Introduction: New Research in Monetary History – A Map

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Abstract

This handbook aims to provide a comprehensive (though obviously not exhaustive) picture of state-of-the-art international scholarship on the history of money and currency. The chapters of this handbook cover a wide selection of research topics. They span chronologically from antiquity to nowadays and are geographically stretched from Latin America to Asia, although most of them focus on Western Europe and the USA, as a large part of the existing research does. The authors of these chapters constitute, we hope, a balanced sample of various generations of scholars who contributed to what Barry Eichengreen defined as "the new monetary and financial history" – an approach that combines the analysis of monetary aggregates and policies with the structure and dynamics

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of the banking sector and financial markets. We have structured this handbook in ten broad thematic parts: the historical origins of money; money, coinage, and the state; trade, money markets, and international currencies; money and metals; monetary experiments; Asian monetary systems; exchange rate regimes; monetary integration; central banking and monetary policy; and aggregate price shocks. In this introduction, we offer for each part some historical context, a few key insights from the literature, and a brief analytical summary of each chapter. Our aim is to draw a map that hopefully will help readers to organize their journey through this very wide and diverse research area.

Keywords
Monetary and financial history · Monetary regimes · Monetary theories · Monetary policies and institutions

This handbook aims to provide a comprehensive (though obviously not exhaustive) picture of state-of-the-art international scholarship on the history of money and currency. Its chapters cover a wide selection of research topics. They span chronologically from antiquity to nowadays and are geographically stretched from Latin America to Asia, although most of them focus on Western Europe and the USA, as a large part of the existing research does. Their authors constitute, we hope, a balanced sample of various generations of scholars who contributed to what Barry Eichengreen defined as "the new monetary and financial history" (Eichengreen 2011) – an approach that combines the analysis of monetary aggregates and policies with the structure and dynamics of the banking sector and financial markets.

The synthesis of money and finance is a development firmly rooted in history. On one hand, "outside money" (issued by monetary authorities) was increasingly complemented by "inside money" (private liabilities such as bills of exchange, banknotes, and bank deposits) in achieving payment finality. On the other hand, monetary policies were always intimately connected to government finance, especially in wartime, from debasements in the Middle Ages to massive debt monetization in the world wars of the twentieth century. In modern economies, money markets based either on short-term private or public debt evolved into a pillar of liquidity management by commercial banks and a privileged channel through which central banks influenced monetary conditions. As a consequence, the regulation of governments' access to central bank money and the stability of banks and money markets became essential tasks of monetary authorities in order to preserve the value of money and the functioning of the payment system. These historical developments explain why money, banking, and government finance evolved as overlapping and deeply integrated fields both in theoretical and empirical research under what is known today as monetary economics (Champ et al. 2018; Walsh 2010). In historical research, as emphasized by Eichengreen, topics such as the interaction between monetary policy and banking failures in the Great Depression, the impact of Gold Standard adherence on sovereign spreads, or the role of credit boom-bust cycles in financial crises are prominent examples of this synthesis.

The "new monetary and financial history" accounts for a substantial portion of research in economic history. In the *Journal of Economic History*, one of the leading publications in the field, articles dealing with monetary and financial topics showed a permanent upward shift in the 1980s compared to the previous decades. Jointly, papers in the subfields "money," "banking and credit," "public finance," and "business cycles and depressions" accounted for 14.7% of pages in the 1980s and 18.6% in the 1990s (Whaples 2002). Over the entire period (1941–2016), they represent 8.9% of published papers – a share quite far from "economic growth" (16.6%) but substantially larger than any other topic (Wehrheim 2019). Research in monetary and financial history also critically contributed to the professional integration of economic history into economics, as reflected by the rising trend of economic history papers published in economics journals since the 1990s (Abramitzky 2015; Margo 2018). Macroeconomic, monetary, and financial history accounts for 25% of the 82 economic history papers published in the top five economics journals between 2013 and 2018 (Jaremski 2019). A quick look at the bibliographical references at the end of this introduction confirms the remarkable capacity of research in monetary history to reach out to academic audiences beyond professional economic historians.

This handbook reflects the key characteristics of historical research on money in the last 30 years. Its analytical framework is strongly influenced not only by modern monetary and financial economics but also by other theoretical strands such as network and information economics. At the same time, it draws increasingly on new institutional economics to shed light on the historical development of legal and institutional factors that underpin money creation and management. It also makes regular and extensive use of empirical methods to analyze original historical datasets and test hypothesis. Readers interested in this specific aspect can refer to the chapters on financial markets, payments systems, financial panics and crashes, financial systems, and the Great Depression in the recent *Handbook of Cliometrics* (Diebolt and Haupert 2016).

We have structured this handbook in ten broad thematic parts: the historical origins of money; money, coinage, and the state; trade, money markets, and international currencies; money and metals; monetary experiments; Asian monetary systems; exchange rate regimes; monetary integration; central banking and monetary policy; and aggregate price shocks. In the following pages, we offer for each part some historical context, a few key insights from the literature, and a brief analytical summary of each chapter. Our aim is not to provide a survey of the existing body of knowledge (a daunting task beyond the scope of this introduction) but rather to draw a map that hopefully will help readers to organize their journey through this very wide and diverse research area.

Historical Origins of Money

Since the nineteenth century, the debate on the origins of money and the sources of its value is dominated by a controversy. One school of thought regards money as a discovery of rational private agents bargaining in incipient market economies: it was

invented in order to reduce the high transaction costs implied by the use of barter in the exchange of goods and services. While in principle any commodity could be used for that purposes, the advantages of precious metals (durable, divisible, portable, saleable) led to the emergence of coins as the standard form of currency. Its value (i.e., its purchasing power) was intrinsically determined by its metallic content. The transaction cost theory of the origins of money, which can be easily found in standard economics textbooks, is a hypothetical and formalist narrative (Wray 2012) – a creation story (Desan 2014) constructed around the function of money as a medium of exchange. This story is both logically and historically inconsistent (Goodhart 1989, 1998). It neglects the substantial costs of verifying the quality (fineness) and quantity (weight) of metal, as well as the historical evidence that those costs were reduced by stamping on coins a quality guarantee in a minting process regulated, supervised, and often directly operated by the state. In turn, credible minting required the use of legitimate violence against the theft of metal inventories, as well as operators with a sufficiently long time horizon to address the time inconsistency problem of quality preservation against the incentives to debase the currency for private enrichment. These requirements could be met only by settled and strong governments.

This view connects to the basic tenets of a second school of thought, known as chartalism, which is the foundation for the so-called Modern Money Theory (Wray 2014). This intellectual tradition claims that the power of the state played a central role in the evolution and use of money. In fact the role of the state goes beyond the certification of metal quality. The creation of money increases the fiscal capacity of a sovereign ruler: it makes easier to levy direct and indirect taxes and provides additional fiscal revenues through seigniorage (a tax on minting services) (Goodhart 1998; Le Rider 2001). This perspective is much more consistent with archeological and numismatic evidence. The origins of money – though "lost in the mists of time" (Wray 2012) – are related to the emergence of complex political economies with centralized power, social hierarchies, and distributional economies (Earle 1991, 2002). Written documentation reveals the use of grain and precious metals as weight standards and value equivalents under public oversight in the accounting systems of ancient Mesopotamian cities, with a highly centralized bureaucratic management and the extensive use of credit to finance long-distance trade (Van de Mieroop 2004). This was related to the development of mathematical thought that allowed small literate elites to use numeration and metrological systems to record, manage, and predict the value of private and public assets, including income rights (Robson 1999, 2007).

Since its remote origins, therefore, money emerged as a "constitutional project," to use Christine Desan's definition – a mechanism of governance through which stakeholders standing at the hub of a community (i.e., rulers) mobilized resources to produce "collective endeavors" (infrastructures, defense) based on labor services and in-kind contributions. In return, they released tokens or receipts marked in standard units with real fiscal value, as they were based on obligations to contribute to the collectivity through tribute, rents, fees, tithes, or penalties. By issuing liabilities to buy goods and services and by credibly committing to redeem them in

discharge of obligations, ancient rulers developed the power to spend and tax. At the same time, as the value of those liabilities was recognized by everybody owing regular tribute to the same ruler (their common creditor), they became transferable, provided valuable cash services, and allowed stranger parties to complete transactions. Money was basically a product of fiscal engineering (Desan 2014).

► Chapter 2, "Origins of Money and Interest: Palatial Credit, Not Barter" by **Michael Hudson** illustrates the administrative and fiscal purposes of a grain-silver bimonetary standard in palatial societies of the Neolithic and Bronze Ages, such as Mesopotamia and Egypt. Grain was used as unit of account to calculate values, measure labor time and land yield, and as means of payment in agricultural and handicraft activities. Silver was used as means of payments for taxes and fees and for long-distance trade. The stability of the grain/silver ratio was legislated by the king and guaranteed by temples. Transactions involved debt relationship related to the cyclical patterns of harvests and trade, and interest rates on silver-denominated official credit were regulated administratively. Commensurability, Hudson argues, represented the key innovation that marked the departure of palatial money from "primitive," special-purpose money used for wergild (the compensation paid by offenders to injured parties), dowries (the price of a bride), or donations, which included also animals, textiles, and jewels. As public oversight extended to silver quality standards and minting to guarantee specified degrees of purity, coinage became widespread in the classical antiquity. Through trade, Near Eastern weights, measures, and practices – including interest-bearing debt and the use of coinage to pay taxes and fees – penetrated in the Mediterranean world.

The latter is the focus of **Colin Elliot**'s (► Chap. 3, "The Role of Money in the Economies of Ancient Greece and Rome"). In the Mediterranean area, the coinage of different metals (gold, silver, copper, bronze), supplemented by in-kind moneys (grains and other commodities), emerged in the political context of the Greek city-states. Hellenization promoted the development of market exchange and financial institutions. On the contrary, war-related fiscal shocks seem to have been critical for the monetization of Rome, which adopted a coherent Greek-style coinage system only in response to mobilization in the Second Punic War. Later one, Roman Emperors established their rights to coin money and fix the coins' legal value and legislated to protect their exclusive prerogatives against criminal offences. The territorial expansion of the Empire challenged monetary unification, leading initially to "a hodgepodge of monetary systems and coinages," possibly to enhance the payment of taxes and tributes in conquered territories. Only later, coinage was centralized under strict legal tender laws, but the monetary system was exposed to frequent shortages, debasements, recoinages, and reforms. In the third century AD, laws commanded the acceptance of official coins and prohibited their trade and assay in black markets by independent money changers, which can be interpreted as a signal of weak trust in the quality of coinage by the public. The progressive demonetization that was generally associated with the territorial contraction of the Empire confirms the intimate connection between money and the quality of political institutions in the ancient world. After the retreat of the Empire from Britain, for instance, the circulation of Roman currency broke down, market exchange

collapsed, and no alternative medium of exchange filled the void – a dramatic "fall in the sophistication of material culture" that provides an enlightening natural experiment on the origins of money (Desan 2014).

