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KEEP AT THE BEGINNING: Some of the answers in the background of the study guide are WRONG. Corrected replies and page references can be found on the textbook website or click here. Chapter 1 - 5E Of Reading Economic Tasks: Chapter 1 ALL (including Addition Charts and Their Meaning) PLUS: Effective Distribution pp. 56-57 Personal income distribution pp. 73-74 Online Lecture IS VERY IMPORTANT: 5Es of economic study guide Chapter 1: Multiple choice: # 1-7, 10-12, 14-24 Issues: #4, 5 Addition to Chapter 1: Multiple Choice: #1, 2, 6, 11, 12 15, 16, 17 Issues: #1a, 1b, 2a, 4 Work problems: 1.1 and 1.2 @ Web Quiz in : ALL questions Key questions at the end of the chapter: # 1-5, 1-7, 1-10, 1-11, 1-14, appendix 1-7 [key question answers can be found on our black page] Chapter 2 - Economic Systems and Globalization Reading Tasks: Chapter 2 ALL PLUS pages 2-13 from Chapter 23W 16: 23W-2 to 23W-3 Problems with Central Planning 23W-3 to 23W-5 The Collapse of the Soviet Economy 23W-5 to 23W-6 The Russian Transition to a Market System 23W-6 to 23W-9 Market Reforms in China 23W-10 to 23W-11 Outcome and Outcomes 23W-11 to 23W-13 Conclusion 23W-13 The Last Word - Fair Trade Products pp. 106-107 Last Word: Shuffling the Deck: p. 41 The Last Word - Economic Growth in China: p. 163 Global Competition, p. 108 The Last Word - Petition of the Candlemakers, 1845: p. 407 Study Guide Multiple Choice: #1-3, 6, 7, 9, 11, 12, 13, 19-25 Problems: #1, 4 Web Quiz Chapter 2 at : ALL Chapter 3 - The Efficiency of Markets: Supply and Demand Chapters 5 and 20 - TRADE : Specialization and Exchange of Reading Tasks: Study Guide Multiple Choice: Chapter 5: #1, 2, 4, 5, 7-19, 24, 25 Chapter 18: #1-12, 18-25 Issues: Chapter 18: #1 a-d, Work Problems 5.1 and 20.1 on Web Quizzes on Chapter 5: 1,2,4-10 Chapter 20 : 1-3, 6-8 End of Chapter Key Questions: #5-4, 5-6, 5-9, 20-4 [Answers to Key Questions Can Be Found on Our BlackBoard] Chapter 4 - Public Sector (Government): Role and Finance Reading Tasks: Chapter 3: Application: Government Set Prices pp. 59-62 Chapter 4 only pp. 78-88 Study Guide Multiple Choice: Chapter 3: #29, Chapter 3 Appendix: #9, Chapter 10 Chapter 4: #9-17, 19-25 Issues: Chapter 3: #7 Chapter 4: #2, 4 Radio problems on : #4.1 Chapter 4 Web quiz on : #2, 3, 6, 7, 9, 10 End-of-Chapter Questions: #4-9, 4-10, 4-15 [key question answers can be found on our panel page] Unit 2 - INTRODUCTION TO CHAPTER MACROECONOMICS 12 AS/AD Reading Tasks: Chapter 12 - Aggreggate Supply and Total Demand: ALL PLUS: Business Cycle: p. 168-170 Promoting stability: p. 81-82 Taxation and AS (Supply Economy - Foreign): p. 367-368 From short to long run: pp. 354-361 Types of inflation: pp. 177-178 Fiscal policy: pp. 255-258 Study Guide Multiple Choices: #1-9, 14-20, 22-25 Issues: #1, 2, Web quiz on : #1-6, 8-10 Key questions at the end of the chapter: #12-4, 12-6, 12-7 [answers to key questions can be found on our Panel page] Chapter 6 - Introduction to Macroeconomic Reading Tasks: Chapter 6 ALL PLUS: Overview Business Cycles: pp. 168-170 review Promoting Stability: pp. 81-82 review Current elections, future opportunities: pp. 17-18 Study Guide Multiple Choice:# 1-8, 11-15, 17, 25 Issues : 2,3 Web Quiz in : ALL Key Questions at the End of Chapter: #6-7 [Key Question Answers Can Be Found on Our Board Page] Chapter 9 - Unemployment and Inflation Reading Tasks: ALL Chapter 9 GDP Price Index, p. 137-138 Study Guide Multiple Choices: #1-11, 14-17, 19-23, 25 Problems: #1, 3, 4 Radio Problem 9.1 and 9.2 on Web Quiz at : #1-6, 8, 10 Key Questions #1, 2, 3 and 5 Key Questions at Chapter End: #9-1, 9-3, 9-8 [key question answers can be found on our blackboard] Chapter 7 - Measuring Economics- Chapters 8 and Web Chapter 22 - Economic Growth and Less Developed Countries Reading Tasks Study Guide Chapter 8: Multiple Choice : #1-3, 6-10, 13-23, 25 Problems: #1, 2, 4 Chapter 22W: Multiple Choice: #1-14, 16-25 Issues: #1, 2 Chapter 6 Multiple Choices #11 Web Quizzes on Chapter 8: 1-7, Chapter 22W: 1-9 Chapter End Key Questions: #8-2, 8-5, 8-8 , 8-11, 22-3, 22-5 [answers to key questions can be found on our board page] Unit 3 - MACROECONOMIC POLICY CHAPTERS 10 and 13 - Fiscal Policy Reading Tasks: ALL Chapter 10 ALL Chapter 13 PLUS pp. 367-368 Taxation and Aggregate Supply Study Guide Chapter 10: Multiple choice: ALL problems: #1, 4, 5 Chapter 13: Multiple Choice: #1-5, 10, 11-25 Issues: #4, 5 Work Problems 10.1 and 10.2 on Web Quizzes at Chapter 10: ALL Chapter 13 : #1, 2, 4-10 Key Questions at the End of Chapter: #10-5a, 10-9, 13-2, 13-3, 13-8, 13-10, 13-13 [answers to key questions can be found on our board page] Chapters 14 and 15 - Money and how banks create reading tasks: ALL chapters 14 and p. 308-310 from Chapter 16 OF CHAPTER 15 Study Guide Chapter 14 Multiple Choice: #1-5, 7, 9, 11, 13, 15-23 Chapter 15 Multiple choice: #1, 3-25 Issues: #1-4 Work problems 15.1 and 15.2 on Web Chapter 14: 1-4, 6-8, 10 Chapter 15: ALL Key Questions at the End of Chapter: #14-4, 14-8, 15-2, 15-4, 15-8, 15-13 [key question answers can be found on our Board page] Chapter 16 - Task of reading monetary policy: ALL Chapter 16 Study Guide Multiple choice: #1, 3, 4, 7, 8, 14 (tricky), 15-30 Issues: #3, 4, 5 (chart is slightly off). Radio problem 16.3 on Web Quiz chapter 16 on : #2, 4-9 End of Chapter Key Questions: #16-1, 16-2, 16-5 [answers to key questions can be found on our Panel page] Figure 15.1 Marriner S. Eccles Federal Reserve Headquarterss, Washington D.C. Some of the most influential monetary policy decisions in the U.S. are made behind that door. (Credit: Modification of work by squirrels83/Flickr Creative Commons) Outline15.1 Chapter federal reserve banking system and central banks15.3 How the central bank executes monetary policy15.4 Monetary policy and economic outcomes15.5 Monetary policy trapsBring it HomeNo problem of zero interest rate Lower BoundMost economists believe that monetary policy (manipulation of interest rates and credit conditions by the NCB) has a strong impact on the economy of the nation. Monetary policy works when the central bank cuts interest rates and makes credit more accessible. As a result, business investment and other types of consumption are increasing, causing GDP and employment to grow. But what if the interest rates banks pay are already close to zero? They can't be negative, can they? This would mean lenders paying borrowers for the privilege of taking their money. Nevertheless, this was the situation in which the US Federal Reserve found it at the end of the 2008/2009 recession. The federal funds rate, which is the interest rate for banks that the Federal Reserve targets with its monetary policy, was just above 5% in 2007. By 2009, 100,000 People's The Federal Reserve's situation was further complicated because fiscal policy, the other major tool for managing the economy, was constrained by fears that the federal budget deficit and public debt were already too high. What were the Federal Reserve's options? How could monetary policy be used to stimulate the economy? The answer, as we will see in this chapter, was to change the rules of the game. Introduction to monetary policy and bank regulation In this chapter you will find out: Federal Reserve Banking System and Central BanksBank RegulationHow the central bank executes monetary policyMonetary Policy and Economic OutcomesPitfalls for monetary policyMoney, loans and banks are all tied together. The money is deposited into bank accounts, which are then loaned to companies, individuals and other banks. When the intertwined system of money, loans and banks works well, transactions proceed smoothly in commodity and labour markets and savers are linked to borrowers. If money and the banking system do not work smoothly, the economy can either fall into recession or suffer prolonged inflation. Each country's government has a public policy that supports the money, credit and banking system. But these policies don't always work perfectly. This chapter discusses how monetary policy works and what can prevent it from working perfectly.15,1 | Federal Reserve Banking System and Central BanksThe end of this section, you will be able to:Explain the structure and organization of the US Federal ReserveDiscuxes how central banks influence monetary policy, promote financial stability and provide banking services When making decisions on a monetary offer, the central bank decides whether to raise or lower interest rates and, in this way, influence macroeconomic policy, which aims to reduce unemployment and low inflation. The central bank is also responsible for regulating all or part of the country's banking system to protect bank savers and ensure the health of the bank's balance sheet. The organisation responsible for conducting monetary policy and ensuring the smooth functioning of the national financial system is called the central bank. Most countries have central banks or currency boards. Some prominent central banks around the world include the European Central Bank, the Bank of Japan and the Bank of England. In the United States, the central bank is called the Federal Reserve – often short for the Fed itself. This section explains the organization of the US Federal Reserve and identifies the main responsibilities of the central bank. The structure/organization of the Federal ReserveUnlike most central banks, the Federal Reserve are semi-decentralized, mixing government appointees with the representation of private sector banks. Nationally, it is led by the Board of Governors, which consists of seven members appointed by the President of the United States of America and confirmed by the