

# Introduction

This book evaluates the financial system of Thailand, a prototypical developing Asian economy. Thailand is intended and considered within this work as a leading example of a developing economy, and the method of analysis developed here can be applied to emerging markets more generally. Specifically, the financial markets and institutions of this developing, emerging market economy are analyzed with applied general equilibrium models. The book then assesses the impact of the financial systems on growth, inequality, and poverty and also quantifies households and firm-level gains and losses to financial policy variation.

Within this work, the financial system comprises both the role of formal and informal financial sectors implicated in the intermediation of savings and credit and the allocation of idiosyncratic and aggregate risk. The book thus gauges the impact of specific financial institutions, markets for credit and insurance, and government policies on growth, inequality, and poverty at the macro, regional, and village levels. It delivers an analysis of the distribution of gains and losses to households and businesses from finance-induced growth and financial-sector policy variation. The methods used herein include parametric and non-parametric estimation, calibration, and model simulation, which are typically used in combination with one another. The data employed is drawn from the author's own Thai surveys, conducted since 1996 throughout Thailand, as well as secondary data assembled in a research database archive with Geographical Information Systems (GIS) functionality.

The fundamental premise of this work is: if markets and institutions were perfect and there were no policy distortions, then certain benchmark standards would be implied. Relative to these benchmarks there are many anomalies in the Thai economy, even for those using what are considered

to be the safe and stable formal credit and savings instruments. Upon considering the data, it can be seen that initial wealth facilitates entry into business and facilitates investment for those already in business. Many households and businesses appear to be constrained in occupation choice, and estimated rates of return are high for occupation-constrained low-wealth households and low for unconstrained high-wealth households. Poor households and small to medium-sized enterprises (SMEs) are particularly vulnerable in consumption and investment to variation in income and cash flow, because some apparently insurable shocks such as movement in international rubber prices are not covered. This is but one example; there is other evidence of exogenously incomplete financial regimes which will be discussed in the coming pages.

Thus, various government program innovations and, conceivably, exogenous variations in access to intermediation have had a non-trivial impact on households and businesses. The new 1 million baht village funds program seems to have increased consumption, agricultural investment, and total borrowing beyond that of village-fund credit, while raising default rates and lowering assets and savings. Conversely, a Bank for Agriculture and Agricultural Corporations (BAAC) debt moratorium program has a neutral if not negative impact. Arguably, exogenous variation in village funds by policy (emergency services training, monitoring, pledged saving) and by type (rice bank, buffalo bank, production credit group, women's groups) implies variation in impact on asset accumulation, risk-sharing, occupation choice, and reliance on moneylenders. Instrumented variation in access allows an assessment of particular financial institutions such as commercial banks, BAAC, village funds, and the informal sector in providing a scorecard or rating system for their impacts on consumption and investment smoothing.

More generally, enhanced finance is established to be correlated with and, in the models evaluated here, causally related to the growth of GDP and to poverty reduction, though it has mixed consequences for the distribution of income. Macro total-factor productivity (TFP) is largely explained, and the TFP numbers make much more sense when we model the Thai economy based on its explicit micro foundations. Otherwise, TFP is negative for manufacturing during several sub-periods. Initially, an access-no access dichotomy is used. That is, there are some in the intermediated sector who have access and others in the same sector who do not, though the former group expands over time. Micro-Kuznet decompositions computed from socio-economic survey data examine the effects of increasing access to or use of the formal sector along with high and increasing

income differentials. We find increased access accounts for a non-trivial part of the growth of per capita income, as well as increased inequality, albeit with other factors including education and sector shifts also playing a role. Financial access, occupation and sector choice, and education are consequently shown to play key roles in both the contemporary Thai economy and in Thai historical data. A model of occupation choice with an exogenous financial driver explains the upturn in the Thai economy at the moment of financial liberalization. In comparison, a model with endogenous financial access and no policy distortions delivers observed long-term historical trends but not that economic upturn. These same models are then used as we focus on areas of interest. Regional and village analysis employing these models reveals the impact of the government-operated BAAC expansion which targets credit and gaps in private commercial bank services. These indicate the potential political and economic impact of market segmentation. Variation over time is also important. The impact of the financial crisis, which restricted intermediation, and the subsequent increase in government participation in the financial sector, as well as its current impact, is again part of the analysis. Subgroups such as village networks and family-related conglomerates are also studied.

