 1997 survey, a doubling of household wealth 5 years prior to the interview date leads to a 21% increase in the number of households who went into business over the past 5 years (1992-1997). Likewise, the presence of financial constraints implies that entrepreneurial households who are in business invest less than the optimal amount. According to our estimates, as of 1992, a doubling of wealth in the cross sectional sample is associated with an increase in start-up investment of 40%. Likewise, under financial constraints, the returns to business investment will be high for low wealth households and will fall as wealth increases. For the whole sample, median returns to business investment, that is, income to capital ratios, fall from a strikingly high 57% for households in the lowest wealth quartile to 16% for households in the highest wealth quartile. Entrepreneurial talent as measured by education and whether parents were in business do seem to facilitate business entry, and the ability to exploit relatively high marginal returns, but it also appears there are a nontrivial number of talented but low-wealth households who are constrained on these margins.

Various underlying artificial environments (models) would deliver these symptoms while differing radically in the proposed policy remedy. In one environment credit markets are so limited that they can be ignored entirely, except for a relatively small fraction of the population. It is for this model that a simple crude expansion of credit has its most compelling case. In a second environment, households can borrow freely at interest to go into business but only up to a multiple

of their assets. Thus, if assets are limited, they will be constrained, regardless of education and talent. This is a model of simple asset-back lending, and in this kind of model the issue is whether it is possible to find a way around collateral requirements, as with joint liability groups, for example. In a third environment, households who borrow much will pay back much in principal and interest, leaving little incentive to work for residual profits, on their own account. This is an environment in which effort or diligence is unobserved by outside lenders, and too much insurance against non-payment would cause the entrepreneur to shirk (economists and insurance companies refer to this a moral hazard). This environment trades off incentives and insurance by a judicious choice of risk contingencies, that is, exceptions to repayment for pre-specified events (coupled with *ex post* verification of those events if necessary).

Environments can also differ in what is assumed about the relationship between the returns to investment and education. One might imagine that startup costs are high for household with little education, so that the necessary investment decreases with education. On the other hand, human capital and physical capital may be complements, that is, reinforce one another, so that more talented households will want to invest even more.

Each of these model environments generates a prediction about whether a household will go into businesses or not as a function of measured wealth and education, and as a function of the marginal productivity of capital, risk aversion, and the distribution of talent in the population. When we take each model to the data, we discover the no-credit model and asset-backed lending model fit the data better than the other models for low wealth households and those in the northeast. In contrast, the risk-contingent credit model fits the data best among high wealth households and those in the Central region. Among the sub-sample of relatively wealthy households in the central region, a doubling of wealth leads to a 40,000 baht increase in savings. This is not true in the Northeast. Likewise, the moral hazard model predicts that virtually all businesses that borrow will report some degree of constraints, whereas the asset-based lending model allows low-talent households to borrow and go into business without hitting constraints. In the data we see that being constrained is strongly associated with borrowing in the central region, i.e., 73% of constrained business in the central region have outstanding debt as compared to only 54% of unconstrained businesses. Constrained businesses in the central region also have more debt than unconstrained businesses, a median of 50,000 baht versus 30,000 baht. That is, businesses that have managed to secure more credit are businesses more likely to complain about persistent constraints. Neither of these relationships holds in the Northeast.

The implication of some of the models that investment should increase with education and talent is strongly supported in the data, contrary to the presumption that talented households will need to invest less. Thus physical capital and human capital are complements – we should expect that more educated households will

want to invest more, and that holding wealth fixed, increasing education causes more households to complain of credit constraints. Likewise, there is a positive relationship in most models between investment and wealth and this is true in the data: if past wealth were to increase by one million baht, business investment would increase by 40%. Put another way, median business investment for firms in the lowest wealth quartile is 17,953 baht but reaches 30,583 baht for firms in the highest wealth quartile.

3. The Macro-economic and Distributional Impact of Expanded Credit and Intermediation

Even modest improvements in the financial system of Thailand could lead to large increases in the growth of per-capita income. Specifically, as noted, financial intermediation in Thailand is limited, which means that personal wealth still plays a dominant role in the decision of whether to expand a business via investment, or to go into business at all. The data suggests then that business activity is dictated too much by wealth and too little by actual ability and underlying productivity. If some of that squandered wealth were saved in interest-bearing accounts, rather than invested in low-yield activities, and that savings were in turn lent at interest to existing businesses short of capital, and to households for business start-ups, then national income would go up. Likewise, relatively small but steady improvements over time in intermediation could lead to substantially higher per-capita growth rates. Even the relatively high pre-crisis growth rates of Thailand would seem to be within reach.