The use of money as "value equivalent" in the measurement of economic obligations between private agents or between them and public authorities is so deeply embedded in the Western tradition since ancient times that it is difficult to imagine for it having a different role. When colonial conquest brought colonizers in contact with so-called simple (i.e., small-scale, stateless) societies, in which "odd and curious" objects (feather, beads, cowries) seemed to serve some or all functions of money, their "coin consciousness" shaped by Western historical experience failed to understand the role of this "primitive money" in local social and political relationships. This issue lies at the heart of ▶ Chap. 4, "Primitive and Nonmetallic Money" by **Bill Maurer**, which discusses critically the contribution of anthropologists and substantivist economists to a deeper understanding of the social roots of money. In this perspective, practices such as bridewealth and wergild can be thought of as "social currencies" that built or repaired social relations. Their role was less about setting value standards and more about playing differentiated social and political games. For instance, in a system of mutual obligations (i.e., equal bridewealth), the gift was not exchanged for a wife (i.e., did not set a person's value according to a standard), but substituted for her in the system of relations; in a hierarchical system (i.e., unequal bridewealth), the gift was used to assert social ranks. As Maurer explains, the process of colonization can be seen as the interaction of competing political hierarchies that affected also monetary standards. When European merchants engaging in slave and palm oil trade with West Africa flooded the region with cowrie shells – the local "currency" – from Zanzibar, the burst of the cowrie shell bubble led this "primitive money" to lose its value. However, this cowrie inflation was not driven by excess supply, but by falling demand, as colonizers imposed tax obligations and forced local subjects to use the Western monetary standard to meet them. In this sense, money measured the interaction between ascending and declining state power, which can be understood also as a "contest over standard setting."

Money, Coinage, and the State

Medieval Europe inherited from the Greek-Roman world the key notions that a coin's value rests on its content of precious metals and that the exclusive power of giving money its value depends on its legal enactment under the authority of a sovereign body (*ius cudendae monetae*). By proclamation, rule, and law, a new coinage system emerged in the Middle Ages: the so-called free minting system in English parlance (Allen 2012; Desan 2014). Since the monetary reform of Charlemagne in 794 AD until the early modern era, European coinages evolved from a monometallic system with virtually one single denomination (the silver penny) to pluri-metallic systems based on gold (for high-value coins to be used in trade), silver, and copper alloys (such as billon and bronze, to provide small change for daily transactions) and an increasing range of denominations (Volckart 2018).

Political fragmentation led to monetary fragmentation, as local rulers successfully claimed coinage rights. The exercise of monetary sovereignty included establishing a territorial unit of account and its fractions (in which prices were expressed), setting the terms for the coinage of domestic coins (the price of bullion at the mint and the number, finesse, weight, and denominations of coins produced out of it), and levying taxes on minting as a source of fiscal revenues (brassage and seigniorage). Rulers also established the conditions under which foreign coins could be accepted as means of payment in domestic transactions. Coins carried no marks of value and could circulate either "by tale" (i.e., on the base of their legal or "extrinsic" value) or alternatively "by weight" (i.e., an "intrinsic" value determined by private agents on the base of their metal content). The medieval and early modern history of money was characterized by governments' attempts to limit the scope of this privately managed circulation (Boyer-Xambeau et al. 1994). This also generated intense legal controversies, in which a nominalist approach eventually prevailed (Fox and Ernst 2016). While in the early Middle Age the legal tradition widely accepted circulation "by weight," by the seventeenth century, the legal foundations of circulation "by tale" were well established (Sargent and Velde 2003).

Georges Depeyrot (▶ Chap. 5, "Monetary System of the "Ancient Régime" (Third to Eighteenth Centuries)") reconstructs chronologically the historical evolution of monetary systems in Europe and the Mediterranean basin from the late Roman Empire to the early modern period. They were characterized by the coexistence of a "Roman system," in which coins' legal value was fixed in terms of units of account, and an "Alexandrian system" in which coins were basically regarded as fractions of bullion and their value "floated" with the relative price of the two metals (the bimetallic ratio) as determined in the market. He also surveys the main technological innovations (such as the screw press and the rolling mill) that allowed the coinage of heavier coins and reduced scope for counterfeiting and clipping. **David Fox** (▶ Chap. 6, "Money, Law, and Institutions") explains how medieval legal systems in Britain and continental Europe elaborated on a common body of principles that had been first clearly articulated in Roman monetary laws and converted them into a practical system of rules especially suitable for the commercial and monetary conditions of the time. Whether coins should be valued "by weight" or "by tale" for the purpose of discharging debts was a legal controversy that jurists and courts had to deal with for a long time. English common law quickly embraced a nominalist approach, under which debt was denominated in terms of a generic unit of account; this prevented any judicial inquiry about changes in the intrinsic value of the coinage between the stipulation and the finalization of contracts. On the contrary, in continental traditions the notion that debt should be repaid in coins with the same intrinsic value prevailed until the late seventeenth and early eighteenth centuries. This implied that coins were legally interpreted as a special kind of bullion, whose quality (weight and finesse) was certified by the sovereign. Legal differences may reflect the relative stability of the English coinage until the mid-sixteenth century (before the Great Debasement of 1544–51), compared with the recurrent debasements that characterized France and other continental polities.

In fact, the sovereign's exclusive right to fix the valuation of the coins implied a prerogative to change the monetary standard, i.e., to debase the currency. Debasements implied an increase in the ratio between the nominal and intrinsic value of money, as a consequence of a reduction in bullion content (finesse), a reduction in coins' weight, or an increase in their official value. Historians' traditional view of debasements indicted them as examples of disrupting monetary policies driven by war-related fiscal motivations – a form of hidden and regressive taxation that harmed earners of nominal rents and forced the extraction of seigniorage through recoinage (Spufford 1991). Others pointed to the "monetary" nature of some episode of debasements, as an attempt to stabilize money supply during the "bullion famines" of the late fourteenth and early fifteenth centuries (North 1994) or to address recurrent shortages of small-denomination coins ("the big problem of small change") providing liquidity services that large-denomination coins failed to perform (Redish 2000; Sargent and Velde 1999, 2003). Recent research, in turn, explains debasements as policies that aimed to address temporary misalignments of local gold-silver ratios (which triggered bullion flows) or to reduce monetary uncertainty created by the circulation of "bad" money – i.e., coins with lower intrinsic value – by periodically "cleaning" money markets, thus reducing transaction costs. The new evidence also suggests that, while gold debasements were essentially driven by "monetary" motivations, silver debasements were indeed related to warfare and used much more extensively by princely polities than by city-states or monetary unions formed by different cities (such as the Wendish Monetary League led by Hamburg) (Chilosi and Volckart 2010, 2011). However, recent comparative research over the very long run, from the Middle Age to World War I, supports the political, seigniorage-driven origins of monetary instability: depreciations of the domestic monetary unit were associated to war, states with intermediate fiscal capacity, and the lack of institutional constraints on rulers that prevented predatory monetary policies (Karaman et al. forthcoming).

Debasements followed a regular pattern. They coincided with unusually large minting volumes and rising seigniorage rates, which allowed rulers to extract huge fiscal revenues. After debasement, old and new coins circulated jointly and were valued "by weight" (i.e., according to their intrinsic content of precious metal). This poses a challenge to monetary theory, as if coins circulated by weight, the opportunity to change heavy coins into light coins at a higher cost did not provide well-informed agents with any additional incentive to bring bullion to the mint (Rolnick et al. 1996). Alternative explanations of this "debasement puzzle" – such as circulation of coins "by tale" (according to their legal tender value) or sluggish price and wage adjustment (Bordo 1986; Sussman 1993; Sussman and Zeira 2003) – do not seem sufficiently supported by empirical evidence. **Oliver Volckart** (▶ Chap. 7, "Premodern Debasement: A Messy Affair") suggests that bullion merchants kept supplying gold and silver to the mint as only small groups of experts in the economy became immediately aware of the alteration. The wider public of illiterate and disenfranchised consumers continued to use coins as if they were unadulterated or simply had no power to refuse to accept them in payment for wages and goods. High information asymmetries also prevented rulers from exerting effective control of

mint officials (who could exploit their autonomy in order to debase coins on their own account). These costs also made it impossible to monitor markets closely enough to enforce regulations, while weak border controls reduced their ability to prevent the import of foreign coins with similar nominal value but lower intrinsic value. In turn, the resulting (and highly profitable) "trade in coinage" created incentives for governments to issue inferior copies of their neighbors' coins – a practice that had the same consequences as a debasement – and forced the affected governments to follow suit by debasing their own coinage in order to reduce the disruption of market transactions.