Senate. The dates are for a period of 14 years and are arranged in such a way that on January 31st it stretches one term every even year. The purpose of long and strained concepts is to isolate the Board of Governors as much as possible from political pressure so that political decisions can only be taken on the basis of their economic merits. In addition, except when filling an unfinished mandate, each member serves only one term of office, further isolating decision-making from politics. The Fed's policy decisions do not require congressional approval, and the president cannot seek the resignation of a Federal Reserve governor as a president can with cabinet positions. One member of the Board of Governors has been appointed Chairman. For example, from 1987 to early 2006, the chair was Alan Greenspan. from 2006 to 2014, Ben Bernanke held Post. The current chairwoman, Janet Yellen, has already made many headlines. Why? See the following Clear It Up feature to find out. Clear It UpWho has the most immediate economic power in the world? Figure 15.2 Federal Reserve Board Chair Janet L. Yellen is the first woman to be chairwoman of the Federal Reserve Board of Governors. (Credit: Federal Reserve System Board of Governors) What individual can make a financial market crash or rise only with a public announcement? That's not Bill Gates or Warren Buffett. That's not even the president of the United States. The answer is the chairman of the Federal Reserve Board of Governors. In early 2014, Janet L. Yellen, shown at number 15.2 became the first woman in the post. Yellen has been described in the media as perhaps the most qualified Fed chair in history. With a Doctorate in Economics from Yale University, Yellen taught macroeconomics at Harvard, the London School of Economics, and more recently at the University of California at Berkeley. From 2004-2010, Yellen was chairman of the Federal Reserve Bank of San Francisco. Not an economist from the Ivory Tower, Yellen became one of the few economists to warn of a possible housing market bubble, more than two years before the financial crisis hit. Yellen has twice been on the Federal Reserve Board of Governors, most recently as vice chairwoman. She also spent two years as president of the President's Council of Economic Advisers. If experience and credentials mean anything, Yellen is likely to be an effective Fed chair. The Fed chairman is first among the equals on the Board of Governors. Although he or she has only one vote, the president controls the agenda, and is the Fed's public voice, so he or she has more power and influence than might be expected. Connect It UpVisit this website (to see who the current members of the Federal Reserve Board of Governors are. You can track links provided for each board member to learn more about their backgrounds, experiences, and when their board conditions will end. The Federal Reserve is more than just the Board of Governors. The Fed also includes 12 regional Federal Reserve banks, each responsible for supporting commercial banks and the economy in general in their district. Federal Reserve districts and cities where their regional headquarters are located are shown at 15.3. Commercial banks in each district are elected by the Board of Directors for each Federal Reserve regional bank, and that board elects a president for each Federal Reserve regional district. So the Federal Reserve system includes both federal and private appointed leaders. Figure 15.3 Twelve Federal Reserve counties There are twelve regional Federal Reserve banks, each with its own district. What's the central bank doing? The Federal Reserve, most central banks are designed to perform three important functions: 1. For the implementation of monetary policy 2. Promote the stability of the financial system 3. Provide banking services to commercial banks and other depository institutions and provide banking services to the federal government. The first two functions are important enough that we will discuss them in our own modules; the third function we will discuss here. The Federal Reserve provides many of the same services to banks as banks to its customers. For example, all commercial banks have a Fed account where they dump reserves. Similarly, banks can obtain loans from the Fed through the discount window facility, which will be discussed in more detail later. The Fed is also responsible for processing the verification. When you write a check, for example, to buy groceries, the store stores a check in your bank account. Then a physical check (or a picture of that actual check) is returned to your bank, after which the funds are transferred from your bank account to your store account. The Fed is responsible for each of these actions. On a more mundane level, the Federal Reserve ensures that enough currency and coins circulate through the financial system to meet public demands. For example, every year the Fed increases the amount of currency available in banks around the Christmas shopping season and cuts it again in January. Finally, the Fed is responsible for ensuring that banks comply with a wide range of consumer protection laws. For example, banks are prohibited from discriminating on the basis of age, race, gender or marital status. Banks are also required to make public information about the loans they earn to buy homes and how these loans are distributed geographically, as well as the gender and race of loan applicants.15.2 | Bank regulation From the end of this section you will be able to:Discuss the relationship between bank regulation and monetary policyIss banking supervisionExpeduously how deposit insurance and lenders are of last resort two strategies for protection against bank fleecesConse a safe and stable national financial system is a critical concern of the Federal Reserve. The goal is not only to protect the savings of individuals, but also to protect the integrity of the financial system itself. This egoterical task is usually behind the scenes, but came under review during the 2008/2009 financial crisis, when critical parts of the financial system and businesses were briefly failed. Imagine suddenly you couldn't access the money in your bank accounts because your checks weren't accepted for payment and your debit cards were declined. This gives an idea of what failure is The system is like. Bank regulation is intended to maintain banks' solvency by avoiding excessive risk. The Regulation falls into a number of categories, including reserve requirements, capital requirements and limits on the types of investments banks can make. In money and banking, we learned that banks must keep a minimum percentage of their deposits handy as reserves. There is a bit of a misnomer on hand because, while some bank reserves are held as cash in the bank, most are held in the bank's account at the Federal Reserve, and their purpose is to cover the desired payments by savers. Another part of bank regulation is restrictions on the types of investments banks are allowed to make. Banks are allowed to credit companies, individuals and other banks. They are allowed to buy U.S. government securities but, to protect savers, they are not allowed to invest in a stock market or other asset deemed too risky. A bank's capital is the difference between a bank's assets and its liabilities. In other words, it's the bank's net worth. The bank must have a positive net worth; otherwise insolvent or bankrupt, which means that he would not have enough assets to repay his liabilities. The regulation requires banks to maintain a minimum net worth, usually reported as a percentage of their assets, to protect their savers and other creditors. Connect To UpVisit this website (to read a short article, Stop confusing monetary policy and bank regulation. Several government agencies monitor banks' balance sheets to make sure they have a positive net worth and are not taking too high a level of risk. Within the U.S. Treasury Department, the Office of the Comptroller of the Currency has national staff of bank examiners conducting on-site reviews of the 1,500 largest national banks. Bank examiners also inspect all foreign banks that have branches in the United States. The office of the currency company also monitors and regulates about 800 savings and credit institutions. The National Credit Union Administration (NCUA) oversees credit unions, which are non-profit-making banks owned and run by their members. There are more than 6,000 credit unions in the U.S. economy, though the typical credit union is small compared to most banks. The Federal Reserve also has some responsibility for overseeing financial institutions. For example, conglomerate companies owned by banks and other companies are called bank holding companies. While other regulators like the Office of the Comptroller of the Currency oversee the banks, the Federal Reserve oversees holding companies. When supervision of banks (and institutions similar to banks such as savings and loans and credit unions) works well, most banks will remain financially most of the time. If bank supervisors discover that a bank has a low or negative net worth or gives too high a share of risky loans, they may demand that the bank change its behavior - or, in extreme cases, even force the bank to be closed or sold to a financially sound bank. Banking supervision can also run into practical and political issues. The practical question is that measuring the value of a bank's assets is not always easy. As discussed in money and banking, the bank's assets are its loans, and the value of those assets depends on risk estimates that these loans will not be repaid. These issues can become