The gains from improved financial sector policies would not be uniform in the Thai population, however. Those with the most to gain would be those who could expand existing small or medium business, or switch from agriculture or wage employment into business, that is, those with relatively low current wealth but with relatively high entrepreneurial talent. Likewise, with a steady expansion of financial infrastructure, the real wage of Thailand would likely be higher than it otherwise would be. That would benefit relatively unskilled workers. However, wage increases could harm those already in businesses, so some opposition to improved financial sector policies might be anticipated.

Rather than resorting to forecasts or simple extrapolations from the experience of other countries, however, we base these results on a firm understanding of what happened to Thailand in its own past. Using a simple economic model, we can understand Thailand's remarkable growth from 1976-1996, at 6% on average, and much higher in the second part of this 20-year period, a growth rate driven in no small part by expansion of financial infrastructure, that is, by improved intermediation. If, contrary to what actually happened, that expansion had been far more limited, virtually zero, then the model predicts that Thailand would not have grown much at all. The best that can be managed is a low and flat 2% per year, and that is driven by an overestimate of total factor productivity (TFP)

gains in agriculture at 4% per year. The observed increase in the GDP growth rate (net of TFP growth), from the mid to late 1980's on into the early 90's, at 8-10 % per year, can only be reconciled in the model by imagining a domestic savings rate at astoundingly high levels.

However, if we progressively allow the population access to competitive financial intermediaries at exactly the rate observed in Thai data, with its surges from 10% with access in the mid 1980's to 20% by the mid 90's, then we can track reasonable well the upturn in the Thai growth rate. More generally, the model is able to reproduce the movements of key macroeconomic variables such as the labor share, savings rate, income inequality and the fraction of entrepreneurs observed in Thailand during the past two decades.

Indeed, with the understanding of Thailand's historical experience that the artificial model economy provides, we can ask who gained from the observed financial sector expansion. We address this issue by comparing two versions of Thailand's history from 1976-1996, the actual one and a counter-factual one with a policy distortion that limits financial intermediation. The results confirm that not everyone benefits equally from the financial expansion. In 1978, for example, the modal gain from enhanced intermediation was between 5,000 baht and 17,000 baht per household, measured in 1997 domestic currency (the numbers depend on the specific estimation procedure used). Under the former exchange rate, this is equivalent to \$200 to \$680 per household for that year. Relative to average income, these numbers represent a 14% to 41% increase in the levels of income in 1978, a surprisingly high increment. Moreover, relatively low-wealth households that managed to switch occupations and go into business gained the most-- the welfare numbers would be even higher if we used the simple arithmetic average.

By the year 1996 the wage is roughly 60% higher than it would have been without the expansion. Such price movements help determine the distribution of welfare gains and losses attributable to the financial sector expansion. The bottom line is that there were still substantial winners in 1996. The modal increase in welfare was 25,000 baht or approximately 26% of 1997 average household annual income, equivalent to \$1,000. With the wage increase, unskilled laborers employed by business also gained. However, that wage increase created welfare losses for those running firms, namely 116,000 baht each for such household, on average, roughly \$4,600.

Like estimates delivered by any model, these gains and losses should be taken with a 'grain of salt'. There needs to be a comparison with other models which taken alternative stands on the underpinnings of the Thai economy and therefore yield potentially different distributions of gains and losses from policy interventions. Nevertheless, with this caveat, the estimates here should be taken seriously. The point is that the gains can be quantified and are large, and are not uniform in the population.

The remarkable Thai growth experience as modeled here can be better understood if it is compared to an extended artificial environment that takes into account international capital movements. We allow foreign investment but limited the observed domestic expansion in infrastructure. This established that the miracle of growth and higher incomes is driven simply by the increased mobility of the Thai population across existing sectors and hence better allocation of existing domestic resources, not by globalization.