The joint circulation of "heavy" and "light" coins after debasement challenges a well-established notion in monetary economics: that bad (overvalued or underweight) money tends to drive good (undervalued or full-weight) money out of circulation. This notion is widely known as Gresham's Law, from the name of Sir Thomas Gresham. A financier and monetary advisor to Tudor's monarchs, in 1558 Gresham drew the attention of young Queen Elizabeth I on the consequences of the Great Debasement of English coinage carried out under her father Henry VIII and half brother Edward VI. Observing that "good and bad coin cannot circulate together," he suggested that the deliberate reduction in the metallic content of silver coins had resulted in a massive export of gold coins. Since the mid-nineteenth century, Gresham's Law has remained a subject of controversy among economist, as the historical evidence provides a wide selection of counterexamples both in bimetallic and monometallic regimes. A qualified version suggests that it holds only if the exchange rate between bad and good money (their par price) is fixed (an argument proposed by Milton Friedman and Anna Schwartz in their classical monetary history of the USA). Another restatement – which tends to reject its general validity as a fallacy – is that if both good and bad money must be accepted at par value under a legal tender law, prices are set in terms of the overvalued currency, but only small denominations of the undervalued currency (circulating at a premium) disappear as agents economize in transaction costs when using large denominations as medium of exchange (Rolnick and Weber 1986). A third perspective – which reinstates the validity of Gresham's Law – contends that legal tender legislation tends to favor "bad" over "good" money by increasing the risk and costs for agents to reveal their monetary preferences, i.e., by sanctioning attempts to place a discount on bad money or to refuse it altogether (Selgin 1996). The issue is somehow theoretically elusive, as both cash-in-advance models (Sargent and Smith 1997) and search-based models (Velde et al. 1999) of commodity money systems predict multiple equilibria. **George Selgin** (▶ Chap. 8, "Gresham's Law") explains monetary selection as the outcome of a coordination game between sellers and buyers in imperfect currency markets. As legal tender laws made it costly to assign distinct nominal values to coins with different intrinsic values, the exchange game between sellers moved the economy into a "bad" money equilibrium in which only adulterated coins or irredeemable paper notes are circulated. But even in the absence of strict legal tender laws, the concentration of private information about intrinsic value in the hands of money changers and merchants could lead to similar results. As Selgin explains, the same logic holds in bimetallic regimes in which the

ratio of gold and silver prices in bullion markets deviated from the ratio of their official values at the mint, which explains the inadvertent switch of England to a de facto Gold Standard in the early eighteenth century and the swings to de facto silver standard and then to a de facto Gold Standard of the USA in the first half of the nineteenth century.

Trade, Money Markets, and International Currencies

In the Middle Age, the wide diversity in climate and resource endowments across European regions, the geographical configuration of the continent with long coastlines and plenty of navigable rivers, and the legal protection of commercial activities guaranteed by rulers enhanced the development of large-scale, long-distance trade organized on a dense network of commercial centers. In the absence of an efficient system of international payments and fund transfers, trade would have been seriously constrained by market frictions. Trading with distant centers implied strong information asymmetries about parties' creditworthiness. Political fragmentation might have favored economic development through flexibility and institutional competition, but it also posed challenges to the deepening of a market economy. Each polity had its coinage and unit of account, and mints often competed for seigniorage within its borders, which affected coinage uniformity. The bewildering multiplicity of small and large coins in circulation with different weight and fineness created serious market frictions. Shipping coins was costly and risky, and trade coins had to be assayed and protected. Money changers had large opportunities for profits from arbitrage and strong incentives to cull out "good" coins, which affected the volume and quality of money supply. Epstein (2001) contended that the reduction in monetary fragmentation allowed by currency unions – both between sovereign polities and between cities adopting a common currency supplied by the same territorial ruler – played a critical role in market integration and growth in the late Middle Age. The reconstruction of local gold-silver ratios (an indicator of prices paid in local money markets) in commercial centers along the transcontinental trade route that linked Northern Italy and South East England and the empirical analysis of their spreads confirm that monetary diversity had adverse effects on bulk trade. The creation of currency unions favored the integration of money markets; at the same time, unions were to a certain extent endogenous – that is, tended to emerge when the member centers were already linked by strong trade connections (Boerner and Volckart 2011).

Costs and frictions generated incentives to monetary innovations: the use of privileged types of private debt (IOUs) with special characteristics that conferred upon them the ability to achieve finality in settling transactions (Kahn and Roberds 2007). These can be considered as new forms of "inside money" as opposed to metallic "outside money." **Meir Kohn** (▶ Chap. 9, "Money, Trade, and Payments in Preindustrial Europe") analyzes how a European system of international payments and remittances based on inside money developed since the Middle Age. Initially, banks in major commercial centers emerged as trusted third parties whose liabilities

(deposits) could be used to settle payments between strangers. Later on, to fix the problems created by deposit banks' instability, original money-like instruments (promissory notes, letters obligatory, bills of exchange) were developed to transfer funds across banking places connected by the extensive branch networks of international trading companies and merchant banks. In major banking places, such as Antwerp in the sixteenth century, organized foreign exchange markets emerged, and new payment systems based on the assignment of private third-party debt were developed, thanks to legal innovations that allowed its transferability and negotiability under the joint contingent liability of all parties involved in the transaction, which generated strong incentives to screen the quality of the circulating debt. A successful alternative was a payment system based on the exchange of negotiable instruments with public banks that offered transferable accounts redeemable in hard money – an innovation pioneered by Venice and quickly imitated by Amsterdam and other North European commercial cities. Both practices facilitated multilateral trade, allowed commercial specialization, and provided international liquidity facilities that critically contributed to economic development. **Pilar Nogues-Marco** (► Chap. 10, "Money Markets and Exchange Rates in Preindustrial Europe") dwells deeper into the functioning of international money markets based on bills of exchange. An instrument of remittance and credit at the same time, bills were used both in commercial and purely financial transactions between merchants as a practical means of currency exchange and circumvention of the Church's prohibition of usury. Nogues-Marco explains how exchange rates fluctuated between a floor and a ceiling defined by the "specie points" – the levels beyond which the international transfer of money by shipping bullion became profitable. Arbitrage was enhanced by the generalized liberalization of bullion movements at the end of the seventeenth century, which favored the efficiency of the specie-point mechanism and the integration of money markets, as in the case of London and Amsterdam. The network of intercity monetary linkages, reconstructed on the base of price cross-quotations (a proxy for market liquidity), draws a "geography of money" in mid-eighteenth-century Europe strongly dominated by monetary agglomeration in Amsterdam, London, and Paris. This triangle provided the lynchpin of a multilateral settlement system that reached out to minor hubs in the north (Hamburg) and the south (Genoa). Given the over-the-counter nature of markets based on bills of exchange and the fact that interest was embedded in the exchange rate at maturity, money market interest rates were not quoted and must be inferred indirectly from the price ratio of bills maturing at sight and bills maturing at a certain future date. Estimated "shadow" interest rates suggest a high and increasing level of money market integration between London, Amsterdam, and Paris, the most liquid markets of the period.

In the second half of the nineteenth century, the London money market, increasingly based on bankers' acceptances (bills accepted by merchant banks on behalf of foreign clients and discounted by specialized intermediaries known as discount houses), reached a truly global dimension. In the heydays of the classical Gold Standard and the First Globalization before 1914, the sterling-denominated "bill on London," quoted and traded in financial centers worldwide, became the key instrument to finance international trade and capital movements, turning the City of

London into "the center of world liquidity" (Flandreau and Jobst 2005; Flandreau and Ugolini 2013). In the interwar period, monetary and financial instability, the contraction of trade, and the widespread introduction of exchange controls and barriers to capital mobility brought this experience to an end. An international money market with global reach re-emerged in the 1960s once the world returned to a situation of generalized external convertibility under the Bretton Woods system. The market, centered again on London but connecting financial centers worldwide, was now based on different money-like instruments (short-term bank deposits) mainly (although not exclusively) denominated in US dollars – the so-called Eurodollar market. **Stefano Battilossi** (▶ Chap. 11, "International Money Markets: Eurocurrencies") analyzes the economic and regulatory factors that drove its secular expansion and its key role in enhancing the mobility of short-term capital as well as in the creation and distribution of international liquidity through global interbank connections. Its offshore nature and its implications for monetary policies and financial stability were a recurrent source of concerns for central bankers and policymakers, who tried with little success to impose multilateral controls to limit its scale and scope. As Battilossi shows, since the late 1960s, large jumps in the spread between Eurodollar and US Treasury bill rates in coincidence with unanticipated financial crises signaled conditions of funding and market illiquidity similar to those observed in the Great Financial Crisis of 2007–2008. ▶ Chapter 12, "The Asian Dollar Market" by **Seung Woo Kim** focuses on the historical development of the Eurodollar market in Asia and the deliberate policies that promoted the emergence of Singapore as the dominant offshore financial center in the Asia-Pacific region.

The dominance of the British pound and the US dollar in the international money markets of the nineteenth and twentieth centuries reflects their role of key international currencies. Before 1914, other currencies (the French franc, the German mark) enjoyed an international status, reflected in the development of sizeable money markets and their use as reserves by other central banks. The relative decline of the British pound against the rise of the US dollar was a secular process during which both currencies continued to be extensively used in commercial and financial transactions, as well as central banks' reserves worldwide. More recently, the Japanese yen, the Euro, and the Chinese renminbi began to rival with the US dollar. In sum, history suggests that the international monetary and financial system had always a degree of multipolarity. This evidence challenges conventional economic models and historical narratives based on network, lock-in, and inertia effects, according to which the advantages of incumbency leave room only for one dominant currency (Chitu et al. 2014; Eichengreen 2010; Eichengreen and Flandreau 2009, 2010; Eichengreen et al. 2018; Flandreau and Jobst 2009). **Barry Eichengreen** (▶ Chap. 13, "International Currencies in the Lens of History") explores the structural factors that explain the international status achieved by different currencies in different historical periods. These include the size of the issuing country's economy, the network externalities generated by the volume of its international transactions, the stability of its value over time, the size and liquidity of its financial markets, and the capacity to project military and diplomatic power. At the same time, history

suggests that the status of international currency is not a natural monopoly: portfolio diversification explains why different international currencies can coexist and transitions across dominant units can be prolonged. This analytical framework can be successfully applied not only to the British pound in the nineteenth century and the US dollar in the twentieth century. It can explain also the dominance of the silver drachma in the Athenian Empire, of the gold aureus and the silver denarius in the Roman Empire, and of the solidus in the Byzantine Empire; the Genoese genoin, the Florentine florin, and the Venetian ducat in the Middle Age; and the Dutch guilder in the seventeenth and eighteenth centuries. The lens of history, Eichengreen suggests, shed also light on the future: as the deepening of modern financial markets and advances in information technologies reduce the costs of currency diversification, competition between the incumbent dollar and its prospective rivals is likely to increase.

Money and Metals

In a hard money economy based almost exclusively on coins, the expansion of money supply was strongly constrained by the available stock of metals. In medieval Europe, coinage was heavily dependent on silver and copper from mines in South Germany and Central Europe. When mining production declined (i.e., between the 1320s and the 1470s), economies experienced periodic "bullion famines," that is, periods of extreme scarcity of circulating coins relative to the transaction demand for money (although this notion is not entirely uncontroversial; Sussman 1998). These were occasionally exacerbated by hoarding and constraints on bullion trade and led to protracted periods of price deflation (Miskimin 1984; Spufford 1991; Munro 1992, 2016). In turn, the silver-mining boom of the late fifteenth century significantly expanded the overall stock of bullion in Europe and facilitated the expansion of the European economy and the recovery of prices (Munro 1991, 1992, 2003). In a similar fashion, the mining boom of silver in Spanish America and the huge inflow of silver coins into Spain are traditionally associated with a sustained increase in price level across Europe – the so-called price revolution of the sixteenth century.

