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Introduction

THE TITLE AND SUBTITLE to this monograph juxtapose two seemingly different subjects and approaches. The title is exciting, timely, and important for political debates and policy decisions: inequality, the impact of trade and manufacturing shocks, financial liberalization and repression, and the impact of the COVID-19 virus pandemic. The subtitle, referring to measurement through integrated financial accounts, may seem tedious if not off-putting.

Yet, the title and subtitle are intimately linked. The measurements of phenomena fueling debates and policy actions are actually disturbingly imperfect. Yet, states of affairs are reported as factual, with accuracy not much questioned. Perceived facts reinforce political positions and have consequences through important policy actions.

Integrated financial accounts have the property that the flows in income statements, including savings and investments, are consistent with the changes in financial assets and liabilities in the balance sheet. Increasing income inequality is taken as synonymous with the rich getting richer, with a tailored financial sector serving that group, consistent with the Main Street vs. Wall Street dichotomy. But the United States and most countries do not actually have consistent measures of wealth and income. Inequality in wealth has to be estimated. Researchers are passionate about measurement, realizing its importance for policy questions, but they do not have anything close to ideal data sets. None of the U.S. micro household surveys are constructed in such a way that the income statements and balance sheets are consistent with each other. At the macro level, GDP is very well measured in the United States by the Department of Commerce's Bureau of Economic Analysis (BEA), and wealth is very well measured by the Federal Reserve Board through Flow of Funds Accounts. But these efforts typically are not linked. A wonderful integration

occurs with an inter-agency project creating Integrated Macro Accounts.[1] But the discrepancy between flows and changes in stock are acknowledged there, pointing to a relatively large errors-and-omissions line item. The single biggest problem is that we do not have consistent measures of wealth and income; that is, no single data set has income, consumption, and wealth.

These limitations show up in a variety of research efforts, for example, to assess the impact of increasing imports to the United States from China and to assess the longer-term sectoral decline in U.S. manufacturing. Via careful analysis with existing data, one can deduce that there are adverse effects on income and employment, and indeed correlations with the opioid problem (Autor, Dorn, and Hanson, 2013; and also Charles, Hurst, and Schwartz, 2018). We can also see from existing data the interstate trade and state-level current account deficits (Ehrlich, Fukui, and Townsend, 2021). But without integrated, consistent regional financial accounts, we cannot as yet look at the entire picture of financial balance sheet outcomes, the impact on assets and liabilities, even though exact accounting identities tell us they must be there.

Likewise, for the United States, the uneven impact of the COVID-19 pandemic is inferred through the measurement of payment flows, but economics and logic, and some rare examples from specialty surveys, tell us that what matters for impact and welfare is the balance sheet position of the impacted households. And we know even less about the liquidity positions of small businesses.

To give these comments a more positive spin, this monograph focuses on what can be done with consistent data. It features the impact of trade and financial liberalization, the flip side of repression. In Thailand, a growing emerging market country, we have created consistent integrated financial accounts at the individual household and small enterprise levels. These can then be aggregated up to create village and local income and product accounts, flow of funds associated with changes in line items of assets and liabilities, and balance of payment accounts. We can link anecdotal stories of individual households to their financial accounts, document the actual real impact on them from growth, and assess what would have happened to them if the liberalization in trade and financial flows had not been allowed. The data and model feature important heterogeneities in productivity and wealth, with precision about winners and losers, even within villages. We try to be constructive

1. See https://www.bea.gov/data/special-topics/integrated-macroeconomic-accounts.

and conclude the monograph with concrete suggestions for what can be done in the United States to allow for this kind of analysis.

In this introductory chapter we now go over some of these aspects in more detail.

1.1 High Inequality in Income and Wealth

In this section we focus first on the inequality situation in the United States, then adopt a larger cross-country perspective, and finally consider the role of geography.

1.1.1 Situation in the U.S.

Though the extremes in income and wealth are an important, age-old topic, Piketty, Saez, and Zucman (2018) have drawn renewed attention to them. In the United States, the share of wealth of the top ten percent increased in the 1920s, dropped during the Depression, and, after a period of stability, took off again, reaching 50%. The share of income of the top 1% has a similar U-shape, but also highlights the increasing contribution of income from capital (dividends, interest payments, and capital gains) for that top group. Indeed, when the rate of return on capital exceeds the rate of growth, the rich benefit and income inequality tends to rise. Relatedly, inequality in wealth increases.