A repeated theme is the description of the Thai economy as an integrated micro–macro system, with the choices of diverse individual agents aggregated to explain group, village, regional, and macro variables. Choices are shown to be constrained by real obstacles to trade. Predetermined, low levels of wealth limit not only financial access but also occupation choice and the education of children. Indeed, transitions of households from farming and wage work to non-farm businesses, and the role of SMEs, are key ingredients in the Thai economy, not only in the past but also in the contemporary system. These factors are important because the dynamic evolution of the economy is determined by an evolving distribution of wealth. This discussion is featured in early parts of the book. Later additions include other obstacles. Upon consideration of the data, there seems to exist a moral hazard in entrepreneurial effort and project choice and adverse selection, such as the exclusion of safer customers from the loan market. Furthermore, there appears to be limited commitment problems, with loan size limited by collateral or wealth, and a tendency for strategic default limited by unofficial sanctions. Apparently there are transactions costs that vary with household and village characteristics, such as distance to a bank office. Each model has its blend of observable variables (e.g., wealth, distribution of wealth, division into collateral, roads, schooling) and unobservable variables (e.g., talent, latent firm size, heterogeneity in

risk preferences, safe versus risky types, technologies). Tests distinguishing the models indicate that the mix of obstacles varies by region. Moreover, some of the transaction costs may pick up on the policy distortion of deliberately segmented markets. Finally, as noted earlier, contracts may be incomplete even beyond the revised benchmark standards that take these obstacles into account.

More generally, endogenous choices with impediments to trade and policy variation all play an important role in observed outcomes. Models of occupation choice that are limited by moral hazard, limited liability, or a combination of the two, make selection into entrepreneurship, investment, and rates of return all functions of wealth and talent. But the models take as a given which objects can be used as collateral, how much is required, the administered interest rates, the transportation costs associated with existing roads, and the bank's infrastructure. A model of endogenous access to formal credit and another model demonstrating a combination of formal and informal credit show how access choices are constrained by predetermined accumulated wealth, education and talent, the scale of potential enterprise, and current locations of the borrower. Again, these models take as a given transaction costs, the location of the bank, interest rates, and the legal system or collateral guarantees. An alternative model of whether to borrow and how much to borrow tests for adverse selection, taking as a given lender-imposed limits on loan size and opportunity costs related to individual and village characteristics. A model of this method of borrowing—i.e., individually with relative performance evaluations or as a group under joint liability—takes as a given pre-existing levels of wealth, inequality in the distribution of wealth, the covariance in project return, and the possibility within the economy of borrowing in these two different ways. Many of the variables should evolve over time as part of the optimal dynamics of the larger system, but there may be policy restrictions that are imposed. Models relating project risk to default test for moral hazard, strategic default, and adverse selection, taking as given interest rates, joint-liability co-payments, official penalties for default, screening and/or cooperation among joint-liability partners, the number of potential alternative lenders, and, again, the possibility of borrowing in groups. Many of these are policy decisions or control variables. Even given their limitations, both models described above offer insight into occupation choice and borrowing, by examining endogenous choices and their respective constraints.