even more complicated when a bank lends to banks or businesses in other countries or negotiates financial deals that are much more complicated than a basic loan. The political question arises because it is often a controversial decision by the bank's watchdog to require the bank to close or change financial investments, and the bank's supervisor often finds himself under political pressure from bank owners and local politicians to remain silent and away. For example, many observers pointed out that Japanese banks were in deep financial trouble during most of the 1990s; however, by the early 2000s nothing substantial had been done about it. A similar unwillingness to face problems with struggling banks is evident throughout the rest of the world, in East Asia, Latin America, Eastern Europe, Russia and elsewhere. In the United States in the 1990s, laws were passed requiring bank supervisors to open and disclose their findings, and to act as soon as the problem was identified. But with many U.S. banks staggered by the 2008-2009 recession, critics of banking regulators have raised pointed questions about why regulators did not previously anticipate banks' financial undoubtedness, before such heavy losses could accumulate. Bank RunsBack in the nineteenth century and during the first few decades of the twentieth century (around and during the Great Depression), putting money into a bank could be nerve-wracking. Imagine that your bank's net worth turned negative, so the bank's assets were not enough to cover its liabilities. In such a situation, whoever took out the deposit first received all their money, and those who did not rush to the bank quickly enough ran out of money. Savers racing the bank to raise their deposits, as shown at number 15.4. In It's a Wonderful Life, the bank manager, played by Jimmy Stewart, confronts a crowd of concerned bank savers who want to withdraw their money but manage to cull their fears by allowing some of them to withdraw some of their deposits - using money out of their own pocket that was supposed to pay for his honeymoon. Figure 15.4 A Run on the Bank works throughout The depression only exacerbated the economic situation. (Credit: State Archives and Records Directorate) The risk of bank runs has created instability in the banking system. Even rumours that the bank could experience negative net worth could trigger the bank and, at the bank, even healthy banks could be destroyed. Because the bank borrows most of the money it receives and because it keeps only limited reserves handy, a bank string of any size would quickly drain any of the bank's available cash. When the bank had no cash, it only heightened the fears of the remaining savers that they might lose their money. Moreover, a bank run in one bank often provoked a chain reaction of running to other banks. At the end of the nineteenth and early twentieth centuries, bank rides were usually not the original cause of the recession – but they could have significantly exacerbated the recession. Deposit insuranceFor why you protect yourself from bank races, Congress has set two strategies: deposit insurance and lender of last resort. Deposit insurance is an insurance system that makes sure bank savers don't lose their money, even if the bank goes bankrupt. About 70 countries around the world, including all major economies, have deposit insurance schemes. In the United States, the Federal Deposit Insurance Corporation (FDIC) is responsible for securing deposits. Banks pay an insurance premium to the FDIC. The insurance premium is based on the bank's deposit level and then adjusted according to the risks of the bank's financial situation. In 2009, for example, a fairly secure bank with a high net worth may have paid 10-20 cents of the insurance premium for every $100 of bank deposits, while a risky bank with a very low net worth may have paid 50-60 cents for every $100 in bank deposits. FDIC banking examiners assess banks' balance sheets, looking at the value of assets and liabilities, to determine the level of risk. The FDIC provides deposit insurance to around 6,509 banks (as of the end of 2014). Even if the bank goes bust, the government guarantees that savers will get up to $250,000 of their money in each account, enough for almost all individuals, although it is not enough for many companies. Since the United States enacted deposit insurance in the 1930s, no one has lost any of their insured deposits. Bank trips no longer happen in secured banks. Last resort lender The average with a bank run is not that insolvent banks will collapse; they are, after all, bankrupt and should be closed. The problem is that bank rides can cause solvents to collapse and spread to the rest of the financial system. To prevent this, the Fed is willing to lend to banks and other financial institutions when they cannot get funding from anywhere else either. This is known as the lender of the last role of last resort. For banks, the central bank operates lender of last resort helps to strengthen the impact of deposit insurance and convince bank customers that they will not lose their money. A lender of last resort can also occur in other financial crises. During the panic over the stock market crash of 1987, when the value of U.S. stocks fell 25% in one day, the Federal Reserve made a series of short-term emergency loans so that the financial system could continue to function. During the 2008-2009 recession, quantitative easing policies (discussed below) of the Federal Reserve can be interpreted as a willingness to make short-term credit available as needed at a time when the banking and financial system was under stress.15.3 | How the central bank executes monetary policyIs at the end of this section, you will be able to:Explain the reason for doing business on the open marketYou value the requirements of the reserve and discount ratesInterpret and show the bank's activity through the balance sheetThe important function of the Federal Reserve is to conduct a national monetary policy. Article I, Section 8 of the U.S. Constitution gives Congress the power to coin money and regulate the value thereof. As part of a 1913 law that created the Federal Reserve, Congress delegated those powers to the Fed. Monetary policy includes managing interest rates and credit conditions, which affects the level of economic activity, as described in more detail below. The central bank has three traditional tools for implementing monetary policy in the economy:Open market operationsChanging reserve requirementsChanging the discount rateIn discussing how these three tools work, it is useful to think of the central bank as a bank for banks – that is, each private sector bank has its own account with the central bank. We will discuss each of these monetary policy tools in the section below. Open market business The most commonly used monetary policy tool in the US is to operate on the open market. Open market operations occur when a central bank sells or buys U.S. government bonds to influence the amount of bank reserves and the level of interest rates. The specific interest rate aimed at doing business on the open market is the federal funds rate. The name is a little wrong because the federal funds rate is the interest rate charged by commercial banks that loans to other banks overnight. As such, it is a very short-term interest rate, but one that reflects very well the credit conditions in financial markets. The Federal Open Market Committee (FOMC) makes decisions regarding these open market operations. The FOMC is located of seven members of the Federal Reserve Board of Governors. It also includes five voting members drawn, on a rotating basis, from regional Federal Reserve banks. The President of the District of New York is a permanent member of the FOMC and four seats are filled by a rotating, annual route, from the other 11 districts. The FOMC usually meets every six weeks, but can meet more frequently if necessary. The FOMC is trying to act by consensus; however, the President of the Federal Reserve has traditionally played a very strong role in defining and shaping this consensus. For the Federal Reserve, and for most central banks, open market business has, in recent decades, been the most commonly used monetary policy tool. Link In UpVisit this website (for the Federal Reserve to learn more about current monetary policy. To understand how doing business on the open market affects the supply of money, consider Happy Bank's balance sheet, shown at 15.5. Figure 15.5 (a) shows Happy Bank starting with $460 million in assets, divided among reserves, bonds and loans, and $400 million in deposit liabilities, with a net worth of $60 million. When the central bank buys $20 million in bonds from Happy Bank, Happy Bank bonds fall by $20 million and the bank's reserves rise by $20 million, as shown in Figure 15.5 (b). However, Happy Bank wants to keep only $40 million in reserves (the amount of reserves it started with in Figure 15.5) (a), so the bank decides to borrow an additional $20 million in reserves, with its loans growing by $20 million, as shown in Figure 15.5 (c). The central bank's open market operation causes Happy Bank to provide loans instead of holding its assets in the form of government bonds, which expands the supply of money. Since the new loans are deposited in banks throughout the economy, these banks will, in turn, lend some of the deposits they receive, which will be encouraged by the money multiplier discussed in money and banking. Figure 15.5 Where did the Federal Reserve get the $20 million they used to buy bonds? The central bank has the power to generate money. In practical terms, the