

CHAPTER 1

Introduction, Motivation, and Overview

Macroeconomics is ubiquitous and nobody questions its importance. Media commentary on breaking economic data – perhaps the gross domestic product (GDP) and its growth, employment, inflation, or the balance of payments – is almost inescapable. Political campaigns often revolve around starkly conflicting views on exchange rates, movements of jobs across borders, or concerns about government deficits and debt. For a discipline that is called a science, macroeconomics displays a confusing divergence of views on real-world developments.

Understanding economic developments – making sense of the mass of data, debate, and commentary produced every day – is difficult even for experts. It is especially challenging for those whose jobs or studies require that they can critically evaluate macroeconomic developments and policies, who have some university-level training, but who have not had practical experience in economic analysis. Our premise is that reporting and debate on macroeconomics can be made understandable if the underlying issues are placed in a broad analytical framework on which economists generally agree and which has immediate relevance to real-world settings.

The aim of this book is to provide such a framework. It is designed for use in courses on applied macroeconomics or for professionals in finance, management, or government and public policy who need to understand macroeconomics.

The manuscript has been filtered through a variety of professional experiences. The inspiration for it started at the International Monetary Fund (IMF) where we were involved in various ways with answering the question “What analytical tools are essential for assessing a country’s macroeconomic outlook and policies and communicating this assessment in the simplest possible terms?” It evolved through work in the private financial sector with portfolio managers who were highly motivated, severely time

constrained, and focused on opportunities, vulnerabilities, and risks in the countries in which they were investing. It was subsequently reorganized, broadened, and made more accessible in seminars on *Applied Macroeconomics* for Economics majors at Bowdoin College.

Our conviction throughout has been that good macroeconomic analysis requires both an understanding of key conceptual constructs and exposure to real-world situations where positions must be taken and decisions made under uncertainty. In this spirit, the book occupies a somewhat unusual niche: it assumes some familiarity with basic macroeconomic models and does not cover the same ground as most textbooks, it eschews the higher-level mathematics and technical material of current academic debate, and it focuses on the practical application of macroeconomics to frequently encountered situations. Thus, for each segment of macroeconomic analysis addressed, the book summarizes key analytical tools and presents thought experiments and exercises that require readers to make decisions and formulate advice in simulations of real-world situations. At the end of the book, readers should be able to evaluate the assumptions and contingencies on which various positions are founded, and the strengths and weaknesses of alternative policy prescriptions.

A few essential requirements for analysis cut across all of the specific topics addressed in the book:

Reading the data. Critical evaluation of real-world developments and policies is impossible without an ability to read the main macroeconomic accounts: the national income accounts as well as the balance sheets and flow accounts of the government, the central bank, the banking sector, and the country as a whole in its transactions with the rest of the world (the balance of payments and the international investment position). Each of these accounts has its own conventions. Once these are understood, the store of data becomes a stepping stone to an appreciation of what is transpiring in and between economies.

Understanding macroeconomic constraints. There are many hard-and-fast relationships among macroeconomic variables drawn from the different accounts. In the language of economists, these are the definitional identities and adding-up constraints that discipline analysis, policy prescription, and forecasting. Unlike many behavioral models, these relationships are not contentious, and they are essential to an understanding of the economy.

Respecting the demands of macroeconomic sustainability. “Sustainability” (a term that will be used in many contexts through the book) essentially

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refers to a configuration of policies and economic developments – typically related to economic growth, inflation, credit expansion, the government budget, and the balance of payments – that does not inherently presage a need for substantial and discontinuous future adjustment. In other words, sustainable policies or developments are those that can reasonably be expected to be steady and predictable in the absence of shocks. Judgments about whether any given set of macroeconomic policies is sustainable must inform all responsible analysis and prescription. Such judgments start with a view of the potential output of the economy – when capital and labor are fully employed but not stretched to a point of continuously rising inflation – which is in a sense the envelope for the macroeconomy. But they also encompass, among other things, the government finances and the external balance of payments accounts. They influence risk premia in financial markets, and they impinge on a wide swath of private and government decisions. At each level, clear methodologies exist for reaching at least qualitative judgments about sustainability. These form another layer of essential constraints on macroeconomic policies.

Considering policy choices. Policy options in the face of economic cycles are a theme throughout the book. We include a great deal of discussion of cyclical positions (booms and recessions) and the efficacy of policies aimed at reducing the amplitude of cycles (countercyclical policies). The debate on policy options almost always uses tools – like those for assessing potential output or financial sustainability – that are based on (sometimes heroic) assumptions that need to be examined critically. Our experience is that the political process will almost always drive governments to adopt countercyclical policies, and that such policies can do good. But when they are based on an incorrect reading of the data or on unrealistic objectives, they can be harmful and make the economy vulnerable to crisis.