There are thus non-trivial gains and losses to financial policy variation and, as previously discussed, consequences for growth, inequality, and

poverty. Financial liberalization that facilitates access to intermediaries and weakens wealth constraints is shown under a variety of the models proposed here to encourage a distribution of gains which is particularly high for the talented poor. An evaluation of specific policy options shows that impact is a function of estimated impediments to trade. With transactions costs and limited commitment, enhanced collateral is more effective than the placement of the formal sector in villages or the availability of interest rate subsidies. When savings, and hence wealth, are endogenous, enhanced collateral and more-generous credit limits speed up life-cycle mobility. But the impact of wealth redistribution via subsidies and lowered interest rates can be large when moral hazard is a concern. Dominating, however, is movement on the extensive margin, the order of magnitude of gains for the poor who move from no access to limited access of some kind. The general equilibrium effect of changes in price from financial liberalization can cause losses for existing firms that hire unskilled labor. Domestic liberalization is the cause of a surge in growth and rising wages, and is associated with the fall in inequality. Augmented capital availability via foreign capital inflows could, in principal, be expansionary and welfare improving, but at estimated parameter values the effect is small; in any event, much of this seems to have been squandered. New roads and easier access to agglomeration synergies lower business-entry costs. This can even dominate the credit effect: new roads alter substantially the path of regional development. But, if credit markets are distorted by implicit government policy, there are gains to be made in their removal, shown in Thailand to be particularly high for the educated, rising middle class near main roads and towns. Further, wealth redistribution from the middle class to the relatively poor can slow down growth. In short, this book seeks to prove that the incompleteness of financial regimes, their evolution, and government policy can, through business formation and investment, alter growth rates, inequality, and poverty.

### **The Townsend Thai Data: Development, Extent, and Research Engendered**

Given the ambitious tasks laid out above, it should come as no surprise that much work has gone into including analyses of all possible socio-economic data at micro, regional, and macro levels and uses, as well as data collected by the author in a relatively large long-term field research project.

The Townsend Thai data has its origin in initial field research in Northern Thailand. Townsend 1995b documents great variation in financial systems across villages relatively near one another. Informal structures and the use of family networks, quasi-formal village funds, and national-level financial institutions such as a Bank for Agriculture all seem to vary in the (small) sample, even holding the environment fixed. This puzzle led to the design of a large survey funded primarily by the National Institute of Health on Risk, Insurance, and the Family. This survey was a stratified clustered random sample of 192 villages in four provinces, two provinces in the industrialized/cash-crop region near the larger Bangkok metropolitan area and two provinces in the relatively poor and semi-arid Northeast, where subsistence rice farmers abound. The gradient from relatively rich to poor was a deliberate part of the design, with the hope that variation over space would be something like variation over time. Subsequent work has capitalized on this design. (Additionally, the four provinces chosen fulfilled another criterion—of having other secondary data, the Household Socio-economic Survey (SES), dating back to 1976; below we discuss further the use of overlapping, multiple data sets.)

The initial, relatively large survey carried out in April and May of 1997 covered 2,880 households, consisting of fifteen randomly selected in each of four villages for each of twelve tambons in each of the four provinces. This stratification of tambons was done to pick up key environmental variation documented in processed satellite imagery, as in Binford, Lee, and Townsend 2004. Topics in the household instrument covered include household composition, occupation, children living outside the household, residential patterns, household and agricultural assets, household businesses and landholding, and income and expenditures, as well as borrowing, lending, and savings. Additional survey instruments were delivered to 192 key informants, one for each village's headman, 262 joint-liability borrowing groups of the BAAC, 161 institutional surveys covering all village-level financial funds, and 1,920 soil samples. Data from each of these instruments are used in the research reported in the various chapters to follow. For example, Paulson, Townsend, and Karaivanov (2006) use the household survey; Ahlin and Townsend (2007b) use the BAAC survey; Kaboski and Townsend (2004) use the institutional and key informant survey, etc. Likewise, Giné (2001), Karaivanov (2003), and others have used these data in their PhD dissertations.

