

*Manufacturing—Lessons from the Textile and Apparel Industries*. Oxford: Oxford University Press. Describes the textiles and clothing supply chain, focusing on the role of retailers, and documents how advances in communication technology have transformed the sector from being supply driven to becoming demand driven.

Eurostat. <http://epp.eurostat.ec.europa.eu>. Source of employment data for the EU.

Evans, C. L., and J. Harrigan. 2005. "Distance, Time, and Specialization: Lean Retailing in General Equilibrium." *American Economic Review* 95: 292–314. Provides empirical evidence that time is an important competitive factor in the clothing sector and finds that the sources of U.S. imports of "fast fashion" items have shifted to nearby countries.

Rivoli, P. 2005. *The Travels of a T-shirt in the Global Economy: An Economist Examines the Markets, Power, and Politics of World Trade*. Hoboken, NJ: John Wiley and Sons. Follows a T-shirt from the cotton fields in Texas to factories in China, sales in the United States, and resale on the secondhand clothing market in Dar es Salaam. At each leg of the journey, economic, policy, and social aspects are discussed.

UN Comtrade. <http://comtrade.un.org/db/>. Source of trade data.

UNIDO. <http://www.unido.org/doc/3474>. Source of employment data for countries other than the United States and the EU.

U.S. Bureau of Labor Statistics. <http://www.bls.gov/ces/home.htm>. Source of employment data for the United States.

World Trade Organization (WTO). 2001. "Comprehensive Report of the Textiles Monitoring Body to the Council of Trade in Goods on the Implementation of the Agreement on Textiles and Clothing during the Second Stage of the Integration Process." *G/L/459* (July), 31. An official WTO report from the Textiles Monitoring Body assessing the implementation of the ATC, it provides comprehensive documentation of the implementation of the Agreement on Textiles and Clothing and its market access impact and can be downloaded from the WTO Web site.

HILDEGUNN KYVIK NORDÅS

### ■ time inconsistency problem

Suppose a government is responsible for setting a policy for several periods into the future. If the government chooses to change its policies from those promised at an earlier date, the policies are said to be *time inconsistent*. The modern interpretation of this issue relates to the time inconsistency of optimal policy rules (Kydland and Prescott 1977). Policymakers may announce in advance the policies they will follow to influence the expectations of private households. Once private decision-makers have acted on the basis of their expectations, however, a policymaker may be tempted to renege on an announcement, leading to suboptimal outcomes.

For example, consider the example of a central bank that is concerned about the inflation rate and the unemployment rate in an economy. The Phillips curve, which postulates an inverse relationship between inflation and unemployment, predicts that the trade-off between inflation and unemployment depends on expected inflation (Mankiw 2007). If policy setting in the central bank is guided by the Phillips curve, to reduce expected inflation the central bank might announce that low inflation is the main goal of its monetary policy. This is because a favorable trade-off between unemployment and inflation depends on the expected inflation rate being low. The announcement of a policy of low inflation is not credible, however. The central bank has an incentive to renege on its announcement and implement an expansionary monetary policy to further reduce the unemployment rate once firms and households have formed their expectations of inflation for the future, and set wages and prices accordingly. Private decision-makers understand the central bank's inherent incentive to shirk its announced policy and do not believe the central bank's announcement in the first place. The implication is that the economy ends up with a higher inflation rate without any lowering of the unemployment rate. Time inconsistency therefore leads to suboptimal outcomes.

Insights from the time inconsistency problem underlie the widely accepted contemporary view among economists that the best policies are the most

predictable policies, or those that follow simple rules. This basic insight also relates to an earlier debate on rules versus discretion in macroeconomic policy (Friedman 1959). A rule specifies in advance the actions that policymakers will take or commit to. Commitment refers to the ability of a government to make binding choices. Economists have long recognized that unless a government can commit to a policy rule, it will in the future want to modify policies that are optimal from the standpoint of today. Further, without such binding policy commitments (i.e., policies aimed at tying the hands of the government), the private sector will fear that today's governments will make promises that its successors will refuse to honor.

**Monetary Policies to Overcome Time Inconsistency** Time inconsistency provides a rich explanation for a wide variety of issues, such as why capital accumulation in countries is low, or why countries choose to fix their exchange rate. In line with the earlier example, however, one of the most important applications of time inconsistent policies is the "inflation bias" inherent in monetary policy (Barro and Gordon 1983a, 1983b). *Inflation bias* refers to prolonged episodes of high inflation above what is socially desirable. An example is the "great inflation" of the 1970s in the United States. Time inconsistency hampers a government's efforts to keep inflation stable and leads to high and persistent inflation despite repeated promises to fight it. This affects the volatility of inflation, output, and interest rates, leading to a misallocation of resources.

Given the implications of time inconsistency, a large body of research has evolved since the 1980s on ways to overcome the time inconsistency problem in macroeconomic policy. For example, in the case of monetary policy, economists have suggested various types of monetary policy rules. Other solutions involve the delegation of monetary policy to an independent authority with well-defined objectives. This in turn has led to greater central bank independence. Central bank independence can help in situations where credible policy rules are not enforceable. In contrast to rules,

discretion implies the absence of commitment to a particular rule, leaving policymakers more flexible with their future actions.