4. Interventions: An Analysis of Village-Level Microfinance Institutions

Village-level and county-level financial organizations are promoted by government and non-government organizations in Thailand. Given the quantitative evidence that there are credit constraints, and the quantitative evidence that improved financial intermediation can have relatively large impacts, it is natural to expect to find impacts of these village institutions at the local level, in micro economic data. That is we would expect local financial institutions to help in efforts to mobilize savings, offer credit and reduce reliance on usurious money lenders, enhance small household business start-ups and provide working capital, facilitate occupation shifts, reduce poverty, and provide insurance against bad times.

Such financial funds run the gamut from production savings groups which are like local savings and loaned to buffalo banks which lend cattle, rice banks which operate as regular banks but use rice and not money, women's groups that are associations of females engaged in improved occupation development, and poverty eradication funds administered by the government with the stated purpose. The policies of these various institutions also vary: the amount of initial funding; the amount and type of training of villagers and committee members; whether savings accounts are optional with flexible depositing and withdrawal or rather are mandatory with withdrawal limited; whether lending occurs; if so, the size of loans and interest rates on loans; and whether emergency services are provided.

We find institutions (varying by type and policy) have very mixed experiences; many institutions fail within the first year or first five years, while others show growth in membership lending and savings services. Some of these experiences are related to chosen policies. In effect the different types of interventions are associated with positive and negative intermediation, and so we can see the effect of intermediation and policies in the micro data. As a natural and highly desirable corollary, we can see which types of funds and which policies should be pursued and which abandoned.

We find support overall for the positive impact that local financial institutions can have, under some circumstances:

- We find evidence in support of theory for positive impacts of village institutions on asset growth, especially among those institutions and policies that were associated with successful provision of intermediation services. That is, institutions which seem to succeed in membership, savings mobilization, and lending are institutions that have higher positive impact on households. In particular, cash loans are associated with the stability or expansion of services, while rice lending institutions and buffalo banks are associated with contraction or failure. PCGs and women's groups, institutions that typically lend cash, had positive impacts on asset growth, while buffalo banks and to a lesser extent rice banks appear to have had, if any, negative impacts. Also, three specific policies associated with institutional success (offering training services, savings services, and pledged savings accounts) were each individually associated with faster asset growth rates. Institutions with these policies yielded 5-6 percent higher annual growth in assets to their villagers.
- Institutions with certain policies can help to smooth responses to income shocks. These policies include offering emergency services, training services, and various savings related policies. While both standard (i.e., flexible) and pledged (i.e., restrictive) savings accounts help with smoothing, flexible accounts appear more helpful. Households in villages with these beneficial policies were 10-29 percentage points less likely to reduce consumption/input use in a year with a bad income shock. Nevertheless, the average institution does not appear to alleviate risk and may increase the probability of having had to reduce consumption, buffalo banks and perhaps rice banks in particular. Though the overall lack of a positive impact on alleviating risk is troubling, the fact that institutions associated with diminishing services had perverse (if any) impacts, and the policies correlated with successful intermediation had positive impacts is in line with what theory suggests.
- We find some evidence in support of the theories of constrained occupational choice, but more so for job mobility per se than entering into business. Women's groups do seem to increase job mobility. Pledged savings accounts (associated with successful intermediation) appear to increase the probability of switching jobs, and possibly starting a business, while traditional savings accounts (associated with diminishing intermediation) seem to have the opposite impact. Nevertheless, the evidence is not fully in harmony with the theory, since PCGs decrease the probability of switching jobs and also perhaps the probability of starting a business, and emergency services also lower the probability of starting a business.
- The most robust result is that institutions overall help reduce reliance on moneylenders, our indirect measure of the prevalence of formal credit constraints. The effect on the average villager is to reduce the probability of becoming a moneylender customer by 8 percentage points. Our interpretation

is that village institutions loosen households' constraints on formal credit, at least to credit that could be acquired alternatively from moneylenders. Other than women's groups, there is no strong evidence of any particular institution or policy associated with this impact, however.

Our overall recommendation, then, is that institutions, when established, offer training to potential villagers customers and to staff. They should also be encouraged to offer lending services when, by their own assessment, they are able to do so. Our advice on the provision of savings is more qualified: it depends on the local objective. Pledged savings are a surprisingly good vehicle, though the benefits may have more to do with the simplicity of administration and the minimization of transactions costs, rather than the nature of the pledge itself. Standard savings, with more flexible withdrawal, offer benefits similar to those of emergency services.