Since the pioneering studies by Earl J Hamilton in the 1930s, monetary interpretations of price dynamics in pre-industrial Europe used the analytical framework of the quantity theory of money (MV=PY in its Fisherian formulation) (Munro 2008). The traditional view hinged on the logic of the price-specie flow model, in which Spain's inflation and trade deficit generated synchronized upward shifts in the monetary base and prices of its trading partners. Challenged by internal inconsistencies (the lack of synchronization between specie inflows and inflationary episodes, the evidence of massive exports of American silver to Asia) and alternative explanations (emphasizing especially urbanization and demographic growth), monetary interpretations were reformulated with a focus on estimated changes in the velocity of circulation. However, the claim that velocity increased as a consequence of specialization and urbanization (Goldstone 1984; Lindert 1985) – an example of Smithian growth – runs counter to the notion that in a modernizing economy with a

rising level of monetization, velocity should fall as a consequence of increased demand for money (Mayhew 1995, 2013). The lack of reliable data on money stocks (M) and the level of economic activity (Y) preclude robust estimates of V, which is obtained as a residual (Nicolini and Ramos 2010).

In the case of pre-industrial England, for instance, a positive impact of American metals on the actual level of monetization of the economy seems incompatible with qualitative evidence that emphasizes a chronic scarcity of low-denomination coins (especially for wage payments) well into the eighteenth century (Muldrew 2001, 2007; Muldrew and King 2003; Selgin 2008). **Nuno Palma** (▶ Chap. 14, "American Precious Metals and Their Consequences for Early Modern Europe") reviews the findings of the most recent research (including his own: Palma 2018) to show that in fact American silver and gold did contribute critically to relieve constraints on monetary expansion in early modern Europe. In the case of England, this claim is supported by a range of quantitative evidence, from the reconstruction of minting volumes and coin stocks, to the presence of Spanish-American silver in English coinage detected by chemical analysis, to the increased availability of small-denomination coins suggested by random coin finds. However, Nuno argues it is reasonable to assume similar developments in other receiving countries such as France and Holland. In turn, higher levels of monetization and liquidity, by reducing transaction costs, enhanced market deepening, agglomeration economies, and fiscal capacity, providing a ground for sustained growth. In contrast, in first-order receivers, such as Spain, the continuous arrival of American metals affected negatively both inflation (an example of Dutch disease) and the quality of political institutions, thus acting as a curse in the long run (Prados de la Escosura and Álvarez Nogal 2013).

Among the positive effect of American metals for Europe, Palma also highlights their critical role in enhancing trade between Europe and Asia, which was conducive to deep changes in households' demand for consumption and labor supply in exchange for monetary wages (the so-called industrious revolution) in some regions of Northern Europe (De Vries 2006). This issue connects with the stream of research on the role of international silver flows in the emergence of a deeply integrated global economy in the sixteenth century (Flynn 2013). In this literature, the rising demand for silver (coming either from Europe or Japan) by a fast-expanding Chinese economy and the critical role of foreign currency supply in its monetization play a central role (Flynn 2013; Flynn and Giraldez 1995a, b, 2002; Flynn et al. 2003; von Glahn 1996, 2016). This global perspective on monetary history connects with the comparative analysis of economic development in Europe and Asia – the so-called Great Divergence debate (Allen et al. 2011; Broadberry and Gupta 2006; Pomerantz 2000). This is the focus of **Alejandra Irigoin**'s ▶ Chap. 15, "Rise and Demise of the Global Silver Standard," which provides an exhaustive summary of state-of-art knowledge about mining production, minting policies, and metal exports from Spanish America. She also outlines patterns of global trade in silver coins and bullion and their impact on the fluctuations of gold-silver ratios. Against traditional interpretations of silver as a pure commodity in long-distance trade, Irigoin especially emphasizes the monetary role of Spanish dollars as the main international

means of payment in the global silver standard of the seventeenth and eighteenth centuries. This also suggests that imported currency played a critical role in the monetization and specialization of Asian economies and gave a critical contribution to global Smithian growth.

Monetary Experiments

As we have seen in Part "Trade, Money Markets, and International Currencies," the advantages of new forms of "inside money" over hard money in terms of costs of production and flexibility to accommodate the needs of a deepening market economy were widely recognized since the Middle Age. However, payment based on the transfer of endorsed money-like private debt was limited to commercial elites of sufficient reputation. Similar limitations applied to local payments by checks or drafts, non-negotiable but payable on demand between businessmen who held account balances with deposit banks. The late seventeenth century saw the emergence of a monetary innovation that facilitated transactions between agents of minor social and economic standing: the issue of liabilities by deposit banks, in the form of large-denomination promissory notes payable to the bearer, against the purchase of short-term assets (e.g., bills of exchange). These would be universally accepted in payments, provided that banks had verifiable wealth and enjoyed sufficient economies of scale in collecting information about the creditworthiness of their counterparties in the asset market. The system formed by goldsmith bankers in London, based on co-monitoring and interbank clearing of checks and notes, is an example of a successful "inside money" experiment (Quinn 1997). However, banknotes' role as payment instruments became established only once their volume reached sufficient scale to generate wide network externalities and increase their liquidity. This was achieved by the massive issue of bearer notes by the Bank of England (some of them with sufficiently low denominations) to acquire government debt. This converted banknotes into claims backed by safe assets and readily redeemable in coins, although they would acquire the status of legal tender only in the 1830s (Quinn and Roberds 2003, 2008). In retrospect, the establishment in the 1690s of the Bank of England with the primary function of a bank of issue, and the circulation of its banknotes (paper promises of value borrowed by the government from the Bank) as currency, was a successful monetary experiment that paved the ground to the invention of modern money (Desan 2014; Kleer 2008, 2015 and 2017).

Monetary and financial experiments flourished in the laboratory of the seventeenth and eighteenth centuries (Neal 2000). A stable system of fiat money (paper money not convertible into coins) was introduced by the Bank of Amsterdam, a public bank with the near-monopoly of domestic large-scale payments, in the late 1680s. On one hand, the Bank issued negotiable receipts against the deposit of large-value trade coins while at the same time removing the traditional right of withdrawal of coins on existing deposit accounts. This reduced the Bank's vulnerability to runs, preserved the stability of the value of the unit of account (the florin), and enhanced

its role as the dominant international currency of the time (Quinn and Roberds 2014). Other experiments – such as the attempt by John Law to implement a full-scale fiduciary currency system to stimulate the French economy with abundant credit and efficient payments while financing large government deficits in the 1710s (Neal 2012; Velde 2007, 2008) – were ill-fated. As **Francois Velde** illustrates in his ▶ Chap. 16, "Experiments with Paper Money," paper money (an innovation widely used by Chinese imperial dynasties from 960 AD to the 1430s) suffers from a specific weakness that makes it difficult to manage: a permanent threat of overissue, depreciation, and inconvertibility, exacerbated by the pressing needs of government finance, especially in wartime. Two models of paper money emerged from the experiments of the eighteenth century: one based on the issue of large denominations by private banks for wholesale payments and the other one based on issue of small denominations by the state for retail payments. The nineteenth century demonstrated the superiority of the former.

British North American colonies were especially affected by a chronic scarcity of coin circulation, and original media-of-exchange methods were developed by using commodities with different degrees of moneyness (Sylla 1982). In his ▶ Chap. 17, "Money and Prices in Colonial America" by **Farley Grubb** shows how, under the pressure of emergency wartime expenditures, colonial legislatures ultimately resorted to an original form of paper money: the emission of bills of credit (either directly or through land banks), in most cases bearing no interest, to be redeemed at a future date (maturity) against sinking funds, tax revenues, or land-backed loans. Structured like bearer zero-coupon bonds, colonial paper money traded below par values. Elaborating on insights from his own research (Celia and Grubb 2016; Grubb 2016a, b), Grubb suggests that, contrary to previous interpretations based on the quantity theory of money (McCallum 1992; Rousseau 2007) or the "backing" theory (Smith 1985, 1988; Michener 1987, 1988, 2015; Michener and Wright 2005), the discount on par value did not reflect currency depreciation but rational bond pricing, which implied time discounting according to their maturity structure.

The US War of Independence was largely financed by inconvertible and rapidly depreciating paper money ("continental dollars"). After independence, the US Constitution prohibited states to issue money, and the Congress regarded the issue of federal paper currency with great suspicious. As a consequence, banknotes issued by private banks against the collateral of state or federal debt played a critical role as media of exchange in an undermonetized economy, rivalling in volume with federal currency during the whole antebellum period. Their circulation beyond local economies (usually below par value) was facilitated by special institutional arrangements (clearinghouse associations) that enhanced the clearing of banknotes and issued special forms of emergency paper money (clearinghouse loan certificates and notes, a joint liability of the member banks) to stabilize liquidity during financial panics. As **Matthew Jaremski** shows in his ▶ Chap. 18, "Privately Issued Money in the United States," recent empirical research suggests that the liquidity benefits of banknotes most likely outweighed the market frictions created by their wide variety and that banknotes' discount efficiently reflected redemption costs and the default risk of the issuing banks. Research also identifies an apparent paradox: banknotes

were highly profitable, but on the aggregate their volume remained below the maximum level allowed by outstanding stock of collateralizable bonds. Recent studies suggest that this "note issue puzzle" may reflect cross-regional differences in opportunity costs of investing in bonds.

▶ Chapter 19, "Money, Prices, and Payments in Planned Economies" by **Michael Ellman** brings us into a different kind of monetary experiment: money in the Soviet Union. Although the survival of money was an aberration in light of the Marxist-Leninist theory, Soviet rulers justified it on practical grounds, first as a necessary evil in the transition from socialism to communism and later on as a necessity for planning. Soviet fiat money performed (at least in part) the functions of unit of account (e.g., production targets were expressed in monetary rather than in physical units) and medium of exchange. At the same time, monetary institutions reflected the unique characteristics of an administrative-command economy. The system was based on a central bank (Gosbank) operating on the base of planned cash emissions. Circulation was split into two separated circuits: noncash ("passive") money for payments between state-owned enterprises (in practice a state giro system, also used to control firms' adherence to state plans) and cash ("active") money used by firms to pay wages and by workers in state retail trade and in the free market for food. After WWII, overissue of cash and noncash money, mainly to finance large budget deficits, led to high inflation in the free market and acute shortages in the state retail market (where prices were fixed) – a chronic situation of "shortageflation," which the reforms of the late 1980s exacerbated, leading to the collapse of the system.