Identifying vulnerabilities and crisis triggers. The policy objective of forestalling economic crises runs through the book. Crises are usually triggered when a shock event exposes a vulnerability in the fiscal or financial system. It is impossible to predict trigger events, but it is possible for policies to make a country's finances more robust and less vulnerable to these shocks. Significant portions of the coverage of monetary policy, government financing, microprudential and macroprudential policies, and risks in a country's macroeconomic interactions with the rest of the world (in Chapters 4, 5, 6, and 7) are motivated by this policy objective.

Characterizing cross-border economic linkages. The perspective that runs through the book is global. In all of the presentations of data catchment systems and tools for analysis, we emphasize international economic linkages through both trade and global financial markets – how they must be read in the data and how they constrain economic developments and policies in both large and small countries.

We have sought to create as simple a framework as possible by being ruthlessly selective in what we present while acknowledging real-world complexity. Many of the intense debates among academic economists of different persuasions reflect differences in assumptions about how the agents in an economy (i.e., consumers and investors, workers, managers, owners, and entrepreneurs) respond to market signals and government policies. The arguments are often couched in stylized models that facilitate elegant mathematical analysis. To the extent that we give these debates and models relatively short shrift, it is because a vast academic literature covers these topics but there is less emphasis on the basic analytic prerequisites that lie behind them and are our main focus. The essence of arguments is usually accessible using the tools we provide.

Each of the following six chapters covers one broad area of macroeconomic analysis:

- Chapter 2: the real economy from the perspectives of both potential output and aggregate demand
- Chapter 3: prices, inflation, interest rates, exchange rates, and expectations
- Chapter 4: the monetary accounts and monetary policy
- Chapter 5: the government accounts and fiscal policy
- Chapter 6: financial stability, the financial system, and regulation (including microprudential and macroprudential policies)
- Chapter 7: the external accounts (the flow balance of payments and the stock international investment position)

Each chapter starts by outlining the principal concepts covered and ends with exercises to test comprehension. Analytic and diagnostic techniques are presented with numerous detours to illustrate how they have been used to understand or address actual macroeconomic issues. Throughout the book (and especially the exercises) readers are forced to adopt the perspective of a decision-maker or advisor: they are called upon to diagnose developments and advocate policies or assess opportunities.

A companion online volume provides answers to the exercises and presents three full-length case studies that allow the reader to use the

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tools of the main volume to interpret the problems and consider the policy choices in the actual historical circumstances of the case-study countries.¹

The book is necessarily sequential in its coverage. But it is impossible to discuss demand and supply (covered in Chapter 2) or monetary developments (in Chapter 4) without acknowledging the influence of government operations and international economic relations on them, even though the fiscal and external accounts are only covered fully later in the book. The summary and intuitive treatment of these topics in chapters before they are covered in depth should suffice for the level of analysis required; readers, however, will gain a richer appreciation of some of the material treated lightly in these earlier chapters when they get to the more in-depth subsequent coverage. Also, it is suggested that readers return to some of the exercises in earlier chapters as they progress through the book and become capable of more comprehensive analysis.

Finally, this book is intended as a guide, not an academic treatise or a textbook.² Even though the book obviously draws on the broad body of economics literature, we provide few citations or references, limiting these to instances where we have drawn directly from a publication. In the main, the economics behind our analytics is so much a part of the standard curriculum that it defies specific attribution. We are enormously indebted to colleagues at the IMF who over the years taught us most of what we know. We hope we have gotten it right.

¹ This online volume is available without charge. For instructors using the book in their courses, it can be accessed at www.cambridge.org/Lipschitz. For those using the book for reference or self-study, it can be obtained by following instructions on the website www.macroeconomicsforprofessionals.com. The three case studies cover the Latvian financial crisis of 2008, the crisis in Greece in 2010, and the economic difficulties and policy conundrums in South Africa in 2013. In each the reader is cast in an advisory role and asked to provide advice based on an examination of the relevant data and economic circumstances.

² Readers may need at times to refer to one of the widely-used textbooks on macroeconomics. Three excellent options are:

Dornbusch, Rudiger, Fischer, Stanley, Startz, Richard, *Macroeconomics* (12th edition), New York: McGraw Hill Education, 2013.

Mankiw, M. Gregory, *Macroeconomics* (9th edition), New York: Worth Publishers, 2015.

Mishkin, Frederic, *Economics of Money, Banking, and Financial Markets* (11th edition), Boston: The Pearson Series in Economics, 2016.