Federal Reserve would write a check to Happy Bank, so Happy Bank could have that money in its Federal Reserve bank account. In fact, the Federal Reserve has created money to buy bonds from the air - or with a few clicks on some computer keys. Doing business on the open market can also reduce the amount of money and credit in the economy. Figure 15.6 (a) shows Happy Bank's balance sheet before the central bank sells the bonds on the open market. When Happy Bank buys $30m in bonds, Happy Bank sends $30m of its reserves to the central bank but now holds an additional $30m of bonds, as shown in Figure 15.6 (b). However, Happy Bank wants to keep $40 million in reserves, as pictured 15.6 (a), so it will adjust the amount of its loans by $30 million to return its reserves to the desired level, as shown in Figure 15.6 (c). In practical terms, the bank may reduce its amount of credit. At any time, the bank receives payments on loans it has previously made and also makes new loans. If a bank only slows down or stops giving new loans for a short time, and instead adds those funds to its reserves, then its total loan volume will decrease. Reducing the amount of loans also means fewer deposits in other banks, as well as in other banks that reduce lending, as the money multiplier discussed in money and banking takes effect. What about all those bonds? How do they affect the cash symud? For an answer, see the following Clear It Up feature. Figure 15.6Clear It UpDoes selling or buying bonds increase the offer of money? Is this about the sale of bonds by a central bank that increases bank reserves and lowers interest rates, or is it a central bank purchase of bonds? An easy way to keep track of this is to treat the central bank as outside the banking system. When a central bank buys bonds, money flows from the central bank to individual banks in the economy, increasing the supply of money in circulation. When the central bank sells bonds, the money of individual banks in the economy flows into the central bank – reducing the amount of money in the economy. Changing reserve requirements Another way of implementing monetary policy is for the central bank to raise or reduce the reserve requirement, which, as we noted earlier, is the percentage of deposits of each bank that it is legally obliged to hold either as cash in a vault or on a deposit with the central bank. If banks have to keep a higher amount in reserves, they have less money available to lend. If banks are allowed to keep a smaller amount in reserves, they will have a larger amount of money available for lending. In early 2015, the Federal Reserve required banks to hold reserves equal to 0% of the first $14.5 million in deposits and then to hold reserves equal to 3% of deposits up to $103.6 million and 10% of any amount above $103.6 million. Small changes in reserve requirements are made almost every year. For example, the $103.6 million dividing line is sometimes increased or dropped by several million dollars. In practice, major changes in reserve requirements are rarely used to implement monetary policy. Sudden demand for all banks to increase their reserves would be extremely disruptive and difficult to match, while loosening the requirement too much would create a danger that banks cannot meet the demand for withdrawals. The Federal Reserve's change in discount rate was established after a 1907 financial panic. As mentioned earlier, since banks make money by lending their deposits, no bank, even those that are not bankrupt, can withstand running a bank. As a result of the panic, the Federal Reserve was established to lender of last resort. In the case of a bank run, healthy banks (banks that were not bankrupt) could borrow as much cash as they needed from the Fed's discount window to shug off the bank's running. The interest rate banks pay for such loans is called the discount rate. (They are so named because loans for loans in relation to outstanding loans are banks at a discount of their face value.) After savers became convinced that the bank would be able to honour their payments, they no longer had reason to flee to the bank. In short, the Federal Reserve was originally supposed to passively provide credit, but in the years since its founder, the Fed has taken a more active role in monetary policy. Thus, the third traditional method for implementing monetary policy is to raise or lower the discount rate. If the central bank raises the discount rate, then commercial banks will reduce their reserve borrowing from the Fed and instead invite loans to replace those reserves. With fewer loans available, money supply is falling and market interest rates are rising. If the central bank lowers the discount rate it charges banks, the process works the other way around. In recent decades, the Federal Reserve has made relatively few discount loans. Before the bank borrows from the Federal Reserve to meet the necessary reserves, the bank is expected to first borrow from other available sources, as well as other banks. This is encouraged by the Fed's collection of a higher discount rate, from the federal funds rate. With most banks taking a bit of a deal at the discount exchange rate, changing the discount rate up or down has little impact on their behaviour. More importantly, the Fed has found from experience that open market operations are a more precise and powerful tool for executing any monetary policy desired. In the Federal Reserve Act, the phrase... afford the means to rediscounting commercial paper is contained in its long title. The tool was seen as a major monetary policy tool when the Fed was originally created. This illustrates how monetary policy has evolved and continues to do so.15,4 | Monetary policy and economic outcomesIn the end of this section you will be able to:Compare expansionary monetary policy and contractionary monetary policyExpeduously how monetary policy affects interest rates and overall demand Evaluate the decisions of the Federal Reserve over the past forty yearsExped the importance of quantitative easing (QE)Monetary policy that lowers interest rates and stimulates borrowing is known as expansionary monetary policy or loose monetary policy Conversely, monetary policy that raises interest rates and reduces borrowing in the economy is a contractionary monetary policy or a strict monetary policy. This module will discuss how expansionary and contractionary monetary policies affect interest rates demand and how such macroeconomic targets such as unemployment and inflation. We will conclude by looking at the Fed's monetary policy practices in recent decades. Effect of monetary policy on interest ratesConsider market for credit bank funds, shown in figure 15.7. The original balance (E0) occurs at an interest rate of 8% and the amount of funds borrowed and borrowed of $10 billion. Expansionary monetary policy will shift the supply of credit assets to the right from the original supply curve (S0) to S1, leading to a balance (E1) with a lower interest rate of 6% and an amount of funds borrowed of $14 billion. On the other hand, contraction monetary policy will shift the supply of borrowers to the left from the original supply curve (S0) to S2, leading to a balance (E2) with a higher interest rate of 10% and a quantity of funds borrowed of $8 billion. Figure 15.7 Monetary policy and interest rates The original balance occurs at E0. Expansionary monetary policy will shift the supply of borrowers to the right from the original supply curve (S0) to the new supply curve (S1) and to the new E1 balance, reducing the interest rate from 8% to 6%. Contraction monetary policy will shift the supply of borrowers to the left from the original supply curve (S0) to the new supply (S2) and raise the interest rate from 8% to 10%. So how does the central bank raise interest rates? When describing monetary policy measures taken by the central bank, it is common to hear that the central bank has raised interest rates or cut interest rates. We need to be clear about this: more specifically, through open market operations, the central bank is changing bank reserves in a way that affects the credit supply curve. As a result, interest rates change, as shown in the number 15.7. If they do not meet the Fed's target, the Fed can deliver more or fewer reserves until interest rates do. Remember that the specific interest rate the Fed targets is the federal funds rate. Since 1995, the Federal Reserve has Of course, financial markets show a wide range of interest rates, representing borrowers with different risk premiums and loans being repaid over different time periods. In general, when the federal funds rate drops significantly, other interest rates fall, and when the federal funds rate rises, other interest rates rise. However, a one percentage point drop or rise in the federal funds rate - which they remember is for borrowing overnight - will typically have an effect of less than one percentage point on a 30-year home purchase loan or a three-year loan to buy a car. Monetary policy may push the full spectrum of interest rates higher or lower, but specific interest rates set forces and demand in these specific markets for lending and borrowing. The impact of monetary policy on aggregate demand policyMonetary affects interest rates and the available amount of borrowers, which in turn affects several components of aggregate demand. A strict or contractionary monetary policy leading to higher interest rates and reduced amounts of borrowers will reduce two components of aggregate demand. Business investment will decrease because it is less attractive for companies to borrow money, and even companies that