Massimo Amato and **Luca Fantacci** (▶ Chap. 20, "Complementary Currencies") deal with past and present experiments in monetary plurality: the development of alternative monetary instruments (designated as complementary, social, parallel, or community currencies) that challenge the domestic monopoly of the currency issued by national monetary authorities. Monetary plurality was pervasive in medieval and early modern periods, in which (as we have seen in previous chapters) means of exchange were separated from units of accounts, different monies and monetary circuits performed different functions, and foreign currencies circulated side by side with domestic currencies (Kuroda 2008a). On the contrary, the overlapping of political and monetary spaces that led to the dominance of territorial currencies is a relatively recent phenomenon dating back to the nineteenth century (Helleiner 2003). Before World War II, monetary "supplements" typically emerged in response to economic crises. The most relevant examples were local currencies and stamp scrips issued by local authorities in Germany, Switzerland, and the USA during the Great Depression. This practice resembled the issue in early modern era of token coins, scrips, and "necessity money" by local churches, cities, merchants, and entrepreneurs, especially in periods of war and economic hardship. The recent proliferation of heterodox monetary circuits (some backed by official currencies, other based on local clearing systems) since 2007 confirms that depressions are especially conducive to the emergence of complementary currencies, whose main purpose is to enhance the velocity of circulation of money. This clearly differentiates them from recent cryptocurrencies (i.e., bitcoins), which presume to offer a radical

alternative to official currency but are more akin to commodity mainly held for speculative purposes.

Asian Monetary Systems

For a long time, the Western perception of monetary institutions in pre-modern China was influenced by the view of late nineteenth-century British observers, who could discern only a system of "chaotic eccentricities." In fact, the late imperial monetary system was the shadow of the flexible silver-based standard established under the Ming dynasty's "Silver Century" (1550–1650) – a monetary policy choice that met the requirements of an economy increasingly integrated in global trade and made possible by massive purchases of Spanish-American silver (von Glahn 1996; 2013). By the time the British navy forced the opening of Chinese ports in the 1840s, the unit of account (*tael*) had become territorially dishomogeneous, as it was expressed in terms of unminted silver ingots of similar weights but different shapes, purity, and finesses. At the same time, low-value copper cash coins, a form of countable currency used for small and local transactions, were strung together into another unit of account (*tiao*), which also varied by regions and trades. Domestic coinage was supplemented by Spanish silver dollars, trading at a premium on their silver value; it was used for large transactions and long-distance trade, but its penetration was limited to southern and coastal regions. In order to provide an anchor for such an amalgam of currencies, local imaginary units of accounts, usually linked to tax collection, were introduced. The result was, in Debin Ma's words, "a nearly infinite set of cross exchange rates among the imaginary units, between the imaginary units and actual currencies, and among the actual currencies" – a reflection of "both the arbitrary nature and limited reach of an absolutist political regime" that "imposed high transaction costs on market exchanges across a vast empire" (Ma 2013). Ma's remark warns against the temptation to limit the analysis to superficial similarities between Asian monetary systems and the experiences of medieval and early modern Europe. In fact recent research on China and East Asia exploits a comparative perspective with Europe to highlight the economic and institutional peculiarities that shaped Asian monetary systems. While the "big problem of small change" (Sargent and Velde 2003) was common to both areas, the facts that seasonal shortages caused low-denomination coins to appreciate in terms of silver taels (for instance, after the harvest season) and low-denomination currencies showed a secular appreciating trend with respect to silver in the eighteenth century may reflect the higher degree of monetization of Asian rural markets and the weak integration of money markets for low and high denominations, which created a structural complementarity between "concurrent but not-integrable currency circuits" (Kuroda 2008b). Currency circuits also reflected differences in market structures and cultures, which led to cross-regional variations in monetary practices and limited the geographical penetration of the silver dollar as unified fiduciary monetary standard (von Glahn 2007).

These traits seem to be deeply rooted in Chinese history. **Yohei Kakinuma** (▶ Chap. 21, "Monetary System in Ancient China") provides a critical discussion of Asian scholarship on the development of a monetary economy in feudal China from the Shang dynasty (around 1600 BC) to the end of the Southern dynasties around 600 AD. The traditional view (the "Rise and Fall Theory") identifies a peak in the use of metallic forms of money during the Western Han dynasty (206 BC–24 AD) – a period of political unification and commercial expansion – followed by a progressive decline characterized by chronic shortages. More recent perspectives emphasize how the monetary functions performed by gold, bronze coins, and standardized commodities (bolts of textiles, grain) generated a system of multiple (concurrent) currencies with different economic and social functions: for instance, under the Jin dynasty (265 AD–420 AD), textiles were used in transactions with the government (taxes and tributes), while market transactions were mainly settled in coins. **Niv Horesh** (▶ Chap. 22, "The Monetary System of China Under the Qing Dynasty") illustrates not only the key differences between the bimetallic regime of the Qing era (1644–1911 AD) and European bimetallism but also the governance principles that informed monetary management in China, i.e., the regulation of coin production across such a vast empire as a means of stabilizing grain prices and the political rationale for a limited use of paper money. He also highlights how research on Chinese monetary history contributes to wider historiographical debates, such as the "Great Divergence" between Western Europe and Asia, or the role of debasement and seigniorage as sources of revenues in the territorial expansion of imperial rule (which connects with the Chinese revisionist literature known as the "New Qing History").

Finally, **Hisashi Takagi** (▶ Chap. 23, "The Monetary System of Japan in the Tokugawa Period") discusses the results of Japanese research on the "triple standard system" (gold coins, silver currency by weight, and copper coins, each one circulating in different spheres and on the base of its own denominational units) that prevailed under the last military regime (shogunate) of feudal Japan (1603–1867) (Ohkura and Shimbo 1978). The shogunate aimed to affirm its exclusive coinage prerogatives and establish a homogenous national system based on official exchange rates. However, currencies issued by the central authority were exchanged on the base of floating market rates and were supplemented by local currencies (including paper notes) issued by feudal lords as well as private paper notes issued by merchants. The system experienced frequent recoinages and alternated periodic inflationary debasements and deflationary increases in metal content. By the early nineteenth century, a large share of the circulation was in token silver coins denominated in gold units (*ryō*). However, in the absence of a free bullion market, the domestic gold-silver ratio deviated significantly from the international ratio. When the Harris Treaty opened Japanese ports to Western trade in 1858, arbitrage led to massive outflows of gold and inflows of silver which forced a debasement of gold coinage to align it to the international ratio. Thus, the monetary development of the late Tokugawa period paved the way to Japan's transition to a Gold Standard under the Meiji period at the end of the nineteenth century.

Exchange Rate Regimes

An international monetary order is defined by the set of rules and practices by which national governments and financial intermediaries provide international money to settle cross-country trade and financial transactions (McKinnon 1993). In this perspective, the choice of the exchange rate regime is a key policy decision that contributes to shape a country's monetary regime. The chapters included in this part survey and discuss research on the historical evolution of exchange rate regimes in the nineteenth and twentieth centuries (Eichengreen 1996 and 2009; Bordo and Eichengreen 1993; Bordo and Schwartz 1984). An influential analytical framework is the so-called trilemma or impossible trinity (a policy trade-off between exchange rate stability, open capital markets, and monetary autonomy) based on the Mundell-Fleming model (Obstfeld et al. 2005). The classification of exchange rate regimes on the base of "de jure" or "de facto" criteria (Ghosh et al. 2003; Reinhart and Rogoff 2004; Rose 2011) and "trilemma configurations" that quantify governments' achievements along the three dimensions (Aizenman et al. 2010, 2013) are related issues. A second perspective is the "nominal anchor" or "credibility" approach – a trade-off between the monetary stability (and easier access to international capital markets) generated by pre-committing to policy rules, such as under a Gold Standard, and the flexibility allowed by discretional policies – inspired by the Barro-Gordon model with rational expectations and time inconsistency (Giovannini 1992; Bordo 2003; Bordo and Kydland 1995; Bordo and Rockoff 1996). Models of currency crises ("speculative attacks") of first (inconsistent fundamentals), second (self-fulfilling expectations), or third generation (sudden stops, balance-sheet effects) and their interaction with banking and sovereign debt crises ("twin" and "triple" crises) are a third strand of literature with a strong impact on historical studies. A comparative historical analysis of the incidence of currency and "multiple" crises highlights a contrast between relative stability under the Gold Standard and Bretton Woods and the pronounced instability of the 1920s to 1930s and the post-1973 period (Bordo and Schwartz 2000; Bordo et al. 2001). Emerging economies were especially vulnerable to currency crises in the past (as they were at the end of the twentieth century) due to high foreign currency debt (a consequence of "original sin," i.e., the inability to issue debt in their domestic currency), poor policy credibility, and sudden reversals in international capital flows (Bordo and Flandreau 2003; Bordo and Meissner 2007; Bordo et al. 2010; Catao 2007). The interaction between a run of the currency and a run on banks in the context of a sudden stop of capital inflows was also at the heart of the German crisis of 1931, whose spillovers contributed to the sterling crisis and brought an end to the interwar Gold Exchange Standard (Accominotti 2012; Accominotti and Eichengreen 2016; Ferguson and Temin 2004; Schnabel 2004a, b, 2009).