The Asian financial crisis occurred unexpectedly in July 1997, originating in Thailand with the devaluation of the baht. As the country headed into a deep recession, it became clear that there was an enormous—and important—

opportunity to track the impact of the crisis. With the timely help of the Ford Foundation, we fielded the first resurvey in 1997. These annual resurveys have continued with unbroken National Institute of Child Health and Human Development (NICHD) and National Science Foundation (NSF) support, and we now have ten years of panel data for households and key informants, a rare resource among developing countries. The resurvey rates are very high: 96 per cent to 97 per cent, making the data of great use to researchers. These data have been used in Alem and Townsend 2006 and Kaboski and Townsend 2007 to evaluate the role of financial institutions in credit and the allocation of risk, with instrumental or exogenous policy variation, and in Paulson and Townsend 2005 to document differences in the kinds of small businesses which were created in the crisis relative to their pre-crisis cousins. The research on enterprise formation and the evaluation of financial systems is funded by the NSF.

Unfortunately, the panel data cover only a subsample of the original 1997 survey: 960 households per year. However, more positively, as the surveys have gained recognition in Thailand, we have been supported by other sponsors and have extended the work. In cooperation with the BAAC, we added Præ in the North and Satun and Yala in the South, and with subsequent resurveys we now have a shorter yet regionally varied panel. Regrettably, the survey in Satun was interrupted by recent problems of terrorism and violence, and we have been unable to return safely, though in a sense this makes the initial survey there even more valuable. In 2005, the surveys in the other six provinces were extended to additional towns and cities in collaboration with the Ministry of Finance. We now anticipate offering an urban–rural contrast and an even more comprehensive account of the ever-changing financial system.

We were aware from the outset that certain activities and transactions would be difficult to measure accurately in annual recall data. Thus, in September of 1998, we began a detailed monthly panel. An initial baseline census covers all individuals and structures in sixteen villages, the four villages in one of the tambons in each of the four provinces of the original 1997 survey. The number of households in each village was increased from fifteen to forty-five, if there were sufficient households to do so, and otherwise the entire village is covered. We now have seventy-eight months for roughly 700 households who have been in the sample continuously for seven years (data for research at the time of writing). Topics in the monthly panel include household composition and occupational history, demographic information on relatives not living in the household, interactions with relatives and non-relatives, information on household members'

position in the village or tambon, financial and property assets, and detailed information on land holdings and use. Samphantharak and Townsend with Paweenawat and Pawasutipaisit create from the original data the income statement, balance sheet, and cash flow statements. Pawasutipaisit and Townsend are looking at case studies and success stories, and Paweenawat and Townsend are creating village-level product and balance and payment accounts.

All together, the Townsend Thai data is one of the longest panels in developing countries. A survey of similar scope is the 2002 follow-up of the 1982 Bangladesh Nutrition Survey which covered fifteen villages. This had a recapture rate at the individual level of 97 per cent. The NCAER ARIS-REDS Survey spans the period 1968–2006 in 6 rounds consisting of 250 villages, and is in the field now for the current round. It is a panel at the household level covering 10,000 households in the latest round. Additionally, Yale's Mark Rosenzweig reports their Economic Growth Center is embarking on two long-term panels. This project went into the field in Tamil Nadu in the fall of 2006 with a baseline including 5,000 households in 200 rural villages and 5,000 households in the urban population. The design is to follow the baseline individuals every three years, in perpetuity. These new collections of data are likely to become instrumental research tools in the developing countries which they examine, as the Townsend Thai data have been over the past twelve years.

Our survey and collection efforts in Thailand are supported by a variety of talented individuals and generous organizations. Khun Sombat Sakuntasathien is the Project Director of the surveys in Thailand. With his help, we have established the Thai Family Research Center, an organization we believe to be Thailand's premier data collection unit. At this date, we employ sixty-five staff in Bangkok and four regional offices. Some of the staff have been with us since the beginning, though data-collection methods have evolved with experience and the nature of the different surveys. A separate book by Sakuntasathien will provide a rich chronology of the data-collection efforts, of special interest to those doing long-term field research in developing countries. The monthly surveys have continued with the generous financial support from University of the Thai Chamber of Commerce (UTCC) in Bangkok.