1.1.2 An International, Advanced Country Perspective: Inequality with a Large but Inefficient Financial Sector

Hildebrand (2019) constructs annual national financial balance sheets and production accounts for twelve advanced economies since 1850. Financial assets relative to output have more than quadrupled in the past 150 years, since 1860. After 1980, the financial asset-to-output ratio skyrocketed, reaching 523% of gross domestic product in 2009, compared to just 223% thirty years earlier. Yet, ironically, it does not appear from Hildebrand's analysis that financial intermediation has become more efficient. Profits and the markups of banks are stable, and the share of investment funded by internal savings remains largely constant.

These observations are consistent with the boom in the financial industry observed by Piketty, Saez, and Zucman (2018), with rising inequality in Canada, the UK, and Australia. Since 1980, the share of overall income going to

the top 1% has risen sharply in these countries. Recent experience (at the time of this writing) also raises questions, with equity market prices breaking new records while COVID-19 ravages various sectors and income groups in the real economy.

1.1.3 The Geography of Inequality Is Part of the Mix

While focusing on health and earned wages, Agrawal and Phillips (2020) note that London, with its financial industry, stands out. According to the IFS Deaton Review summary[2] of Agrawal and Phillips (2020): "Productivity and earnings in London are one-third to one-half times higher than the UK average. Mean property and financial wealth increased by 150% in London in the ten years prior to 2016–18, compared with only 50% across Great Britain as a whole."

In France, a new increase in inequality started around 1983. The income share of the top 1% rose significantly between 1983 and 2007, from less than 8% of total income to over 12% over this period, thus by more than 50% (Garbinti, Goupille-Lebret, and Piketty, 2018).

By 2018, a protest movement arose, with the yellow vests holding weekly demonstrations against rising fuel prices and uneven burdens of taxes. They succeeded in getting a major fuel tax reversed. But the movement was stalled at first by violence and then by the COVID-19 pandemic (Wikipedia 2021).

For the United States, Smith, Zidar, and Zwick (2019) provide state-level estimates of wealth. The data reveal vast disparities in wealth across regions. In the Northeast, wealth exceeds $450K per capita, whereas in the poorest states in the South, wealth is less than $200K. Further, and much more to the point, disparities are increasing. The coastal states have experienced increased wealth-to-income ratios between 100% and 300% since 1980, in contrast to more modest growth inland.

1.1.4 Repressive Policies Follow

With globalization, trade, and capital flows thought to underlie the inequality phenomena, repressive and/or distorting policies have followed. The United States renegotiated NAFTA with quotas and protectionist targets for specific industries. The United States also pulled out of the Trans-Pacific Partnership

2. See https://ifs.org.uk/inequality/geographical-inequalities-in-the-uk/

(TPP), imposing sanctions on China, with American farmers and consumers caught in the middle. Tax policy in the United States under the previous Republican administration seemed to target individual states as a function of past voting patterns. The 2020 election continued to highlight an urban/rural divide, with Democrats seeming to favor a continuation of some protectionist Trump policies (e.g., buy American), while also pushing for a higher minimum wage and increased social benefits.

The EU works at maintaining the monetary union while debating financial integration across countries. Britain under Brexit has pulled out of the trade union. Yellow jacket protestors in France have called for lower fuel taxes, a reintroduction of the solidarity tax on wealth, and a minimum wage increase.

1.1.5 Yet the Measurement of Inequality Is Problematic, despite All the Above Perceived Facts and Policy Actions

Piketty, Saez, and Zucman (2018), much to their credit, articulate quite clearly some of the problems and limitations of policy guidance. They focus on the absence of "distributional accounts" corresponding to measured national income.