Lawrence Officer (▶ Chap. 24, "International Monetary Regimes: The Gold Standard") reviews critically the results of the last generation of research on the Gold Standard. This was an international monetary regime under which countries with domestic circulation mainly based on gold coins and gold-backed fiduciary money allowed free trade of gold and capital flows. Exchange rates were fixed at the mint

parity and could fluctuate within a narrow band of "gold points," determined by the cost of shipping gold. Officer explains the criteria used to identify countries on an "effective" (i.e., operational) Gold Standard and to locate them in a center-core-periphery international hierarchy which reflects each country's relative importance in the establishment and maintenance of the standard. Empirical studies suggest that the post-1870 "scramble to gold" (the widespread adoption of Gold Standard by an increasing number of countries) was driven by network externalities in international trade and a search for exchange rate stability and easy access to international capital markets. Recent research also suggests that adjustment of external disequilibria under the Gold Standard was driven by global monetary mechanisms quite different from the classical price specie-flow model. In a similar fashion, empirical research challenges the traditional view of central banks "playing by rules" that strongly constrained their monetary independence, showing how discount rates and central bank assets were managed to stabilize domestic monetary conditions. The Gold Standard's stability rested on the absolute credibility of private sector commitment to fixed gold parities and an ideology of monetary and fiscal orthodoxy shared by policymakers and a wide coalition of economic interests. However, the notion that the Gold Standard championed monetary stability compared to later regimes holds for the mean of inflation, but not for its volatility; and the presence of strong deflationary forces suggests that there might have been a trade-off between stability and growth.

Olivier Accominotti (▶ Chap. 25, "International Monetary Regimes: The Interwar Gold Exchange Standard") shows how the macroeconomic and political circumstances of the pre-1914 period changed dramatically after World War I. The interwar Gold Exchange Standard (in which central banks held most of their reserves in short-term assets denominated in gold-convertible international currencies) was intrinsically vulnerable. Any sizable liquidation of international reserves (mainly British pounds and US dollars) into gold tended to weaken key international currencies and contracted liquidity in the London and New York money markets, which in turn increased pressure on the international monetary system. Recent research inspired by currency crisis models explored this mechanism in the "sudden stop" of 1929–1931 that followed the foreign capital boom-bust cycle of 1924–1928. The interwar regime also lacked the credibility of its predecessor, since the postwar mass mobilization exposed monetary and fiscal policies to unprecedented political pressure. In this low-credibility environment, investors were extremely sensitive to policies that might signal a weakening of governments' commitment to the recently re-established gold parities. As a response, policymakers became reluctant to engage in expansionary policies in response to economic recessions with rising unemployment. This political economy dynamic imparted on the monetary regime a strong "deflationary bias," which reached its peak in the perverse policy choices that led to the Great Depression. In this perspective, however, recent research emphasizes that, beyond economic policy mistakes, the Depression was the result of a complex interaction between governments, central bankers, and investors' expectations, in an international environment not conducive to cooperative behavior.

Peter Kugler and **Tobias Straumann** (▶ Chap. 26, "International Monetary Regimes: The Bretton Woods System") illustrate how the new rules of the game designed at the Bretton Woods conference envisaged a system (a pegged-but-adjustable exchange rate supported by the liquidity provided by the IMF) that would generate exchange rate stability without the destructive deflationary adjustment of the interwar period. On retrospective analysis, however, the system operated on the base of three structural and interrelated weaknesses: a heavy reliance on the US dollar and the Federal Reserve as sources of international liquidity, which loosened the external constraints on the US balance of payments; governments' reluctance to use demand-management and devaluation to reduce external imbalances, which delayed adjustment and exacerbated pressure on international liquidity; and the escalation of US external liabilities compared to its gold reserves, which undermined the stability of the anchor currency. Kugler and Strauman suggest that the evolution of the system into a pure dollar standard resembled the dynamics of a bimetallic system in which large and persistent deviations of the relative market price from the legal ratio undermine the monetary use of the legally undervalued metal – a version of Gresham's Law. As the real dollar price of gold in the gold market declined in the inflationary 1960s, dollars replaced gold in central banks' international reserves. Empirical research based on time-series methods supports this interpretation.

Finally **Atish Ghosh**, **Anne-Marie Gulde,** and **Holger Wolf** (▶ Chap. 27, "Currency Boards") analyze the historical record of currency boards, a fixed exchange rate regime widely used under different historical circumstance to achieve monetary stability. Ghosh, Gulde, and Wolf analyze the characteristics and implications of soft and hard variants of currency boards and discuss recent research on three cases: colonial boards in the British Empire of the late nineteenth and early twentieth centuries, Argentina dollar board, and the Euro boards adopted by Baltic and Eastern European countries in the 1990s. Studies on the colonial experiences agree that currency boards achieved their primary goals of monetary stability and trade facilitation but disagree on their possible costs in terms of sterilization of resources and constraints on financial development, reserve diversification, seigniorage revenues, monetary flexibility, and growth. More recent cases in emerging economies suggest that currency boards' credibility as an anti-inflationary arrangement depends on the fact that it makes external adjustment practically impossible and an exit strategy extremely costly both politically and economically. The lesson is that boards are sustainable only in political economies that generate a wide societal consensus on redistributional policies constrained by fiscal discipline.

Monetary Integration

Monetary integration can be measured in terms of convergence of short-term nominal interest rates in money markets across regions or countries. In the "trilemma," nominal convergence is achieved by combining fixed exchange rates with free capital movements, which reduce the scope for national monetary authorities to determine domestic interest rates and inflation autonomously. An extension is the

optimum currency area (OCA) theory, an analytical framework originally built on the base of contributions by Robert Mundel, Peter Kenen, and Ronald McKinnon in the 1960s and subsequently revised and expanded. The theory is based on the key notion that countries with high level of economic integration – measured by bilateral trade and business cycle synchronization – can reap large gains in monetary efficiency (i.e., reduction in transaction costs) by forming a monetary union with a single currency and a single monetary policy. For sufficiently integrated countries, these benefits largely outweigh the costs implied by the loss of the exchange rate as an instrument of macroeconomic stabilization. Fiscal transfers that accommodate the impact of asymmetric shocks improve the sustainability of a monetary union in imperfect OCAs. A variant of the theory is its "credibility" version, in which the inclusion in a monetary union of countries with a credible record of good macroeconomic management and high-quality institutions provides especially high benefits to member countries with endemic macroeconomic instability. An extension, proposed by Jeffrey Frankel and Andres Rose, suggests that the very creation of a monetary union may foster trade, financial integration, and symmetric shocks – i.e., optimum currency areas are endogenous (Tavlas 1993; Dellas and Tavlas 2009). Since the 1990s the process of monetary integration that eventually led to the establishment of the Economic and Monetary Union in Europe led to the emergence of a large body of historical research that uses, challenges, and enriches the OCA perspective. While studies of national monetary unifications in Europe (Italy, Germany) are limited, international currency unions of the nineteenth century (the Latin Monetary Union, the Scandinavian Monetary Union) drew considerable attention. In the Italian case, research suggests that monetary unification failed to overcome domestic financial market segmentation (Toniolo et al. 2003) and to produce a reconfiguration of trade flows and economic structure in line with OCAs criteria (Foreman-Peck 2005). Several studies explored the political and economic factors that shaped the experience of the Latin Monetary Union in the context of transition from bimetallism to the Gold Standard (Einaudi 1997, 2000a, b, 2001; Flandreau 1995a, 2000, 2003). Although the Union qualified as an OCA in terms of trade and financial integration and had a high degree of convergence in coinage standards (Flandreau 1995b; Redish 2000), its functioning was rapidly disrupted by arbitrage forces triggered by the instability of the bimetallic standard and undisciplined coinage and overissue by free-riding members (especially Italy). Empirical research finds that the Union lacked credibility and did not enhance nominal convergence among member countries (Bae and Bailey 2011), while its positive impact on trade was marginal and limited both in scope and time (Flandreau and Maurel 2005; Timini 2018). Scholars agree that the most important lesson from past experiences of monetary unions is the critical importance of fiscal integration for their sustainability (Bordo and Jonung 1999; Bordo et al. 2013; De Cecco 1996; James 1997). In this perspective, the USA provides an especially interesting historical example. Early experiments with a common currency circulating side by side with state currencies failed, and the US federal political economy complicated the transition to a stable monetary union with a uniform currency and robust safeguards against financial instability during the nineteenth century. Ultimately, the structural problem of

asymmetric regional shocks was gradually addressed by institutional reforms, such as the establishment of the Federal Reserve in 1914, the expansion of federal fiscal transfers, and the establishment of bank deposit insurance in the 1930s (Bordo 2004; Grubb 2003; 2006; Rockoff 2000; Rousseau 2006; 2015; Michener and Wright 2006; Selgin 2007; Sylla 2006, 2014).

David Weiman and **John James** (▶ Chap. 28, "The Evolution of the Modern US Monetary and Payments System") illustrate the key elements of the US national monetary-payments union from the 1790s to the 1920s: a common unit of account (the dollar), a common currency (national and then Federal Reserve banknotes), and an integrated banking system with a common national bank deposit money. The US monetary-payments system experienced periods during which a central federal authority realized the criteria of a "more perfect" monetary union (until 1836 with the Bank of the United States, after 1914 with the Federal Reserve) and periods in which states' prerogatives on banking and money prevailed. Weiman and James show how a continuously expanding hierarchical network of interconnected banks created positive externalities that produced an efficient payment system. The logic of network economics was explicitly recognized in the structural design of the National Banking and the Federal Reserve System. Although a central monetary authority was not a necessary precondition for the development of an efficient monetary-payment system based on bank liabilities, it became a necessary institutional change to guarantee the value of bank deposits and the execution of payments during banking panics.

Anders Ögren (▶ Chap. 29, "Currency Unions") critically discusses the basic tenets and inconsistencies of the optimum currency area theory and analyzes the most important historical cases of national monetary unifications (the USA, Germany) and international monetary unions (the Latin Monetary Union and the Scandinavian Monetary Union). Research unanimously suggests that successful monetary integration requires a high degree of political and fiscal integration which go hand in hand. In fact national monetary systems work as politically integrated currency unions supplemented by fiscal transfers from surplus to deficit regions, both in centralized and federal polities. Transfers are especially necessary in shocks that hit asymmetrically sectors and regions. This lesson holds also for "multinational" currency unions, EMU included, if they aim at being sustainable. Examples of less politically integrated unions can be found in history, but they were more akin to fixed exchange rate regimes managed by independent central banks.

Emmanuel Mourlon-Druol (▶ Chap. 32, "European Monetary Integration") deals directly with the EMU. His chapter analyzes the key controversies that articulated the long economic and political debate over plans for European monetary integration since the 1960s. One is the confrontation between "monetarists" (according to whom monetary integration would lead to macroeconomic convergence) and "economists" (monetary integration should "coronate" a process of convergence). Another thread deals with different approaches to monetary integration. These included a European Unit of Account (a basket of national currencies); a common (parallel) currency circulating alongside national currencies; the exchange rate mechanisms under the "Snake" (1973–1979) and the European Monetary

System (1979–1997); and the two single-currency grand schemes devised in the Werner Report (1970) and the Delors Report (1989). As Mourlon-Druol emphasizes, the post-2008 eurozone crisis shed light on some of the weaknesses correctly identified but left unaddressed in the architecture of the EMU as finally materialized in the Maastricht Treaty.