Indeed, the University of Chicago and UTCC have founded a joint research center. This will house an increased number of secondary surveys: Household Socio-economic Survey (SES), Community Development Department (CDD), Bank for Agriculture and Agricultural Cooperatives (BAAC), Bank of Thailand (BOT), gross provincial product (GPP), Labor

Force Surveys, World Bank and Ajann Bank data, Pacific-Basin Capital Markets (PACAP), World Scope, and Japan Bank for International Cooperation (JBIC), among others. Various research papers featured in this book use multiple surveys. Lee, Kaboski, and Townsend use CDD and Townsend Thai data, Vickery and Townsend use SES and CDD, and so forth. The importance of comprehensive panel data and secondary surveys cannot be understated in research efforts, as the availability of multiple data sources is essential in developing microeconomic and macroeconomic models that can be combined.

### **The Larger Context: Literature in Review**

The Thai economy represents the ideal of a successful Asian economy. Thailand's average growth of 4.7 per cent per year in real per capita household income, in combination with higher GDP rates for the two decades 1976 to 1996, garnered the country citations as the 'Next Newly Industrialized Country', following in the path of Taiwan, South Korea, Singapore, and Japan. GDP growth at over 12 per cent between 1987 and 1989 was among the highest in the world. The poverty rate fell from 46 per cent in 1976 to 9.8 per cent in 2002. The financial crisis and tsunami proved to be only small fluctuations around this long-term trend. As such, the Thai economy in 2003 had a growth rate second only to China and in 2004 a rate of 7 per cent.

The success of Asian Tigers feeds into a larger debate on the inevitability and desirability of growth both in the world economy and in specific countries. Here we briefly review the big picture, placing the book in this larger context.

Dollar and Kraay (2001) argue that dramatically increased incomes in 'globalizing' countries such as India, China, Vietnam, and Bangladesh have reduced world poverty. Others focusing on inequality disagree (see below). Related is growth club literature and a debate between Barro and Sala-i-Martin (2004) and Quah (1993) on convergence; the former suggest that some countries are able to join the club and catch up, but Quah argues that others remain left behind. Lucas (2003) argues that success stories could be told for most countries, were it not for internal restrictive policies or barriers to trade and financial flows. Aghion and Howitt (1995) agree that technological innovation and implementation, education, and competition are key forces for growth, but only for those countries on the technology

frontier. For others off the frontier, the financial system and countercyclical government policy matter most.

In a debate with Galbraith and Pitt in *Foreign Affairs*, Dollar and Kraay (2002) also press the claim that growth among globalizing, formerly poor countries has caused world inter-country inequality to go down. In contrast, using both the now-standard decompositions that he has helped to foster and a somewhat larger sample, Bourguignon (1979) finds that world inequality increased from the beginning of the nineteenth century until the Second World War, driven by diverging cross-country incomes. More recently this trend in increasing inequality is weak, and other authors find it is now reversed. Both Bourguignon and Sala-i-Martin suggest that world inequality is driven now more by within-country inequality movements. Still, using cross-country evidence, Barro (2000) explains that the Kuznets curve, that of increasing and then decreasing inequality with growth, is not the dominant force in the data. His main finding is that equality is associated with growth in low-income countries, while high inequality is associated with growth in high-income countries. He then argues for and against redistributive policies, dependent on a country's relative income.