> We still face three important limitations when measuring income inequality. . . . There is a large gap between national accounts—which focus on macro totals and growth—and inequality studies—which focus on distributions using survey and tax data, usually without trying to be fully consistent with macro totals. This gap makes it hard to address questions such as: What fraction of economic growth accrues to the bottom 50%, the middle 40%, and the top 10% of the distribution? How much of the rise in income inequality owes to changes in the share of labor and capital in national income, and how much to changes in the dispersion of labor earnings, capital ownership, and returns to capital? Second, about a third of U.S. national income is redistributed through taxes, transfers, and public good spending. Yet we do not have a good measure of how the distribution of pre-tax income differs from the distribution of post-tax income, making it hard to assess how government redistribution affects inequality. (p. 554)

Piketty, Saez, and Zucman (2018) seek to overcome the limits of existing series by computing better inequality statistics for the United States, creating these needed distributional national accounts.

As they note, though, this is not a new concept:

> The first national accounts in history—the King's famous social tables produced in the late seventeenth century—were in fact distributional national accounts, showing the distribution of England's income, consumption, and saving across 26 social classes—from temporal lords and baronets down to vagrants—in 1688. (p. 558)

1.1.6 An Obvious Remedy to the Measurement Problem: Integrated Financial Accounts

Not having the necessary data is simply an artifact of the way U.S. data are collected. Ironically, to construct integrated accounts, all one needs to do is follow the steps outlined in U.S. Department of Commerce (1985). If one were able to start at the level of individual household and/or firm accounts, then one would be getting measures of individual income and contribution to production. This would happen along with consistent balance sheets and income flows from assets. Such complete financial accounts are termed "integrated," comprising balance sheets, income statements, and cash flow statements that are consistent with each other. In other words, the financial accounts are naturally integrated in the measurement of flows and stocks. Finally, the integrated accounts allow aggregation from micro to macro. One does not need to distribute national income. Indeed, accounting logic is the other way around. National income is the sum of individual incomes. And all of Piketty, Saez, and Zucman (2018)'s questions can be answered. Given all of this, and their importance to policy, it is startling that the United States, like most countries, does not have integrated financial accounts.

Both U.S. national income accounts and inequality studies often use the same data sets, such as the CPS data, as one example. The issue is making micro and macro consistent with each other, whether the approach be top-down or bottom-up. That requires a conceptual framework and associated measurement. Complete financial accounts for a surveyed population in Thailand are presented in Samphantharak and Townsend (2009), here reported in Chapter 2, and the aggregation, here in Chapter 3.

1.1.7 Where Do the Current Inequality Facts Come from?

At the micro level, measurement of inequality in wealth in the United States is currently done by mechanically linking income to the balance sheet. Thus, the measurement of wealth inequality in the United States inevitably involves

assumptions and extrapolations. Typically, authors use a rate of return approach. Essentially, observed income is discounted to get the present value of wealth, mechanically. More specifically, using aggregated IRS data, measures of dividends and interest income are used to infer the balance sheet of financial assets, with the same formula applied uniformly across income classes and regions. Smith, Zidar, and Zwick (2019) improve on this by allowing heterogeneity in rates of return across wealth classes and activities. This matters for orders of magnitude, as they summarize:

> Accounting for heterogeneity reduces the growth in top shares since 1980 by half. . . . Our approach also alters the composition of top wealth. We find a larger role for private business wealth and a smaller role for fixed income wealth, consistent with the composition of top wealth in the SCF [the Survey of Consumer Finances] and estate tax data. Less than half of top wealth takes the form of liquid securities with clear market values. (Smith, Zidar, and Zwick, 2019, p. 3)

1.1.8 Integrated Macro Accounts in the U.S.: The Conceptual Framework Is Correct and Clear

The Integrated Macro Accounts (IMAs) integrate flows from available data from the Bureau of Economic Analysis with changes in balance sheet items, the stocks, of the Federal Reserve Board. The IMA is (an unfortunately rare) joint project, featured on both the FRB and BEA websites. But inevitably it comes with errors and omissions. The problem of divergent measurement is recognized by both agencies.

Still, the concept of IMA is identical to the one underlying the complete integrated financial accounts.

> This article introduces a set of macroeconomic accounts that relate production, income and saving, capital formation, financial transactions, and asset revaluations to changes in net worth between balance sheets for major sectors of the U.S. economy. These new accounts should help economists gain a better understanding of major developments in the U.S. economy by providing a comprehensive picture of economic activity within an integrated framework in which consistent definitions, classifications, and accounting conventions are used throughout the presentation. (Bond et al., 2007, p. 14).