► Chapters 31, "Currency Blocs: The Yen" by **Michael Schiltz** and ► 30, "The Sterling Area 1945–1972" by **Catherine Schenk** deal with another type of monetary integration schemes: currency blocs, i.e., international arrangements that promote the exclusive international status of a currency of reference within group of countries tied to a core country by strong political and economic connections. Schiltz characterizes the yen bloc as a projection of imperial aspirations in a geopolitical environment (East Asia) which was fundamentally adverse to Japan's political and economic influence. The case of Korea (under Japanese rule since 1905) is illustrative of a pattern of currency imperialism which, through monetary reforms and exchange rate choices, was explicitly designed to promote the adoption by colonies of a de facto yen standard in support of Japan's financial domination. This had been worked out in Taiwan and would be replicated with minor variants in Manchuria and other occupied territories in the 1930s. After 1941, the "Greater East-Asian Financial Sphere" turned into a hyperinflationary experiment that flooded captive economies with inconvertible yens in support of the Japanese war machine. Although the sterling area found its origins in World War II, it was a loose international arrangement under which former and actual British colonies pegged their exchange rate to the sterling, used almost exclusively sterlings as central bank's reserves, and adopted common exchange and capital controls to limit the conversion of sterling assets into dollars. In return, they enjoyed preferential treatment when trading with Britain and issuing debt in the London capital market. The scholarly debate revolves around various burdens that the sterling area allegedly imposed on the British economy: external fragility, excess capital exports, high interest rates, and a misguided initial hesitancy to join in the process of the European economic integration. From a different angle, the sterling area was regarded as a constraint on monetary management and economic diversification of peripheral member countries. As Schenks's critical review of the literature shows, research suggests that most of these claims were fallacious. Overall, sterling area's trade and monetary arrangements contributed to macroeconomic stability of member countries while allowing them to pursue national economic interests, including central bank reserves' diversification. By the late 1960s, a declining sterling area was reduced to a set of bilateral agreements to manage in a coordinated way central bank reserves' diversification, in the wider context of multilateral cooperative efforts to prop up exchange rate pegs in the crisis of the Bretton Woods system.

Central Banking and Monetary Policy

The history of central banking and monetary policy is a research area in which the integration of money and finance is stronger. This reflects principally the fact that in the historical evolution of central banks, the pursuits of monetary and financial

stability – that is, the protection of the payments system and the role of lender of last resort to the banking system in periods of acute stress (later on complemented with regulation and supervision) – were twin responsibilities that evolved side by side and often posed complex trade-offs to central bankers (Bordo and Siklos 2018; Capie 1995; Capie et al. 1994; Goodhart 1988, 2011; Toniolo 1988; Toniolo and White 2015). Macroeconomic models that emphasize the key role of the banking sector as a channel of transmission of monetary policy through lending and balance-sheet effects and the impact of monetary policy on asset prices also contributed to move historical research in a similar direction. Recent macrofinancial studies explored the role of monetary policy in driving credit and asset boom-bust cycles and their ability to predict financial crises over the long run (Schularick and Taylor 2012; Jorda et al. 2011, 2013, 2015; Meissner 2013). Some historical episodes have emerged as privileged ground for empirical analysis, for instance, the channel of transmission of monetary shocks and the role of non-monetary shocks in the Great Depression (Bernanke 1983; Hamilton 1987, 1992; Cecchetti 1992; Romer and Romer 2013) or the interaction between monetary shocks, interest rates, and stock prices in nineteenth-century banking panics (Canova 1991; Rousseau 2002; Davis et al. 2009; Hanes and Rhode 2013). In line with the "nominal anchor" or "credibility" approach discussed in Part "Exchange Rate Regimes," research on monetary policy has increasingly focused on "monetary policy regimes," which jointly with the exchange rate determine a country's monetary regime. Monetary policy regimes can be defined as sets of rules for the formulation of monetary policy (usually differentiated in terms of "targets": gold price, the exchange rate, monetary aggregates, inflation) that generate stable expectations between policymakers and the public (Eichengreen 1991; Mishkin 1999). In international comparative perspective, scholars have explored the performance of alternative monetary policy regimes in terms of macroeconomic stability (Bordo and Schwartz 1999; Rolnick and Weber 1997) and the long-run evolution of central banks' credibility and reputation in delivering price stability (Bordo and Siklos 2014, 2015). International comparison of monetary policy regimes has been enhanced by the increasing availability of historical monographs with detailed insights of monetary institutions and policymaking in the USA (Meltzer 2003, 2010; Hetzel 2008), the UK (Capie 2010; Needham 2014), France (Patat and Lutfalla 1990; Monnet 2018), Germany (Bundesbank 1999), and Italy (Fratianni and Spinelli 1997). In addition, long-run perspectives on the evolution of national central banks are available for most Western European countries, the USA, Japan, and China (Edvinsson et al. 2018). Research on central banks' cooperation from the Gold Standard to Bretton Woods also produced a vast literature, often based on primary archival sources of national central banks and multilateral organizations such as the IMF and the BIS (Bordo and Schenk 2016; Cooper 2006; Eichengreen 1984; Flandreau 1997; James 1996; Mouré 2002; Toniolo 2005).

Many of these issues are reflected in the chapters of this part. **Stefano Ugolini** (▶ Chap. 33, "The Historical Evolution of Central Banking") provides a secular perspective that covers a variety of polities with different institutional and political economy characteristics, from medieval city-states and centralized states of the modern period to decentralized territorial polities, such as the USA and the

European Union. For that purpose, Ugolini differentiates conceptually between central banks, which are a relatively recent phenomenon, and central banking as a set of public policies aiming at enhancing monetary and financial stability. These include the management of the payment system (a natural monopoly), the establishment of prudential lending standards, the provision of lending of last resort, the monetization of public debt, and the management of money creation. These functions, which are the prerogatives of modern central banks, were performed by a variety of institutions over the course of history, such as public banks and banks of issue. Ugolini's analysis suggests that the historical development of central banking did not follow an evolutionary process driven by the principle of "survival of the fittest" or by the adoption of superior organizational solutions. It was rather the result of continuous experimentation and adaptation in response to domestic political economies.

The other chapters in this part deal with the historical evolution of monetary policy in the nineteenth and twentieth centuries – the periods that saw the emergence of modern central banks – under different exchange rate regimes, from the Gold Standard to the recent Great Recession. They reflect how different theoretical frameworks (Fisher-Friedman vs Keynes), by embedding different ideas about the characteristics of the economy (inherently stable or unstable), define the policy goals that central banks are expected to achieve and can be held responsible for – a non-activist regime based on an optimal monetary rule vs a more activist regime trying to exploit the trade-off of the Phillips curve. They also illustrate how the modern conception of monetary policy – the setting of a policy instrument to influence the behavior of the economy – only emerged after World War II together with modern macroeconomics.

Duncan Needham (▶ Chap. 34, "The Evolution of Monetary Policy (Goals and Targets) in Western Europe") provides a critical analysis of the very large literature on the three largest European economies: the UK, France, and Germany. Beyond similarities and differences in institutional frameworks, monetary policy design, and execution, he emphasizes the discontinuity represented by World War I and the long-term influence of each country's interwar experience (hyperinflation for Germany, unemployment for Britain) on the postwar preferences (price stability vs employment) of their central banks. **Robert Hetzel** (▶ Chap. 35, "The Evolution of US Monetary Policy") offers an analytical narrative based on the continuous interaction between the monetary rules followed by Fed policymakers, the nature and properties of the monetary regime in force, and the consequences of Fed's policy. The 1920s provide an example. The establishment of the Federal Reserve in 1914 aimed at fixing the problem of financial instability (speculative credit booms and asset bubbles followed by panics and deflation) that had shaken periodically the US economy in the nineteenth century. However, Hetzel argues the real bills doctrine (a variant of the quantity theory) that inspired its policy rule and the peculiar characteristics of the US Gold Standard (which operated somehow as a de facto fiat standard) prevented the Fed from fully understanding the impact of its monetary regime on prices and, as a consequence, misguided it into the contractionary policy that exacerbated financial instability in the first phase of the Great Depression. This

was just the first episode of a never-ending debate over the evolution of the monetary regime and the optimal monetary policy rule that would deliver economic stability, which Hetzel reconstructs until the recent Great Recession.

Masato Shizume (▶ Chap. 36, "The Historical Evolution of Monetary Policy (Goals and Instruments) in Japan: From the Central Bank of an Emerging Economy to the Central Bank of a Mature Economy") outlines the long-run fluctuations in the Bank of Japan's institutional framework, policy objectives, and operative instruments from the late nineteenth century to the recent period. Established in the 1880s with a mandate to mobilize resources in support of Japan's industrialization, in peacetime the size of its balance sheet with respect to GDP remained stable. This fact, Shizume suggests, reflects the stability of demand for central bank money and the accommodative stance of the Bank's policy. Massive debt monetization to support war finance during World Word II and the adoption of unconventional quantitative easing in 2001 (in response to the deflationary pressures that prevailed after the banking crisis of the 1990s) represent the only significant exceptions to this long-run equilibrium.

Finally **Esteban Pérez Caldentey** and **Matias Vernengo** (▶ Chap. 37, "The Historical Evolution of Monetary Policy in Latin America") outline the main phases of monetary policymaking in the recent history of Latin America. This started in the 1920s when Latin American countries joined the Gold Exchange Standard and the first central banks were established under the guidance and supervision of foreign "money doctors" (US and European experts of central banking). In the 1930s and 1940s, the adoption by central banks of the goals of the state-led inward-looking model of economic development (Taylor 1998) marked a major departure from the original design, whose impact lasted until the 1970s. The economic and financial reforms of the 1980s were a third turning point. Since then the mandates and practices of Latin American central banks have converged toward those of industrial countries, by setting price stability as their overarching objective and later on by adopting monetary policy rules based on inflation targeting and complemented by fiscal rules. Pérez Caldentey and Vernengo discuss whether these rules are optimal for a region with peculiar economic characteristics (i.e., its strong dependence on international trade and capital flows and its exposure to boom-bust cycles) and to what extent the subordination of fiscal policy and its reduction to social welfare spending reduces the ability of Latin American policymakers to achieve macroeconomic stabilization.