have money will notice that, with higher interest rates, it is relatively more attractive to put these funds into financial investment than to invest in physical capital. In addition, higher interest rates will discourage consumer borrowing for big-ticket items such as houses and cars. On the other hand, loose or expansionary monetary policy leading to lower interest rates and higher volumes of borrowed funds will typically increase business investment and consumer borrowing for big-ticket items. If the economy suffers recession and high unemployment, with production below potential GDP, expansionary monetary policy can help the economy return to potential GDP. Figure 15.8 (a) illustrates this situation. This example uses the short-term aggregate supply curve Keynesian (SRAS). The original balance during the E0 recession occurs at an exit level of 600. Expansionary monetary policy will reduce interest rates and boost investment and consumption, which is why the original total demand curve (AD0) shifts to the right to AD1, so that the new balance (E1) occurs at a potential GDP level of 700. Figure 15.8 Expansionary or contraction monetary policy (a) The economy was originally in recession with the balance of production and price levels shown at E0. Expansionary monetary policy will reduce interest rates and shift overall demand to the right from AD0 to AD1, leading to a new equilibrium (E1) at a potential GDP level of production with relatively small price rises. (b) The economy originally produces above the potential level of GDP of production in the E0 balance and has seen pressures for inflationary price level growth. Contraction monetary policy will shift overall demand to the left from AD0 to AD1, leading to a new equilibrium (E1) at the potential gdp level of production. On the other hand, if the economy produces by production volume above its potential GDP, contraction monetary policy can reduce inflationary pressures for rising price levels. Figure 15.8 (b) original balance (E0) occurs with production of 750, which is above potential GDP. Contraction monetary policy will raise interest rates, discourage borrowing for investment and consumption, and cause the original demand curve (AD0) to shift to the left AD1, so the new balance (E1) is happening at a potential GDP level of 700.These examples suggest that monetary policy should be countercyclical; i.e. it should act as a counterweight to business cycles of economic downturns and upswing. Monetary policy should loosen when the recession has caused unemployment to rise and tighten when inflation threatens. Of course, contracyclical policy poses a risk of overreaction. If loose monetary policy seeking to end the recession goes too far, it could push overall demand so far to the right that it drives inflation. If a solid monetary policy that seeks to reduce inflation goes too far, it could push overall demand so far to the left that a recession begins. Figure 15.9 (a) compresses the chain of effects linking loose and robust monetary policy to changes in production and price levels. Figure 15.9 Monetary policy pathways (a) In expansionary monetary policy, the central bank causes an increase in the supply of money and borrowing funds, which lowers the interest rate, encourages additional borrowing for investment and consumption and shifts overall demand to the right. The result is higher price levels and, at least in the short term, higher real GDP. (b) In contraction monetary policy, the central bank causes a reduction in the supply of money and credit in the economy, which increases the interest rate, discourages borrowing for investment and consumption and shifts overall demand to the left. The result is a lower price level and, at least in the short term, lower real GDP. Federal Reserve actions over the last four decadesFor the period from the mid-1970s to the end of 2007, the Federal Reserve's monetary policy can be largely summarized by looking at how it targeted the federal funds interest rate using open market operations. Of course, telling the story of the U.S. economy since 1975 in terms of Federal Reserve actions lacks many other macroeconomic factors that have affected unemployment, recession, economic growth and inflation during that time. The nine episodes of Federal Reserve action listed in the section below also show that the central bank should be considered one of the leading players influencing the macro economy. As previously noted, the single man with the greatest power to influence the U.S. economy is likely chairman of the Federal Reserve. Figure 15.10 shows how the Federal Reserve has spent monetary policy targeting the federal funds interest rate over the past few decades. The chart shows the interest rate of federal funds (remember, this interest rate is set through open market business), unemployment rate and inflation rate since 1975. The number indicates different episodes of monetary policy during this period. Figure 15.10 Monetary policy, unemployment and inflation Through the episodes shown here, He usually responded to higher inflation with a contractionary monetary policy and a higher interest rate, and responded to higher unemployment with expansionary monetary policy and a lower interest rate. Consider episode 1 in the late 1970s. The inflation rate was very high, exceeding 10% in 1979 and 1980, so the Federal Reserve used strict monetary policy to raise interest rates, with the Federal Funds rate rising from 5.5% in 1977 to 5.5% in 2014. By 1983, inflation had fallen to 3.2%, but aggregate demand had decreased sharply enough that the 1982.In recessions that occurred in 1980 and 1990 had changed. The federal funds interest rate has fallen from 16.4 per cent in 1981 to 6.8 per cent in 1986. Until 1986. However, in Episode 3 in the late 1980s, inflation seemed to rise again, rising from 2% in 1986 to 2% in 2013. In response, the Federal Reserve used contraction monetary policy to raise federal funds rates from 6.6% in 1987 to 6.7% in 2014. Tighter monetary policy has halted inflation, which has fallen from above 5% in 1990 to below 3% in 1992, but it also helped cause the 1990-1991 recession, and the unemployment rate rose from 5.3% in 1989 to 7.5% by 1992.In Episode 4, in the early 1990s, when the Federal Reserve was convinced inflation was back under control , it lowered interest rates , and the interest rate of federal funds fell from 8.1 per cent in 1990 to 3.5 per cent in 1992. As the economy expanded, the 1997.In unemployment rate shrank from 7.5% in 1992 to 7.5% in 2013. Inflation did not rise, and the period of economic growth during the 1990s continued. Then in 1999 and 2000, the Fed was concerned that inflation seemed to be creeping, so it raised the federal funds interest rate from 4.6 percent in December 1998 to 6.5 percent in June 2000. By the beginning of 2001, 100,000 People's 100,0 Between 2000 and 2005, the 2004-20 In episodes 7 and 8, the Federal Reserve implemented loose monetary policy and lowered the federal funds rate from 6.2% in 2000 to 6.5% in 2014. They actually did this for fear of Japanese-style deflation; that convinced them to lower fed funds further than they otherwise would. The recession ended, but unemployment rates fell slowly in the early 2000s. Finally, in 2004, The New York Times The rate until it reached 5% to 2007.In Episode 9, as the Great Recession took off in 2008, the Federal Reserve was rapidly cutting interest rates, taking them down to 2% in 2008 and to nearly 0% in 2009. When the Fed lowered interest rates to near zero by December 2008, the economy was still deep in recession. Doing business on the open market could not make the interest rate negative. The Federal Reserve had to think outside the box. Quantitative easing The most powerful and commonly used of the three traditional monetary policy tools - open market operations - works by expanding or contracting a cash supply in a way that affects the interest rate. In late 2008, as the U.S. economy struggled to cope with the recession, the Federal Reserve had already cut the interest rate to near zero. With the recession still ongoing, the Fed has decided to adopt an innovative and nontraditional policy known as quantitative easing (QE). At issue is the purchase of long-term government and private mortgage-backed securities by central banks to make the loan available to stimulate overall demand. Quantitative easing differed from traditional monetary policy in several key ways. First, this included the Fed buying long-term government bonds rather than short-term Treasury bills. In 2008, however, The New York Times (Read bring it home's final feature for more on this.) Therefore, Bernanke sought to reduce long-term rates using quantitative easing. This leads to another way in which QE differs from traditional monetary policy. Instead of buying Treasury securities, the Fed also began buying private mortgage-backed securities, which it had never done before. During the financial crisis, which led to the recession, mortgage-backed securities were toxic assets, because when the housing market collapsed, no one knew how much these securities were worth, which put the financial institutions that held those securities on a very shaky footing. By offering to buy mortgage-backed securities, the Fed has both pushed long-term interest rates down and also removed possible toxic assets from the balance sheets of private financial firms, which would strengthen the financial system. Quantitative easing (QE) occurred in three episodes:1. During QE1. During QE1, which began in November 2008, the Fed purchased $600 billion in mortgage-backed securities from state-owned companies