Unfortunately, the change in net lending or net borrowing from the integrated macro "current account" flows is different from the net lending or net

borrowing in the financial account changes in the balance sheet. The former comes from income minus consumption data, as with the BEA. The latter is net lending from the financial accounts, that is, measured by observing the changes in actual assets and liabilities using flow of funds and the SCF. When comparing the two—the flows vs. changes in stocks—discrepancies can be quite sizable.

1.2 Implications for Policy, What We Can Say Currently but with Limitations: The China Shock and Manufacturing Shocks

As noted, trade policies are formulated around inequality concerns and the aggravating impact of globalization. In what follows, we set the stage for a discussion of what we know from the literature and associated problems that stem from a lack of integrated financial accounts. The main limitation is our inability to assess, quantify, and compare mitigating mechanisms; standard accounting identities do not add up as data come from different sources.

1.2.1 The Adverse Impact of Trade and Manufacturing Shocks

In deservedly much cited work, Autor, Dorn, and Hansen (2013) summarize their findings:

> We analyze the effect of rising Chinese import competition between 1990 and 2007 on U.S. local labor markets, exploiting cross-market variation in import exposure stemming from initial differences in industry specialization and instrumenting for U.S. imports using changes in Chinese imports by other high-income countries. Rising imports cause higher unemployment, lower labor force participation, and reduced wages in local labor markets that house import-competing manufacturing industries. In our main specification, import competition explains one-quarter of the contemporaneous aggregate decline in U.S. manufacturing employment. Transfer benefits, payments for unemployment, disability, retirement, and healthcare, also rise sharply in more trade-exposed labor markets. (Autor, Dorn, and Hansen 2013, p. 2121)

Likewise, from Charles, Hurst, and Schwartz (2018):

> Using data from a variety of sources, this paper comprehensively documents the dramatic changes in the manufacturing sector and the large decline in

> employment rates and hours worked among prime-aged Americans since 2000. . . . We find that manufacturing decline in a local area in the 2000s had large and persistent negative effects on local employment rates, hours worked and wages [and] that declining local manufacturing employment is related to rising local opioid use and deaths. . . . Given the trends in both capital and skill deepening within this sector, we further conclude that many policies currently being discussed to promote the manufacturing sector will have only a modest labor market impact for less educated individuals. (Charles, Hurst, and Schwartz 2018, p. 2)

1.2.2 *The China Shock and Manufacturing Shocks through the Lens of Open Economy Accounting Identities*

The China shock can be analyzed through the conceptual lens of accounting identities at the state level: trade flows, current accounts including gifts and public/private transfers, and associated potential adjustments on the financial side. But currently this has to be done without the benefit of integrated accounts. In particular, the disconnect between flows and changes in stocks hampers the ability to study all potential mitigating adjustment mechanisms.

As an analogy, when the U.S. macro economy runs a trade deficit against another country, the latter country is accumulating U.S. assets. Likewise, if a state runs a trade deficit, exporting less of previously manufactured goods, the state receives private and/or public transfers or runs down financial claims on other states, or both. The accounting identities are:

- Financial flows (baseline measurement)

$$\begin{aligned}
\text{Current Account}_{st} &= \text{Trade Balance}_{st} + \text{Net Income Transfers}_{st} \\
\text{Trade Balance}_{st} &= \text{Exports}_{st} - \text{Imports}_{st} \\
\text{Net Income Transfers}_{st} &= \text{Gross State Income}_{st} - \text{Gross State Product}_{st} \\
\text{Private Transfers}_{st} &= \text{Net Income Transfers}_{st} - \text{Public Transfers}_{st}
\end{aligned}$$

A second set of financial flows is based on the premise that positive changes in net worth correspond with increases in claims on other states, except that increases in the housing stock and other capital investments are within-state (with the obvious change in sign for running a current account deficit on the left and a corresponding decrease in claims on other states).

TABLE 1.1. Data sources.