Another solution to the time inconsistency problem involves reputation building. By acting consistently over a long period, a policymaker builds up a reputation that causes the private sector to believe its announcements. Once a reputation has been built, expectations of inflation become consistent with the announced low inflation policy. In some cases reputation can be imported. For instance, the monetary authority can peg its currency and import the monetary policy of another country with more credible institutions. This is often the primary motivation behind the adoption of hard pegs such as currency boards, dollarization, and common currencies.

**Political Macroeconomics** Since the early 1990s a line of research called political macroeconomics has evolved to explore the political determinants of macroeconomic policy (Drazen 2000; Persson and Tabellini 1994). This line of research recognizes that a policymaker's incentives and constraints originate in the political process. For example, within the context of fiscal policy, elected officials may be motivated by electoral reasons to enact time inconsistent expansionary policies that have long-term inflationary consequences. Alternatively, fiscal stabilizations—attempts to reduce a large fiscal deficit of a country—are likely to fail if the adjustments are achieved by higher taxes, as in Ireland's fiscal stabilization of 1982. The time inconsistency of this policy is that governments are unlikely to deliver on the promise of higher taxes, given the nature of the political business cycle. With respect to monetary policy, the economist Rogoff (1985) argues for the appointment of a conservative central banker who has greater inflation aversion than society as a whole to eliminate the inflation bias inherent in monetary policy. Welfare improves because the central bank trades some flexibility for some gain in credibility. Indeed, different views about rules and discretion—with the associated themes of commitment, credibility, and time inconsistency—are

among the most pressing issues concerning the conduct of macroeconomic policy in a strategic setting.

See also common currency; currency board arrangement (CBA); currency substitution and dollarization; discipline; exchange rate regimes; inflation targeting; monetary policy rules; monetary versus fiscal dominance

#### FURTHER READING

- Barro, R., and D. Gordon. 1983a. "Rules, Discretion, and Reputation in a Model of Monetary Policy." *Journal of Monetary Economics* 12: 101–21.
- . 1983b. "A Positive Theory of Monetary Policy in a Natural Rate Model." *Journal of Political Economy* 91: 589–610. These two articles show how an incentive toward time-inconsistent behavior in the Kydland-Prescott model can yield an inflationary bias in monetary policy. They also introduce a new solution to the time inconsistency problem: reputation building.
- Drazen, A. 2000. *Political Economy in Macroeconomics*. Princeton, NJ: Princeton University Press. Represents the first full-scale effort to organize a large body of literature on political economy and macroeconomics. It has an extensive coverage and depth as well as critical assessment.
- Friedman, M. 1959. *A Program for Monetary Stability*. New York: Fordham University Press. Contains a comprehensive discussion of an early debate between rules versus discretion in macroeconomic policy.
- Kydland, F., and E. Prescott. 1977. "Rules Rather than Discretion: The Inconsistency of Optimal Plans." *Journal of Political Economy* 85: 473–91. The modern interpretation of time inconsistency of policy stems from this pathbreaking paper. It had a profound effect on the practice of policymaking.
- Mankiw, G. 2007. *Macroeconomics*. 6th ed. New York: Worth. Contains economic and noneconomic examples on time inconsistency.
- Persson, T., and G. Tabellini. 1994. *Monetary and Fiscal Policy*. Vol. 1. *Credibility*. Cambridge, MA: MIT Press. Contains a full treatment of political macroeconomics with a specific focus on policy issues.
- Rogoff, K. 1985. "The Optimal Degree of Commitment to an Intermediate Monetary Target." *Quarterly Journal of*

*Economics* 100: 1169–90. A pathbreaking paper in the time inconsistency literature on the importance of central bank independence.

CHETAN GHATE

#### ■ Tinbergen principle/rule

See assignment problem

#### ■ Tobin tax

Nobel Laureate economist James Tobin (1974, 1978) advanced a now well-known case for what has come to be known as the Tobin tax, namely, the imposition of a modest ad valorem tax (i.e., a percentage of value) on all spot transactions in foreign exchange. (Spot transactions are those that entail actual exchanges of currency at the existing market rates.) Tobin wrote that "the tax would apply to all purchases of financial instruments denominated in another currency. It would have to apply . . . to all payments in one currency for goods, services, and real assets sold by a resident of another currency area" (1978, 159). Tobin advanced the case for this tax on currency trading following the collapse of the Bretton Woods system of pegged exchange rates and attendant concerns about speculation, volatility, and misalignment in currency markets. Tobin also suggested that the tax could restore "some fraction of short-run [policy] autonomy"; however, he was careful to explain that "it will not, should not, permit governments to make domestic policies without reference to external consequences" (1978, 158).

The Tobin tax built on John Maynard Keynes's case for a securities transactions tax. Keynes (1936) proposed a substantial transfer tax on all transactions as a means to dampen the general tendency for speculation to dominate enterprise in liquid, competitive financial markets. Keynes (1980, chap. 36) also proposed taxation of foreign lending to contain speculative capital movements.