CHAPTER 2

Real Economic Activity

This chapter covers the measurement and analysis of a country's aggregate economic activity, a term typically used synonymously with total output. The chapter is concerned with "real" measures and concepts – i.e., measures that do not include changes in prices. Four basic concepts are covered:

- 1 The determination of actual and potential output of a country (the difference between the two being critical to policy analysis in subsequent chapters).*
- 2 Decisions on labor and capital inputs to production (which determine employment and investment and affect international capital flows).*
- 3 Factors that influence whether output levels across countries converge (i.e., whether poorer countries catch up with richer ones).*
- 4 The National Accounts data catchment system, and how it can be partitioned in different ways to diagnose demand shocks and help formulate policies.*

A country's aggregate economic activity during any period, its gross domestic product (GDP), can be measured in three ways – as aggregate output (or the supply) of goods and services, as aggregate demand for those goods and services, or as income generated from the production of those goods and services.¹ The critical aspect of GDP is that regardless of which of the three measures is used, it represents the *value-added* produced by the economy.²

¹ We use GDP here because it is the most commonly used measure. But, as shown in section 2 of this chapter, alternative broad measures of economic activity may be more appropriate in particular circumstances.

² The concept of output in GDP is not gross output but value-added. (The term "gross" in the name refers to the fact that depreciation of capital is not excluded from the measure.) If a manufacturer requires a raw material input to produce output, the contribution to GDP would be only the value-added by capital and labor to that raw material input. If the raw material is produced by domestic mines, its production would be included in GDP as

Although, in principle, all three measures produce the same statement of activity, each provides a different perspective on the underlying influences. This chapter reviews the measurement and conceptual underpinnings of aggregate activity from both the production and expenditure perspectives. While we will frequently use the terms “output,” “production,” and “activity,” these will all refer to GDP. Even those familiar with these concepts should find useful the numerous examples of how they are used in real-world analysis.

Aside from wars and natural disasters, the conditions of supply change relatively slowly. This is why we usually approach secular questions about an economy’s productive potential (i.e., the amount that the country could produce if its labor and capital were fully employed) from the perspective of the production or supply side. Cyclical fluctuations, however, usually originate in demand (i.e., actual expenditure), so much of the discussion about short- to medium-term movements in the real economy centers on the analysis of demand.³ Over time, demand and potential supply should converge, but they are not identical at any point in time.

Figure 2.1 shows a stylized relationship between *potential output* and *actual output* (which responds quickly to demand). The former tends to follow a trend reflecting the growth of labor and capital inputs and changing productive efficiency. The latter reflects actual changes in demand (which are subject to more frequent shocks) and therefore varies around the trend.

Figure 2.1 shows a business cycle perspective for a roughly 10-year period. In this example, potential growth is a steady 3 percent a year (represented by the slope of the smooth blue line), and actual growth (the changing slope of the red line) varies between a high (during the initial boom years and final recovery years) of 5 to 7 percent per year and a low (during the middle recessionary years) of 0 to –1 percent.

The gap between the actual output line and the potential output line (the “output gap”) defines the business cycle (positive in the boom and early slowdown period and negative in the recessionary and recovery years). When demand exceeds sustainable capacity – so that inventories fall, imports rise, and producers add extra hours for existing employees or hire more workers – changes in prices and other variables usually push demand

the capital and labor value-added in the mining process. If the raw material is imported, it is excluded from GDP.

³ This is the conventional view. But, as will be seen in later chapters, sudden changes in risk premia, and thus interest rates and exchange rates, may be as much supply shocks as demand shocks.

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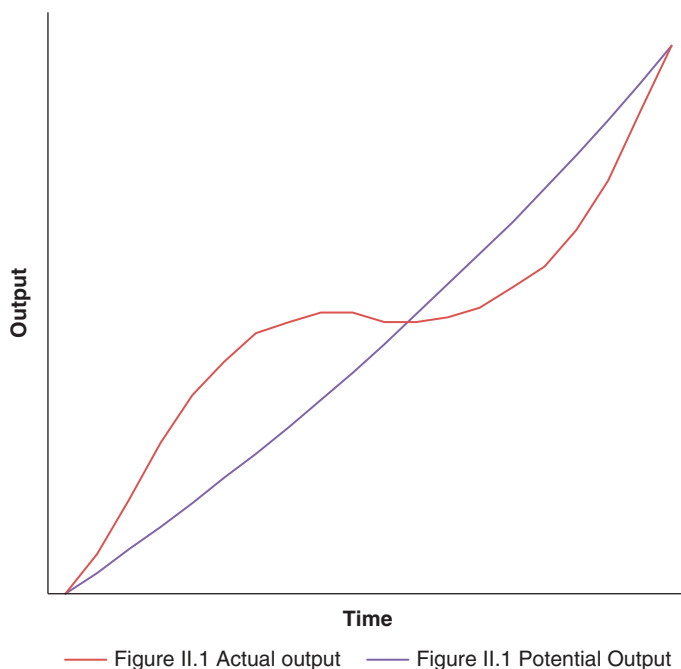