Variables	Data source
State-level trade flows	Commodity Flow Survey
State-level gross income and product	BEA regional accounts
State-level public transfer receipts	BEA regional accounts
State-level housing stock	American Community Survey
State-level house price	Federal Housing Finance Agency
State-level stocks and bonds	IRS tax record
State-level wage, dividends, interest income	IRS tax record
State-level capital stock	Yamarik (2013)
State-level household debt	NY Fed Consumer Credit Panel
State-level Chinese shock	Autor, Dorn, and Hanson (2013)
State-level manufacturing shift share	Charles, Hurst, and Schwartz (2018)

Source: *Recreated from Ehrlich, Fukui, and Townsend (2021).*

- Financial flows (alternative measurement) (from Ehrlich, Fukui, and Townsend 2021)

$$\begin{aligned}\text{Current Account}^{alt}_{st} &= \text{Net worth}_{it} - \text{Net worth}_{i,t-1} - \text{Capital Investment}_{it} \\ &\quad - \text{Housing Investment}_{it} \\ \text{Net worth}_{it} &= \text{Housing net worth}_{st} + \text{Stocks}_{st} + \text{Bonds}_{st} - \text{Debt}_{st}\end{aligned}$$

But currently, we do not have consistent state-level aggregated regional accounts. Thus, following the literature and using a variety of independent data sets (see list in Table 1.1), Ehrlich, Fukui, and Townsend (2021) create synthetic accounts, which, not unlike Integrated Macro Accounts, come sometimes with substantial errors.

To gauge the impact of the China shock and the manufacturing decline, one utilizes these accounting identities and the data estimation, via seemingly unrelated regressions (SUR). The overall impact is summarized in Table 1.2, which shows that state-level exports decline under both shocks and the current account deteriorates under the China shock. Private transfers increase in both instances.

Though the financial flows ought to counterbalance the current account deficit, we currently find a counterintuitive increase in the housing stock. We have been unable to find other financial adjustment mechanisms, though when the current account deteriorates, as noted, there must be some adjust-

TABLE 1.2. Summary of the effect of shocks on the variables in the accounting identities.

	China shock	Manufacturing Bartik
Real current account	–	Insignificant
Trade balance	–	–
Exports	–	–
Imports	Insignificant	Insignificant
Transfers	+	+
Private transfers	+	+
Public transfers	+	+

Source: *Recreated from Ehrlich, Fukui, and Townsend (2021).*

ment, by definition, but not due to construction of the data. The accounting errors may be insurmountable without attacking the problem directly.

1.2.3 *Integrated Financial Accounts in an Emerging Market Setting*

In Thailand, we have measured from transactions data the flow of funds exactly as in the accounting identities. In Chapter 3, we will discuss the construction of the data, and in Chapter 4 we will look at the trade and financial liberalization that has happened over time. Specifically, using relatively high-frequency, long-duration panel data, we construct integrated household financial accounts that are consistent with income and wealth, that is, with changes in stocks and flows. Relevantly here, we also construct village and regional economic accounts and the associated balance of payments accounts. If a village runs a current account surplus, we see all of the adjustment mechanisms. By construction, everything adds up properly.

Chapter 4 presents a heterogeneous-agent/occupational-choice/trade model with financial frictions built and calibrated around micro and regional facts, that is, at both the individual level and the aggregate level. With this in hand, one can conduct counterfactual policy experiments. One of these determines the effect of isolationist policies that could have impeded trade and/or capital flows across regions by looking at wedges in relative prices and interest rates.

Impacts can be large and vary with policy. They are significantly heterogeneous, with both gains and losses and non-monotone movement across wealth classes and occupations, even allowing for occupation shifts which a priori might have mitigated impact. This is the advantage of having data consistent from the ground up.

1.3 Implications for Policy: The Limitations of What We Can Say Currently in the U.S. regarding the Impact of COVID-19

There are a variety of important measurement efforts underway to assess the impact of the COVID-19 shock on the U.S. economy as policymakers formulate their policy response. Notable among them are those of Chetty et al. (2020) and the Philadelphia Fed.[3] In addition, there are some revealing specialty studies and reports from the JPMorgan Chase Institute (for example, see Cox et al., 2020).