Many maintain a healthy skepticism about the ability to infer causality from correlations in the data, and all are aware of the issue. Rodrik (1999) argues further that the timing effects of globalization and liberalization policies are not consistent with the claims of Dollar and Kraay; he points out that India and China were growing before liberalization. Accordingly, there is now a literature distinguishing *de facto* versus *de jure* liberalization (e.g., Berglof and Claessens 2004). More generally, critics such as Rodrik take issue with cross-country work, worrying much about sample selection and the quality of the data. Others wonder as well about the standard linear specifications typically used in the empirical work. Indeed, Banerjee and Duflo (2003) take a non-parametric approach to the Kuznets curve in cross-country data and find that *any* change in inequality, in any direction, up or down, in one period, is associated with reduced growth in the next period.

Given concerns about cross-country data, controversies surrounding cross-country regressions, and the increasing relative importance in any event of within-country movements to world inequality and poverty, we turn next in this introduction to individual country studies.

Most are no less controversial. In the US, 'trickle-down economics' is a term often used by critics of growth policy in the popular press and in Congress, a phrase countered by the sentiment, 'a rising tide raises all boats.' The view that growth has beneficial consequences for the poor has professional economic antecedents dating back to Adam Smith (1776): to

paraphrase, laissez-faire policies seemingly favorable to entrepreneurs, such as reduced taxes, promote growth in such a way as to reach less-wealthy individuals. The US debate continues, as various studies show that moderately high and sustained growth has benefited the relatively rich while leaving part of the middle class at lower real incomes. Juhn, Murphy, and Pierce, in a widely cited study (1993), document a fall in the average real wage and a rise in the returns to skill.

Other studies show great diversity over countries. Ferreira, Leite, and Litchfield (2007) show via decompositions that education plays a large role in the Brazilian inequality story, but they find that returns to education may be decreasing. Inflation also exacerbates inequality. Race and family type play a lesser role, and there seems to have been regional and urban/rural convergence. In Mexico, Orozco and Fedewa (2006) show that disin-termediation after the 1992 financial crisis increased poverty and played a role in the movement in subsequent inequality. In other work for Mexico, a historical tendency toward convergence in incomes is now replaced with increasing concentration on the US border.

Others take a more theoretical approach. For example, Mookherjee, Banerjee, and Benabou (2006) focus on theories which make inequality a key factor in development economics. These authors are only beginning to examine the corollary empirical implications.

Many of the specific chapters to this book contribute directly to these debates. First, this close study of Thailand, a successful Asian Tiger, contributes to our understanding of the internal mechanics of growth. Second, the models included in this book make clearer the potential and actual mechanisms of trickle-down dynamics, as in Chapter 6. That is, we examine the often non-linear and sometimes complicated transitional dynamics of growth—and the heterogeneous impact of this growth with policy change on the Thai population. Third, Thailand displays a Kuznets curve, so we can study how a Kuznets curve can be generated in practice.

More specifically, Chapter 4 presents growth, inequality, and poverty decompositions for Thailand and enumerates key forces including education, occupation choice, and access to finance. These forces are associated with high growth, changing inequality, and a dramatic reduction of poverty levels. Viewing provinces and regions within Thailand as different countries, as in Chapter 3, we examine growth and inequality patterns as in the cross-country literature. There is convergence in part, but industrialization continues to make Bangkok an agglomeration hot spot, and a new agglomeration center has emerged in the North. Meanwhile relative poverty persists on the periphery. High growth regions tend to have high and

increasing levels of within-region inequality, but the far South is an important and telling exception, given current political instability and terrorism, with low levels and high inequality of income. Chapter 4 also illustrates that there is more inequality across regions in provincial product than in household incomes. For example, in the relatively poor Northeast, migration with remittances is a substantial equalizing factor in overall welfare. In any event, the contribution of across-province income to inequality, while first increasing, is now decreasing.

On the macro policy side there is a variety of literature assessing policy and, in particular, the role of financial deepening and financial policy change. We begin with the evident controversy over globalization. Prasad, Rogoff, Wei, and Kose (2003) offer a recent, balanced appraisal bearing on the key question: does financial, capital account liberalization cause growth or instability? Their evidence is mixed. There seem to be countries which do benefit, but for others liberalization seems premature.