Fannie Mae and Freddie Mac.2. In November 2010, the Fed started QE2, in which it bought $600 billion in the US. Government bonds.3. QE3, started in September 2012. This amount increased in December 2012. The Fed has stated that when economic conditions allow, it will begin to narrow (or reduce monthly purchases). By October 2014, the Fed had announced a final $15 billion bond purchase, which would end quantitative easing. Quantitative easing policies adopted by the Federal Reserve (and other central banks around the world) are typically seen as temporary emergency measures. If these steps are, indeed, temporary, then the Federal Reserve will have to stop making these additional loans and sell off the financial securities it has accumulated. The concern is that the quantitative easing process may prove more difficult to reverse than it should have brought about. Evidence suggests that QE1 was somewhat successful, but that QE2 and QE3 were smaller.15.5 | Monetary policy traps What is the end of this section, you will be able to:Analyze whether monetary policy decisions should be made more democraticCalculate the speed of moneySee the influence of the central bank on inflation, unemployment, asset bubbles and leverage cyclesSee the effects of monetary stimulus In the real world, effective monetary policy faces a number of significant obstacles. Monetary policy affects the economy only after a time lag that is usually long and variable in length. Recall, monetary policy includes a chain of events: the central bank must perceive the situation in the economy, hold a meeting and decide on a reaction by tightening or loosening monetary policy. The change in monetary policy must permeate through the banking system, changing the amount of loans and affecting interest rates. When interest rates change, companies must change the level of investment, and consumers must change borrowing patterns when buying homes or cars. Then it takes time for these changes to filter through the rest of the economy. As a result of this chain of events, monetary policy has little effect in the immediate future; instead, its primary effects are felt perhaps one to three years in the future. The reality of a long and changing time lag does not mean that the central bank should refuse to take decisions. This means that central banks should be humbled to take action because of the risk that their measures can create as much or more economic instability as they resolve. Excess ReservesBanks is legally required to hold a minimum level of reserves, but no rule prohibits them from keeping additional excess reserves above the legally mandated limit. For example, during a recession, banks may hesitate to lend because they fear that when the economy is contracted, a high proportion of loan applicants less likely to repay their loans. When many banks choose to maintain excess reserves, expansionary monetary policy may not work well. This may happen because banks are concerned about the economy deteriorating, while the central bank is trying to expand its money supply. If banks prefer to keep excess reserves above the legally mandated level, the central bank cannot force individual banks into loans. Similarly, sensible businesses and consumers may be reluctant to borrow substantial amounts of money in a recession because they recognize that business sales and employee jobs are more precarious in a recession and do not want to face the need to pay interest. As a result, during a particularly deep recession, expansionary monetary policy can have little effect on either price levels or real GDP. Japan experienced this situation in the 1990s and early 2000s. Japan's economy has entered a period of very sluggish growth, dipping in and out of recession, in the early 1990s. By February 1999, 100,000 people had been killed. He kept it there most of the time until 2003, moreover, in the two years from March 2001 to March 2003, he was a 15-year-old. However, even this highly expansionary monetary policy has not had a significant impact on stimulating aggregate demand. Japan's economy continued to experience extremely slow growth in the mid-2000s. Clear It UpShould monetary policy decisions are made more democratically? Should monetary policy be conducted by a national Congress or legislator composed of elected representatives? Or should it be run by a politically appointed central bank that is more independent of voters? Here are some of the arguments put forward by each side. The case for greater democratic control of monetary policyElected representatives implement fiscal policy by adopting tax and bill of quantities. We could deal with monetary policy in the same way. Of course, sometimes they will make mistakes, but in a democracy it is better to have the mistakes of elected officials accountable to voters than political appointees. After all, people appointed to top management positions at the Federal Reserve - and most central banks around the world - tend to be bankers and economists. They are not representatives of borrowers such as small businesses or farmers, nor are they representatives of workers' unions. Central banks may not raise interest rates so quickly if they have to pay more attention to businesses and people in the real economy. The case of the independent central bankBecause central bank has some isolation from everyday politics, its members can nonpartisan look at specific economic situations and make difficult, immediate decisions when necessary. The idea of giving the ability to create money and lend is likely to end badly, sooner or later. It is simply too tempting for lawmakers to expand their cash syringe to finance their projects. The long-term result will be rampant inflation. Also, the central bank, acting in accordance with laws passed by elected officials, can react far faster than parliament. For example, the U.S. budget takes months to debate, pass and be signed into law, but monetary policy decisions can be made much faster. The day-to-day democratic scrutiny of monetary policy is impractical and seems likely to lead to overly expansionary monetary policy and higher inflation. The problem of excess reserves does not affect contraction. Central bankers have an old saying that monetary policy can be like pulling back and pushing strings: when a central bank pulls the strings and uses contractionary monetary policy, it can definitely raise interest rates and reduce overall demand. But when a central bank tries to push a series of expansionary monetary policies, the streak can sometimes just limp and have little effect, as banks choose not to lend excess reserves. This analogy should not be taken too literally – expansionary monetary policy usually has real effects, after this inconveniently long and variable lag. There are also moments, such as the Japanese economy in the late 1990s and early 2000s, when expansionary monetary policy was not enough to lift a recession-prone economy. Unpredictable speed trendsVelocity is a term that economists use to describe how quickly money circulates through the economy. The speed of money in a year is defined as: Specific speed measurements depend on the definition of the monetary stock used. Consider the speed of the M1, the total amount of currency in circulation, and check your account balance. In 2009, for example, the M1 was $1.7 trillion and nominal GDP was $14.3 trillion, so the speed of the M1 was 8.4 ($14.3 trillion/$1.7 trillion). Higher money speed means the average dollar circulates multiple times in a year; lower speed means the average dollar circulates fewer times in a year. You may have heard the d-word mentioned during our recent economic downturn. See the following Clear It Up feature to discuss how deflation can affect monetary policy. Clear It UpWhat happens during deflation episodes? Deflation occurs when the inflation rate is negative; that is, instead of money having less purchasing power over time, as happens with inflation, money is worth more. Deflation can make it harder for monetary policy to resolve the recession. Remember that the real interest rate is the nominal interest rate minus the inflation rate. If the nominal interest rate is 7% and the inflation rate is 3%, then the borrower is effectively real interest rate of 4%. If the nominal interest rate is 7% and there is deflation of 2%, then the real interest rate is actually 9%. In this way, unexpected deflation increases actual interest payments for borrowers. This can lead to a situation where an unexpectedly large number of loans are not repaid and banks consider their net worth to be decreasing or negatively. When banks suffer losses, they become less able and eager to make new loans. Overall demand is falling, which can lead to a recession. Then a double whammy: After causing a recession, deflation can make monetary policy more difficult. Let's say the central bank uses expansionary monetary policy to cut the nominal interest rate all the way to zero - but the economy has a 5% deflation. As a result, the real interest rate is 5%, and since the central bank cannot make the nominal interest rate negative, expansion policy cannot further reduce the real interest rate. In the U.S. economy during the early 1930s, deflation was 6.7% annually from 1930-1933, causing many borrowers and many banks to end up bankrupt, which in turn contributed significantly to the Great Depression. However, not all episodes of economic depression deflation end. Japan, for example, experienced deflation of just under 1% a year from 1999 to 2002, which hurt the Japanese economy, but still grew at about 0.9% a year during that period. Indeed, there is at least