Chetty et al. (2020) build a publicly available platform that tracks economic activity at a granular level in real time using anonymized data from private companies. This illustrates how real-time economic tracking can help rapidly identify the origins of economic crises and facilitate ongoing evaluation of policy impacts. They report weekly statistics on consumer spending, business revenues, employment rates, and other key indicators disaggregated by county, industry, and income group. Their original paper featured impacts as of spring 2020, with the most recent data available on their website (https://tracktherecovery.org/).

They show that high-income individuals reduced spending sharply in mid-March 2020 in areas with high rates of COVID-19 infection and in sectors that require physical interaction. This greatly reduced the revenues of small businesses in affluent zip codes that cater to high-income households. This led to a surge in unemployment claims in affluent areas. State-ordered re-openings had little impact in that stimulus payments to low-income households increased consumer spending sharply but had modest impact on employment in the short run.

The Philadelphia Fed has made a comprehensive effort to assemble data. This includes their own survey[4] as well as their utilizing Fiserv payments processing data. These efforts show that the share of those with severe income loss has slowed, but roughly a third of the population is quite adversely impacted. The fraction of respondents seeking assistance from family and friends, seeking

3. See the FRB-Philadelphia for their collection of research briefs at https://www.philadelphiafed.org/the-economy/covid19.

4. For example, https://www.philadelphiafed.org/-/media/frbp/assets/consumer-finance/reports/cfi-covid-19-survey-of-consumers.pdf

credit card and other loans, and deferring payments on mortgages and utilities increased sharply.

However, there is little balance sheet information in either the Chetty/Hendren assemblages of data or the Philadelphia Fed sources. Higher income households that reduced their spending arguably accumulated liquid assets. But because we are not looking at the balance sheets of small businesses, we do not know how many can or will recover. Cox et al. (2020) report on a deteriorated cash position for small businesses.

For lower income households, Baker et al. (2020) explore responses to stimulus payments and individual heterogeneity in marginal propensities to consume (MPCs) by using high-frequency transaction data from SaverLife, a nonprofit that had been helping working families develop long-term saving habits and meet financial goals. In their data, individuals linked their financial accounts so that the authors would have access to de-identified bank account balances and transactions data. The point is that here one sees both flows and changes in assets consistently.

With this, Baker et al. (2020) document sharp and immediate responses to the stimulus payments. Greater income, larger income drops, and less liquidity are all associated with larger MPCs out of the stimulus payments. Liquidity on the balance sheet is the strongest predictor of such MPCs.

In contrast, the JPMorgan Chase Institute's report on the household data from its clients paints a different picture (Cox et al., 2020). Even low-income clients increased their liquid asset balances, relatively more than others. In addition to sample selection issues, one notes for the JP Morgan Chase data that there are few measured items on the balance sheets and there is no effort to reconcile income with balance sheet changes.

1.4 Inequality and Liberalization in Developing Countries: The Same Questions in Reverse

Simon Kuznets, who pioneered the development of national income accounts, is also a pioneer in the study of inequality. Of course, as noted, both strands come together here. The Kuznets curve is based on the idea that inequality is likely to increase along the development path as relatively few benefit much, but then inequality declines in a catch-up phase with rising levels of wages, education, and financial access. Data from some countries, such as Thailand, support the hypothesis, but not from others.

One does see in data that, over time, emerging market countries are becoming more open in trade and financial flows, both externally and internally—and hence are becoming more liberal. Still, key questions are raised. One seeks to disentangle the impact of real factors (movement in relative sectoral prices, which determine production and trade) from financial factors (lower interest rates, more liberal credit/asset ratios). One seeks to do this not only for households providing wage labor but also for households running farm/business projects, and in the context of diverse, heterogeneous village and regional economies. There is a parallel with the earlier policy discussion, except that here actuals and counterfactuals are reversed relative to that discussion. Above, the reference to policy concerned the impact of tariffs and what might have happened had they not been imposed. Here, we assess the impact of the observed liberalization on GDP and the distribution of income, but ask, what if the liberalization had not been allowed to happen? What if internal domestic restrictions on trade and financial flows had been imposed?

1.5 Outline of the Monograph

Here we summarize the flow of the monograph, starting first with a detailed summary of the work in Thailand, where we have the desired data and can use those data in models answering policy questions, and then moving to work in the United States, including what is being done on important policy questions with the more limited data, and, finally, what we would like to do in terms of constructing better data.