Cross-country correlations are used to argue that finance causes growth, as in the seminal paper of King and Levine (1993). In a comparative study of Mexico and Chile, Kehoe and Prescott (2002) find that the only reasonable explanation for higher TFPG in Chile versus Mexico post crisis and reform is that Chile had a better functioning financial system. Moving toward the use of instruments in cross-country micro data, Rajan and Zingales (1998) find that industrial sectors that are more in need of external finance relative to the US develop disproportionately faster in countries with more-developed financial markets. Beck, Levine, and Loayza (2000) find a very strong connection between the exogenous component of financial intermediary development and long-run economic growth. Using cross-country panels with more refined tests for exogeneity, Demirgüç-Kunt and Maksimovic (1998) find that both banking system development and stock market liquidity are positively associated with high growth of firms; that is, a larger proportion of firms growing at an 'excess' level that requires access to external sources of long-term capital.

Within countries, Caballero, Hoshi, and Kashyap (2006) find that Japan stagnated due to an over-regulated and protected financial system, and Bertrand, Schoar, and Thesmar (2004) find that France grew at one point as a consequence of a financial liberalization. Burgess and Pande (2005) see poverty reduction in India as a direct result of increased access to credit via expanded bank branches in disadvantaged areas. Additionally, Banerjee and Duflo (2003) find that liberalized, then tightened, eligibility regulations for lending were associated with higher, then reduced, investment. Another within-country study is Guiso, Sapienza, and Zingales (2006), who

find in Italy effects of differences in local financial development. For a larger review of this literature see Levine 1997.

That cross-country financial policy variation and within-country financial liberalization can have direct impacts on growth, poverty reduction, and inequality should not come as a surprise. There is a multitude of micro studies that find financial market anomalies or facts inconsistent with neoclassical, complete financial-market models. For example, real interest rates and internal rates of return are sometimes found to be quite high, as in Banerjee and Munshi 2004, Foster and Rosenzweig 1996, and McKenzie and Woodruff 2003. However, there are other instances in which high rates of return are not seized upon—for example, Goldstein and Udry 1999 and Duflo 2003. Further, high average internal rates of return and interest rates are dispersed and heterogeneous, implying that some inefficient projects are also undertaken. Indeed, dispersion of TFP across firms is taken as a measure of inefficiency, as in Abiad, Oomes, and Ueda 2004. For an excellent and more-comprehensive review of the development literature, see Banerjee and Duflo 2003.

Various chapters of this book make contributions to this literature. Introductory material in Chapter 1 notes the increased depth of the Thai financial system and changing government financial sector policies. After establishing that access to finance is a key force in growth and inequality decomposition, Chapter 5 describes in detail the historical and contemporary Thai financial system, including its informal markets. Tying to the work of Prescott, Caballero, and others, Chapter 6 uses a model with micro underpinnings estimated in the data to show that Thai TFPG is largely explained by arguably exogenous financial deepening, with the highest contribution in a liberalization period. Likewise, Chapter 4 argues that emerging market capital inflows were not the direct cause of growth and inequality dynamics within Thailand.

Chapter 7 documents the wide range of neoclassical anomalies in the Thai case—for example, high rates of return for low-wealth households and low rates of return for high-wealth households, better allocation of risk for higher-wealth households despite targeted credit programs, and investment and occupation choice related to wealth. Chapter 8 shows with micro data that financial-sector variation and government financial policies do have an impact on various outcome variables. There is natural policy variation across village funds promoted by different ministries, and, more recently, variation in per capita credit expansion in one of the world's largest microcredit interventions. Finally, the book integrates these reduced-form econometric assessments with explicit choice models,

comparing instrumental variable (IV) estimates to the distribution of gains and losses to financial-sector policy change.