one historical example of deflation that coexists with rapid growth. The US economy experienced deflation of about 1.1% a year for a quarter century from 1876-1900, but real GDP also expanded to a rapid clip of 4% a year during that time, despite some occasional severe recessions. The central bank should be on guard against deflation and, if necessary, use expansionary monetary policy to prevent any prolonged or extreme deflation. Except in severe cases like the Great Depression, deflation does not guarantee economic catastrophe. Changes in speed can cause problems for monetary policy. To understand why, rewrite the speed definition so that the money supply is on the left side of the equation. That is: Remember from a macroeconomic perspective thatthis equation is sometimes referred to as the basic equation of the amount of money, but, as you can see, it's just a definition of speed written in another form. This equation must be true, by definition. If speed is constant over time, then a certain percentage increase in the supply of money on the left side of the basic amount of money equation will inevitably lead to the same percentage rise in nominal GDP - although this change could happen by increasing inflation, or by increasing real GDP, or by some combination of the two. If the speed changes over time, but in a constant and predictable way, then it changes offer will continue to have a predictable impact on nominal GDP. However, if the pace changes unpredictably over time, then the impact of changes in cash supply on nominal GDP becomes unpredictable. The actual speed of money in the U.S. economy measured using M1, the most common definition of cash supply, is illustrated at 11.15. from 1960 to about 1980, the speed seems quite predictable; that is, it increases quite constantly. In the early 1980s, however, the speed calculated with the M1 became more variable. The reasons for these sharp changes in speed remain a puzzle. Economists suspect that the speed changes are linked to innovations in banking and finance that have changed the way money is used in economic transactions: for example, the growth of electronic payments; increase in personal borrowing and credit card use; and accounts that make it easier for people to keep money in savings accounts, where it counts as M2, until the moment they want to write a check for money and transfer it to the M1. Until now, at least it has been shown that it is difficult to draw clear links between these types of factors and specific fluctuations in the M1. Given the many changes in banking and the prevalence of electronic banking, the M2 is now favoured as a measure of money rather than a narrower M1. Figure 15.11 Speed calculated using M1 speed is nominal GDP divided by cash supply for a given year. Different speed measures can be calculated using different monetary offer measures. Speed, as calculated using the M1, has not had a steady trend since the 1980s, instead bouncing up and down. (credit: St. Louis Federal Reserve Bank) In the 1970s, when the speed measured by the M1 seemed predictable, a number of economists, led by Nobel laureates Milton Friedman (1912-2006), argued that the best monetary policy was for the central bank to increase its money supply at a constant rate of growth. These economists argued that with long and shifting monetary policy lags and political pressures on central bankers, central bank monetary policy was equally likely to have unintended effects. Thus, these economists believed that monetary policy should look for steady growth in the 3% annual cash supply. They argued that a steady rate of monetary growth would be correct over longer periods of time, as it would roughly match the growth of the real economy. In addition, they argued that granting the central bank less discretion to conduct monetary policy would prevent the overly activist central bank from becoming a source of economic instability and uncertainty. In this spirit, Friedman wrote in 1967, The first and most important lesson history teaches about what monetary policy can do—and this is the lesson of the deepest monetary policy can prevent money itself from being the main source of economic disruption. As the speed of the M1 began to fluctuate in the 1980s, for the supply of money to grow at a predetermined and unchanging rate seemed less desirable, because as the money volume theory shows, a combination of steady growth in money supply and fluctuating speed would cause nominal GDP to rise and fall in unpredictable ways. Due to a jump in speed in the 1980s, many central banks focused less on the rate at which the amount of money in the economy was increasing, and instead set monetary policy in response to whether the economy was experiencing or at risk of higher inflation or unemployment. Unemployment and inflationAs if you should poll central bankers around the world and ask them what they think should be the primary task of monetary policy, by far the most popular answer would be to fight inflation. Most central bankers believe that the neoclassical model of economics accurately represents the economy in the medium to long term. Remember that in the neoclassical model of the economy, the aggregate supply curve is drawn as a vertical line at the level of potential GDP, as shown in the number 15.12. In the neoclassical model, the level of potential GDP (and the natural unemployment rate that exists when the economy produces potential GDP) is determined by real economic factors. If the original level of aggregate demand is AD0, then an expansionary monetary policy that shifts aggregate demand to AD1 only creates an inflationary increase in price levels, but does not change GDP or unemployment. From this perspective, all monetary policy can do is lead to low inflation or high inflation - and low inflation provides a better climate for a healthy and growing economy. After all, low inflation means that investing companies can focus on real economic issues rather than finding ways to protect themselves from the costs and risks of inflation. In this way, a consistent pattern of low inflation can contribute to long-term growth. Figure 15.12 Monetary policy in a neoclassical model According to neoclassical opinion, monetary policy affects only the level of prices, not the level of production in the economy. For example, expansionary monetary policy causes total demand to shift from the original AD0 to AD1. However, the adjustment of the economy from the original equilibrium (E0) to the new equilibrium (E1) represents an inflationary increase in the price level from P0 to P1, but in the long term there is no effect on production or the unemployment rate. In fact, no shift in AD will affect the amount of output balance in this model. This vision of focusing monetary policy on a low inflation rate is so attractive that many countries have re-written their central banking laws since the 1990s to have their own inflation, which means that the central bank is legally obliged to focus primarily on keeping inflation low. By 2014, central banks in 28 countries, including Austria, Brazil, Canada, Israel, Korea, Mexico, New Zealand, Spain, Sweden, Thailand and the United Kingdom faced a legal requirement to target the inflation rate. A notable exception is the Federal Reserve in the United States, which does not practice inflation targeting. Instead, a law governing the Federal Reserve requires both unemployment and inflation to be taken into account. Economists do not have a definitive consensus on whether the central bank should be required to focus only on inflation or whether it should have greater discretion. For those subscribed to the philosophy of inflation, the fear is that politicians concerned about sluggish economic growth and unemployment will constantly pressure the central bank to implement loose monetary policy - even if the economy is already producing on potential GDP. In some countries, the central bank may not have the political power to resist such pressures, as a result of higher inflation, but not a long-term reduction in unemployment. The US Federal Reserve has a tradition of independence, but central banks in other countries may come under more political pressure. For all these reasons - long and variable lags, excess reserves, unstable speed and controversy over economic targets - monetary policy in the real world is often difficult. However, the basic message remains that central banks can influence aggregate demand through monetary policymaking and thus influence macroeconomic outcomes. Asset Bubbles and Leverage CyclesA long-standing concern about the central bank focusing on inflation and unemployment is that it may overlook certain other economic problems coming in the future. For example, from 1994 to 2000 during what was known as the dot-com boom, the US stock market, measured by the Dow Jones Industrial Index (which includes 30 very large companies from across the US economy), nearly tripled in value. The Nasdaq index, which includes many smaller tech companies, has increased in value by a multiple since five since 1994. These rates of increase were clearly not sustainable. Indeed, dow jones stock values were nearly 20% lower in 2009 than in 2009. Stock values in the Nasdaq index were 50 per cent lower in 2009 than in 2009. Falling stock market values contributed to the 2001 recession. A similar story can be told about housing prices in the mid-2000s. During the 1970s, 1980s and 1990s, house prices increased on average about 6% a year. During what has been the 2003-2004 election, The New York Times Rate. These rates of increase were clearly not sustainable. When the price of housing