FIGURE 2.1 Macroeconomic cycles: potential and actual output

back down to the level of potential output. When demand falls short of supply – inventories rise, imports fall, and producers cut back on labor input – a similar (but opposite) set of endogenous changes is put in train that leads eventually to a rise in demand. But these automatic adjustments may be slow (or, put differently, prices may be sticky) so that booms and recessions may be protracted. The objective of countercyclical macroeconomic policies (often also called demand management policies) is to shorten the periods when an economy is experiencing output gaps. Thus, the analysis of aggregate activity and output gaps in this chapter feeds directly into the analysis of monetary policy in Chapter 4 and fiscal policy in Chapter 5.

Some of the most fundamental questions that macroeconomic policymakers must answer on economic activity are these:

- What is a country's potential level of output?
- What components of demand are driving a country's actual level of output, and can they feed back to affect potential output?

- Is there an “output gap” at any point in time?
- How can the sources of shocks to demand be identified in ways that help fashion appropriate policy responses?
- How is a country’s productive capacity likely to grow over the medium to long term (that is, how steep is the slope of the blue line in Figure 2.1) and what will determine this growth rate?

The first four questions relate mainly to where a country is in its business cycle and how demand shocks play out. Answering them is the first step in addressing a range of issues, from whether economic conditions and institutions are in some way preventing the economy from fully employing its labor force to whether countercyclical policies are needed and how strongly they should be applied. The fifth bullet concerns the underlying growth rate of the economy.

To address the cyclical questions as well as the long-term growth question, we need supply-side analysis to estimate potential output. Such analysis focuses, in the first instance, on a country’s inputs to production – its labor supply and capital stock. More broadly, however, it needs to encompass a country’s institutional and technological environment and the “structural policies” – i.e., policies that influence this environment over the medium and long term. Cyclical questions also require demand-side analysis – i.e., analysis of the shorter-term fluctuations in the components of demand (consumption, investment, and trade). As will be clear from this chapter and those that follow, sound analysis of both supply and demand is critical to getting economic policies right.

1 The Supply Side

The centerpiece of supply-side analysis is estimating an economy’s potential output – a task that is conceptually straightforward but exceedingly difficult in practice. Although the input variables that determine potential output tend to move slowly and be less volatile than those that influence demand, there can be structural breaks in potential output due, for example, to sudden shifts in technology, governmental institutions, or trading conditions. But a more important difficulty in assessing potential output is the fact that past and current levels of potential output – as opposed to actual output – are unobservable; potential output is a concept rather than a variable for which there are data. And initial errors in assessing potential output tend to carry over into future diagnostic and policy errors.

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Good estimates of potential output are essential to two types of macroeconomic analysis: calculating output gaps and projecting GDP with a focus on a three- to five-year horizon so as to understand whether there are any structural impediments to medium- and long-term growth.

a A Framework for Understanding the Drivers of Potential Output

Macroeconomists borrow a production function framework from microeconomists to consider the drivers of potential output. The production function, in this application, represents the capacity to produce goods and services by combining inputs (defined broadly as labor and physical capital) in a given institutional environment and state of technology.⁴

$$Y = Af(K, L) \quad (2.1)$$

Y = aggregate real output (or GDP) per year

K = an index of the capital input per year

L = hours worked per year

A is a summary of the efficiency with which capital and labor are combined. It is also referred to as total factor productivity (TFP).⁵

Whereas microeconomists specify the production function to explain the value-added in an individual firm or industry, in macroeconomic analysis the production function is specified as one aggregate process for all goods and services. That is, it is a characterization of a country's average production process even though every good and service individually has different input proportions of K , L , and A , and the specific characteristics of capital and labor employed differ for different goods and services produced. The aggregation is heroic but the production function mechanics nevertheless provide a useful conceptual framework.

Actually using the production function to assess a country's potential output requires specifying a functional form and parameters relating inputs

⁴ Note that aggregating capital over different vintages and labor over different skill levels is problematic, but a more elaborate function to deal with these complications would detract from the clarity of exposition without adding analytic value.

⁵ The concept of A or TFP is much debated among economists. In their macroeconomic application, Y , L , and K are aggregates of products or inputs that are not in fact homogeneous. But they are more measurable than A , which does not even have any conceptual units of measurement. Rather, A is typically calculated as a residual in equation 2.1 given data for Y , L , and K .