### **Embracing Multiple Approaches: Methodology and a Way Forward**

The book does not shy away from measurement and the presentation of facts. We try not to force models onto data that would be inappropriate for that data. Still, some ordering of the data is needed, and measurement without theory certainly has its limits. So these summaries motivate, indeed anticipate, subsequent modeling choices. Similarly, both the micro and macro data are put into a unified (atheoretic) conceptual framework, a common framework for measurement purposes, as in Chapter 2. This is the framework of financial accounting and the national income accounts. They are, in fact, the same thing. This symmetric treatment of micro and macro data helps in consistency. A variety of techniques are used in analysis, from ordinary least squares (OLS) and IV regressions to non-parametrics, and on to structural estimation. This willingness to embrace multiple approaches, often in the very same context, seems to set the book apart from most professional literature. Of course, not all the models are entirely successful. Anomalies remain. These are fully reported and embraced as instructive for the next round of research. Indeed, this iteration is started here, as in Chapter 9, which articulates modified and new theories which link growth, inequality, poverty, and financial deepening. Subsequent research can be tracked on the author's website <[http://cier.uchicago.edu/townsend\\_thai/townsendproj.htm](http://cier.uchicago.edu/townsend_thai/townsendproj.htm)>.

Still, the overall contribution of the manuscript is intended to be greater than the sum of the contributions of the individual chapters. As should be clearer from the earlier review of the literature, there is relatively little work that combines microeconomics and macroeconomics and equally little that combines both theory and data. In contrast, this book provides an overall conceptual framework that allows us to integrate both macro and micro data. The methods of the book have content in the sense that the various theories can, as noted, be rejected in the data, and again, fathering further rounds of the iterative research agenda. Finally, explicit frameworks allow the researcher to assess and quantify the heterogeneous impact of financial policy change at the levels of households and firms while being consistent with the facts of growth, inequality, and poverty.

There are relatively few contributions of this kind and, strikingly, practically none in developing countries. Banerjee and Duflo 2005 (see bibliography) travel down this road in their study of India, focusing as here on the financial system. Their theme is that the cross-country growth dynamics and TFP pioneered by Lucas (1993), among others, are hard to reconcile with an aggregated production function, as if the neoclassical framework were assumed to cover the micro data. Essentially, human-capital-adjusted worker-to-capital ratios imply TFP differentials between the US and India which would imply, in turn, an incredibly high interest rate in India. They find an average rate in India which, while relatively high, is only half the necessary order of magnitude. They also find, as noted, a large dispersion in interest rates. At the end of their book, Banerjee and Duflo thus begin the task of reconciling the anomalies with the macro evidence, moving toward a new micro-funded model with a small number of alternative technologies and varying fixed costs. They view their contribution as a preliminary attempt that is of interest primarily because there are few other studies which combine micro estimates with endogenous growth and inequality dynamics, as here.

Clearly, progress can be made, and has been made in other fields. Cunha and Heckman (2008) focus on human capital, the returns to schooling, and inequality in earnings in the US, as individuals with diverse talents and costs of selection maximize levels of education with limited information on ultimate returns. Much of this work is partial equilibrium and assumes complete markets, but Heckman, Lochner, and Taber 1998a and 1998b are a start on making the return on wealth and labor endogenous in the context of an aggregate production function. More explicitly, Cagetti and De Nardi (2005), and the literature they review, focus on wealth inequality in the US. The two begin with a representative-consumer, infinitely-lived construct, with a mechanical limit on credit, but they alter this to take into account heterogeneity—in particular, diversity in talent for wage-earning and setting up a business. High-wealth entrepreneurial individuals that value bequests to children and face uncertain lifetimes, seem to be a key to the concentration of wealth not only in the US but also in Sweden. The asset-pricing literature of Heaton and Lucas (2000) is solidly in this tradition. As usual, there are anomalies which fuel further work, but little of the literature provides models of transition and none deals with development and change in the financial system. This book can thus be seen as an attempt to unify fields under applied general-equilibrium modeling, bringing important, modified methods to emerging market countries.