1.5.1 Thailand

To begin, we take advantage of the unusual data for Thailand. We proceed in two broad steps. The first, in Chapter 2, is to describe the creation of complete integrated financial accounts at the household and SME level. The second step, in Chapter 3, illustrates the power of this information for the generation of village-level national accounts and flow of funds. Chapter 4 develops an economic model of trade and financial integration, as if running a China shock in reverse.

More specifically, we: (1) use the preexisting complete financial accounts from a comprehensive, integrated survey for the sampled households (income statement, balance sheet, and cash flow statement), of which many are running small and medium enterprises, and we embrace the concept of financial account-

ing for firms, for all sectors; (2) create the village economic System of National Accounts (SNA) and balance of payments accounts from the detailed balance sheets and income statements made available from the first step; (3) generate stylized facts on within-village heterogeneity in wealth and productivity; (4) generate stylized facts on cross-regional variation in factor prices, factor intensities, financial obstacles, and openness; (5) compare the regional measures to national events and numbers; (6) construct a two-sector occupation-choice/trade/financially constrained open-economy model for each of the regions, grounded carefully around the observed micro and regional heterogeneity; (7) estimate/calibrate key parameters and unobserved variables, different across the diverse regions; (8) simulate and judge model performance against the data; (9) disentangle the contribution of real or financial factors by freezing one group or the other at their initial values and comparing them to the baseline simulations; and (10) impose real and financial frictions, or wedges, one at a time.

We find that the impact of real and financial factors can be heterogeneous and large, generating both gains and losses and non-monotone impacts across wealth classes and occupations, even when allowing for occupation shifts. We are able to map and quantify impacts back onto featured case-study households, to bring the analysis to life, going beyond anecdotal stories and conjectures.

More about the data: Townsend Thai surveys are stratified random samples covering rural and semi-urban areas. We use the monthly data from January 1999 to December 2005, annualized, so we have six years in total. We have a reasonably large sample of households for each village, and we aggregate up to the county level (with four randomly selected villages for each county). Two counties are in the agrarian Northeast and two are relatively close to Bangkok and the industrialized central core. These economies reflect the diversity within the country; e.g., the Northeast not only specializes in agriculture but also has relatively less real capital, and tends to be less open to trade flows. The Townsend Thai surveys illustrate how much can be done with relatively small samples, and can serve as a prototype for a similar effort in the United States.

From these data, we review and utilize the framework developed in Samphantharak and Townsend (2009), which created the balance sheet, income statement, and statement of cash flow for each of the households/businesses. These accounts are integrated in the sense that changes of stocks in the balance sheet and flows in income statements are consistent with each other, without any error.

We then follow the steps laid out in U.S. Department of Commerce (1985) to create integrated village economic accounts for Thailand. As noted, no agency has done this yet for the United States. In particular, we create the production account, appropriation account, saving-investment account, and balance of payments account. We are mindful that our data are not perfect, in particular, that there can be sampling error and that we cannot distinguish the source (village production vs. import) of all consumption data. We also need to decide in the end which variables to feature and use in the model, for example, real capital vs. financial assets such as cash, how to account for land, and so on. And, of course, there is the measurement error in the measured variables themselves to account for.

In terms of stylized facts, we feature movement over time as the country evolves with structural transformation and public policy. We look at the value of outstanding loans and the loan/wealth ratios, which, as anticipated, have been increasing, especially in the Northeast; the declining price of manufactured goods relative to agriculture; declining and converging real interest rates; rising and diverging real wages, especially in the Central region; and rising wage to interest rate ratios. We distinguish between labor-intensive agricultural production and capital-intensive manufacturing production; present evidence of constraints, in terms of credit and the heterogeneity of the marginal product of capital across high and low wealth households; and document varying degrees of openness. We stress that we have measures of the distributions of wealth and income, already anticipated in the discussion of distributional accounts in the United States and their shortcomings.