Aggregate Price Shocks

In the secular swing between success and failure that characterized the quest for monetary stability and credibility since the late nineteenth century, World War I and II represented extreme circumstances that turned central banks into "engines of inflation" (Bordo 2018). The wartime inflation and postwar hyperinflations of the twentieth century just confirmed the association between inflationary finance (i.e., the systematic monetization of large budget deficits), an acceleration of money

growth, and extreme price dynamics already observed in the American revolutionary war (Baak 2006; Grubb 2008, 2012, 2013), the French revolution (Sargent and Velde 1995; White 1995), and the American civil war (Calomiris 1988; Burdekin and Weidenmier 2001). All those episodes occurred – in fact, they became conceivable only under a fiat money monetary regime, in which governments, by suspending the convertibility of paper money into specie, removed any physical constraint on money issue (Capie 1986, 1991). The global transition to a fiat money regime in the 1970s also witnessed an acceleration of money growth that produced the largest and longest peacetime departure from price stability of the twentieth century (Friedman 1986). Overall the historical record suggests that the quantity theory of money can adequately explain price dynamics under purely fiduciary money. Empirical analysis of long time series confirms that the growth rates of monetary aggregates exhibited stronger cross-correlation and correlation with inflation under fiat money after World War II than under the Gold Standard; this correlation was especially strong in coincidence with the inflationary outbursts of WWI and the Great Inflation (less so during WWII, possibly due to price controls) (Rolnick and Weber 1997; Fischer et al. 2002; Benati 2009). In this sense, historical research vindicates Milton Friedman's claim that "inflation is always and everywhere a monetary phenomenon" (especially high inflation). At the same time, cross-country data spanning the nineteenth and twentieth centuries reveal a long-run equilibrium between monetary aggregates, GDP, and short-term interest rates. Historical analysis therefore suggests that the long-run money demand remained remarkably stable over time. The implication is that monetary aggregates might have been dismissed too early both as components of macroeconomic models and targets in monetary policymaking (Benati et al. 2016).

Recent research on hyperinflationary episodes shows a wide consensus on Sargent's approach focused on fiscal regimes and expectations (Sargent 1982). The dynamics of public debt (and, in some cases, also private debt and nominal wages) and fiscal news were the key drivers (either directly or indirectly) of rising inflationary expectations and monetary expansion. Expectations reversed and inflationary pressures quickly subsided as soon as governments committed credibly to a drastic change in fiscal and monetary policy regime, supported by legal and institutional reforms that limited governments' access to central bank borrowing (Siklos 1990; Burdekin and Burkett 1992; Ferguson 1996). A recent qualification suggests that high economic uncertainty, by preventing governments from committing to credible fiscal policies, might have contributed to hyperinflationary dynamics (Lopez and Mitchener 2018).

On the contrary, the scholarly debate on the Great Inflation of the 1970s is largely unsettled. Beyond the old (but still lively) controversy between monetarists (blaming overly expansionary monetary policies) and supporters of a "supply shock" interpretation, the monetarist camp has divided on why monetary authorities lost control of price dynamics (Bordo and Orphanides 2013). While some blame central banks' attempt to ride the Phillips curve to reach full employment, others contend that they accommodated private expectations of rising inflation because pursuing disinflation would have been too costly in terms of output and employment losses. Another

hypothesis is that central banks avoided monetary policy actions because they regarded inflation as a cost-push phenomenon, while others suggest that they were misled by an excessive focus on output gaps and unemployment, or by misperceptions of the natural rate of unemployment, or by poor real-time data. Whatever its determinants, the monetary policy failure of the 1970s translated into a highly persistent inflation, which some economists suggest, should be "hardwired" as a structural element into macroeconomic models. Historical research, on the contrary, demonstrates that inflation persistence greatly varied across monetary regimes and was almost absent in stable regimes with clearly defined anchors, such as the Gold Standard and, more recently, inflation targeting (Benati 2005, 2008).

The termination of high and extreme inflations and macroeconomic stabilization inevitably implies negative money supply shocks that generated disinflation or outright deflation. While the latter are usually associated with recessions and unemployment, historical research shows that their costs are affected by policy credibility. The historical experience of the USA suggests that a gradual approach to disinflation (such as in the period after the civil war) causes less harm to the real economy than a sharp monetary contraction (e.g., after World War I) if the monetary regime has a credible long-run anchor and the policy is predictable, as under a Gold Standard. In contrast, only an aggressive policy with high costs (as in the disinflation of the early 1980s) is likely to achieve its objectives in a monetary regime with poor credibility and predictability (Bordo et al. 2007). In general, negative money shocks which are non-neutral for a significant period tend to produce "bad" deflations with significant contractions in aggregate demand. However, this effect can be offset by positive supply shocks that reflects increases in productivity. Research shows that this was actually the case during the pre-1914 period, during which the secular decline in prices reflected mainly "good" deflation (Bordo et al. 2004; Bordo and Redish 2004). In turn, the Great Depression was characterized by the international transmission of deflationary pressures that led to several cases of "ugly" deflation with very large output and employment losses. In the case of the USA, deflationary shocks were also regularly associated with banking and financial crises until the 1930s (Bordo et al. 2002). However, the Great Depression is a very special case not representative of the overall historical experience, in which an association between asset price deflations and positive growth seems to prevail (Bordo and Filardo 2005a and 2005b; Borio and Filardo 2004; Borio et al. 2015).

The chapters of this part echo many of these issues. The institution of banknotes' convertibility into high-value coins at a predetermined fixed rate aimed at managing the overissue problem by constraining the supply of paper money. Under exceptional circumstances, however, such as a state of war, governments could temporarily suspend convertibility; this was the case in Sweden in the early 1740s and in England and Ireland in the late 1790s. Contemporaries observed that, in a monetary standard based on inconvertible paper, the price of specie tended to increase in terms of the domestic currency leading to a depreciation of the exchange rate. A controversy followed between those who interpreted this as evidence of price inflation driven by excess circulation of banknotes ("bullionist") and those who pointed to real factors as an alternative explanation. **Joshua Hendrickson**

(▶ Chap. 38, "Bullionism") explains how in modern historical research the bullionist controversy led to a debate about the determinants of the price level under different monetary regimes, raising the critical questions of whether the quantity theory is the appropriate analytical framework for the relationship between money and prices only under conditions of inconvertibility. Empirical tests based on time-series methods have provided mixed results, but the most recent studies point to a strong inflationary impact of shocks in the supply of banknotes in the cases of England and Sweden, which supports the bullionist view.

In ▶ Chap. 39, "Money in Wars" by **Kenneth Moure** deals with the monetary dimensions of the two "total wars" of the twentieth century. His comparative analysis emphasizes the importance of state tax and borrowing capacity – a long-run process dating back to the early modern period – to achieve a successful economic mobilization and reduce the use of the money press for war financing, thus limiting postwar monetary overhang and inflation. However, the unprecedented scale of the resources required and the characteristics of the wars (for instance, military occupations) disrupted monetary regimes and paved the ground for significant monetary changes. During World War I, the suspension of gold convertibility and the withdrawal (or hoarding) of metal coins installed a fiat money regime, with a circulation largely based on banknotes of small denomination; acute money shortages were relaxed by the issue of "necessity money," currency bonds, and tokens by local authorities and private organizations. In World War II, the failed policies of the previous war provided governments with a blueprint for a more successful management of war finance. In the USA and the UK, governments elaborated rudimentary national accounts and macroeconomic models to keep inflation under control. On the contrary, war finance and monetary management in totalitarian countries resorted less to planning and more to coercion. In occupied territories, Germany introduced an extractive system of forced credits, clearing accounts and administered exchange rates to pay for "occupation costs" which fed the German war machine at the cost of local treasuries, decreased inflationary pressure in Germany, and left occupied countries sitting on an inflationary time bomb. On the contrary, allied occupation authorities managed monetary emissions in liberated territories in coordination with local governments. In many countries, overcoming the legacy of wartime disruption required comprehensive monetary reforms to restore circulation and eradicate inflationary pressures.

Pierre Siklos and **Martin Bohl** (▶ Chap. 40, "The Anatomy of Inflation: An Economic History Perspective") review the theoretical and empirical literature on the determinants of inflation, its relationship with relative price variability, and its welfare costs. They also compare the record of price inflation under different monetary regimes and discuss the role of government credibility in anchoring inflationary expectations. An important conclusion is that inflation, if fully anticipated, produces modest social costs. The consensus view is that low and stable inflation is desirable as it comes closest to reducing the loss of purchasing power of money and (at least in theory) is easier to forecast, thus reducing the probability of large and persistent forecast errors. Economists however have failed to identify an "optimal" inflation rate and to provide a conclusive account of the dynamics of

inflation. The last part of their chapter is devoted to extraordinary spells of inflation – i.e., hyperinflations. As Siklos and Bohl show, empirical research confirms Cagan's hypothesis of a stable money demand function even under extreme monetary stress; in turn, the presence of self-generating inflation based on rational bubbles is excluded. As a consequence, they can be stopped by credible stabilization programs that affect fundamentals.

In the last chapter, **Richard Burdekin** (▶ Chap. 41, "Deflations in History") emphasizes the profound differences between historical and recent episodes of deflations. In the past, deflations were frequent in the second half of the nineteenth century and widespread during the Great Depression. These episodes were regularly associated to monetary contractions, mostly associated to the operation of the Gold Standard, although "good deflation" (falling prices driven by positive supply-side shocks) might have played a role. On the contrary, recent deflationary pressures, which emerged in Japan and China after the turn of the twenty-first century and in the USA and the Euro Area after the 2007–2008 crisis, occurred in a context of expansionary policies and a pronounced fall in the money multiplier – an apparent paradox which raised a lively debate. Burdekin also reviews critically the main negative effects that deflations can have on real economic activity through a reduction in aggregate demand (Mundell-Tobin effect), debt deflation (Fisher), or balance-sheet effects (Bernanke). Finally he discusses price-level targeting (an approach followed by the Swedish central bank in the 1930s; Straumann and Woitek 2009) as a possible monetary policy rule (alternative to inflation targeting) to anchor expectations and achieve price stability when conventional anti-deflationary policies fail.

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