To calibrate the model, we act as if interest rates are accurately measured and taken as given (small open economy). We do not believe we see accurate measures of local relative prices, of agricultural vs. manufactured goods, or of borrowing limits. Relative prices are determined at the sector level, but the particular types of goods in the capital-intensive and labor-intensive sectors vary by region; available price indices are not sufficiently disaggregated to reflect this regional variation or shipping costs. Borrowing limits are an approximation to implicit and formal credit contracts, which are not modeled in detail here. Thus, these two variables—relative prices and borrowing limits—are calibrated to match the sectoral profit shares and the wage rates, respectively. We are able to match quite well.

To judge the performance of the model, we compare the model's predictions on occupations, income, and wealth with those of the actual households

in the Townsend Thai data. We do a reasonable job predicting the occupational choices and the levels of total income and fixed assets of the sampled households, which we detail in a sample of case studies.

We run two counterfactual exercises, namely, freezing real (relative prices) and then financial factors (interest rates and borrowing limits) at their initial values, with the other variables (financial and then real, respectively) allowed to vary freely. We compare this in turn to the baseline simulations, where both real and financial factors are allowed to vary to match the wage rates and profit shares we see in the data. When only financial factors are allowed to vary, as, for example, in a counterfactual for the province Lopburi in Thailand's central corridor, the profit share of the capital-intensive sector is higher, whereas when we vary only relative prices, the profit share is lower. Under either of these counterfactual scenarios, the wage rate is higher than what we observe in the data.

In a more austere counterfactual, we impose trade frictions or financial frictions on the economy, one at a time. When trade frictions are imposed, the price of imported goods must increase relative to that of exported goods. So, it matters whether the local economy was initially importing labor-intensive goods or capital-intensive goods, raising the price of the factor that is used relatively intensively in the imported goods. The counterfactual with trade frictions can thus cause the wage rate to drop, if, for example, the price of the labor-intensive goods is lowered, with the lost demand for exports of those goods. Of course, similar arguments can be made for capital-intensive goods. When financial frictions are imposed, the interest rate will decrease (or increase) if the economy had been exporting savings or lending (or borrowing from abroad, out of the region). Thus, owners of capital experience large losses (or gains).

Finally, our model shows heterogeneous effects on the households' welfare. In these exercises, whether households are better off or worse off also depends on where they are in the ability and wealth distributions. For example, if trade frictions increase the price of capital-intensive goods relative to the price of labor-intensive goods, this will, in turn, lower the wage rate as there is less demand for labor. Then, high-ability, high-wealth households, comprising entrepreneurs in the capital-intensive sector hiring laborers, will benefit from trade frictions. On the other hand, the low-ability households comprising wageworkers will be worse off. Also, the very-high-ability households, comprising entrepreneurs in the labor-intensive sector, could face worse prices.

1.5.2 Summary of Work in the U.S.

We take the framework of Samphantharak and Townsend (2009) to well-known and widely used U.S. surveys in two ways. First, in Chapter 5, we assess the degree of integration in U.S. household surveys. We do this by creating complete financial accounts of surveyed households in each of the selected surveys, running code over measured variables. We also assess the degree of coverage of each survey. But our main point is that the errors between the changes in the balance sheet and the flows from the income statement are a measure of integration of the accounts, and unfortunately these errors typically are not small. Unlike the effort in Thailand, survey answers were not cross-checked with the integrated accounts in mind.

Second, also in Chapter 5, we then merge the framework of Samphantharak and Townsend with the Federal Reserve Bank of Boston surveys on payments to create a comprehensive statement of liquidity accounts, generalizing the notion of cash flow. Though we do this for households, the conceptualization would apply to other sectors of the National Income and Product Accounts (NIPA) and Flow of Funds Accounts.

In Chapter 6, we present the Integrated Macro Accounts of the United States, a joint effort of the Federal Reserve Board and the Bureau of Economic Analysis. These integrated accounts are consistent in principle with the integrated and complete financial accounts in Samphantharak and Townsend (2009). But, as the data are gathered by different agencies from different sources, lack of integration shows up in nontrivial discrepancies.

The final chapter envisions the next logical step, creating integrated financial accounts for the United States, from the ground up. This would come from a household and SME survey that combines field research with financial transactions data, then integrated with other data. A related top-down approach works with Federal Reserve Board and Bureau of Economic Analysis data to help bridge the gaps in what would be integrated regional accounts, in turn guiding the coordination of data and further survey efforts.

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