fell in 2007 and 2008, many banks and households found that their assets were worth less than they expected, which contributed to a recession that began at 2007.At a broader level, some economists worry about the leverage cycle, where leverage is a term used by financial economists means borrowing. When economic times are good, banks and the financial sector want to borrow, and people and businesses want to go into debt. Remember that the amount of money and loans in the economy is determined by the money multiplier – the process of providing loans, depositing money and more loans. In good economic times, this wave of lending exaggerates the economic growth episode. This may even be part of what lead prices for certain assets - such as share prices or house prices - are rising at unsustainably high annual rates. At some point, when economic times turn bad, banks and the financial sector become much less willing to credit and loans become expensive or inaccessible to many potential borrowers. Sharp credit cuts, perhaps combined with deflating prices from the dot-com stock bubble or housing bubble, make the economic downturn worse than it otherwise would have been. Therefore, some economists have suggested that the central bank should not only look at economic growth, inflation and unemployment rates, but should also monitor asset prices and leverage cycles. Such proposals are quite controversial. If the central bank had voted in 1997 to end the 1998-1999 war, it would have been the only Neither the Federal Reserve nor any other central bank wants to take on the responsibility of deciding when stock prices and house prices are too high, too low or simply correct. As further research explores how asset price bubbles and leverage cycles can affect the economy, central banks may need to think about whether they need to pursue monetary policy in a way that would like to moderate these effects. Let's end this chapter with a Work it Out exercise on how the Fed or any central bank would stir up the economy by increasing its money supply. Work It OutCalculating effects of monetary stimulusSuppose that the central bank wants to stimulate the economy by increasing the supply of money. Bankers estimate that the speed of money is 3, and that the price level will increase from 100 to 110 due to incentives. Using the cash volume equation, what will be the impact of an $800 billion increase in cash stock on the volume of goods and services in the economy given the initial cash stock of $4 trillion? Step 1. We start by writing quantitative equation of money: MV = PQ. We know that initially V = 3, M = 4,000 (billion) and P = 100. By replacing these numbers, we can solve it for Q:Step 2. We now want to find the effect of adding $800 billion in cash supply, along with rising price levels. The new equation is:Step 3. If we take the distinction between the two volumes, we find that monetary stimulus has increased the amount of goods and services in the economy by 10.9 billion. The discussion in this chapter focused on domestic monetary policy; monetary policy position within the economy. Exchange rates and international capital flows explore the international dimension of monetary policy and how monetary policy is included in exchange rates and international financial capital flows. Bring it home Lower BoundIn 2008 interest rate problem, the US Federal Reserve has found it in a difficult position. The federal funds rate was on track to near zero, which meant that traditional open market operations, at which the Fed buys U.S. Treasury bills to lower short-term interest rates, were no longer viable. This so-called zero bound problem, prompted the Fed, under then-President Ben Bernanke, to try some unconventional policies, collectively called quantitative easing. By early 2014, quantitative easing had almost increased the amount of bank reserves. This probably contributed to the recovery of the US economy, but the impact was muted, possibly due to some of the obstacles mentioned in the last part of this module. The unprecedented increase in bank reserves has also led to fears of inflation. Since the beginning of 2015, however, KEY TERMSBank is guided when savers team up to the bank to raise their deposits for fear that otherwise the fiscal equation of the amount of cash supply × speed = the nominal institution of the GDPcentral Bank that implements national monetary policy and regulates its banking systemcontractive monetary policy monetary policy that reduces the supply of money and loanscountercyclical moves in the opposite direction of the business cycle of economic downturns and upswingsdeposit insurance insurance system that makes sure savers in the bank does not lose their money , even if the bank goes bankrupt, the interest rate charged by the central bank on loans provided to other commercial banks by the reserves held by banks, which exceed the legally prescribed limitexpansionary monetary policy, monetary policy that increases the supply of money and the amount of creditfederal funds, the interest rate at which one bank lends funds to another bank overnight. it is only necessary to focus on maintaining inflation in the latter case an institution that provides short-term emergency loans in the conditions of financial crisisose monetary policy see expansionary monetary policyopen market operations of the central bank selling or buying government bonds affect the amount of money and the level of interest ratesquantitative mitigation (QE) purchase of long-term government and private mortgage securities by central banks to make the loan available in the hope of stimulating the aggregate demand requirement to claim a percentage of its total deposits that the bank is legally obliged to hold as cash in a vault or deposit see in central banktight monetary policy the contraction monetary policyvelocity the speed at which money circulates through the economy; calculated as nominal GDP divided by the concepts of cash supplyKEY AND SUMMARY15.1 The system of banking of the Federal Reserve and the central bank The most prominent task of the central bank is to implement monetary policy, which includes changes in interest rates and credit conditions, affecting the amount of borrowing and spending in the economy. Some prominent central banks around the world include the U.S. Federal Reserve, the European Central Bank, the Bank of Japan and the Bank of England.A bank run occurs when there are rumors (possibly true, possibly false) that the bank is at financial risk of having a negative net worth. As a result, savers flock to the bank to withdraw their money and put it somewhere safer. Even false rumours, if they cause a bank to start, can force a healthy bank to lose its deposits and be forced to close. Deposit insurance guarantees bank savers that even if the bank has a negative net worth, their deposits will be protected. In the United States, the Federal Deposit Insurance Corporation (FDIC) collects deposit insurance premiums from banks and guarantees bank deposits of up to $250,000. Banking supervision includes a review of banks' balance sheets to ensure they have a positive net worth and that their assets are not too risky. In the United States, the Office of the Computer Currency (OCC) is responsible for banking supervision and inspection of savings and loans, and the National Credit Union Administration (NCUA) is responsible for inspecting credit unions. The FDIC and the Federal Reserve also play a role in banking supervision. When a central bank acts as a lender of last resort, it makes short-term loans available in situations of severe financial panic or stress. The collapse of one bank can be treated like any other business failure. Still, if many banks fail, it can reduce overall demand in a way that can bring about or deepen a recession. The combination of deposit insurance, bank supervision and policy lenders of last resort helps prevent weaknesses in the banking system from causing a recession.15.3 How central Executes monetary policyA central bank has three traditional tools for conducting monetary policy: open market operations, which include buying and selling government bonds with banks; reserve requirements, which determine the level of reserves the bank is legally obliged to hold; discount rates, which is the interest rate charged by the central bank on loans it provides to other commercial banks. The most commonly used tool is open market operations.15.4 Monetary policy and economic outcomesSepan (or loose) monetary policy raises the amount of money and credit above what it would otherwise be and lowers interest rates, stimulating aggregate demand and thus countering the recession. Contraction monetary policy, also called strict monetary policy, reduces the amount of money and credit below what it would otherwise be and raises interest rates, seeking to keep inflation down. During the 2008/2009 recession, central banks around the world also used quantitative easing to expand loan offerings.15.5 Monetary policy trapsMonet policy are inevitably imprecise, for a number of reasons: (a) the effects only occur after long and variable lags; (b) where banks decide to maintain excess reserves, monetary policy cannot force them to lend; and (c) speed can change in unpredictable ways. The basic quantitative equation of money is MV = PQ, where M is a cash offer, V is the speed of money, P is the price level, and Q is the real production of the economy. Some central banks, such as the European Central Bank, practice inflation targeting, meaning the central bank's sole goal is to keep inflation within the low target range. Other central banks, such as the US Federal Reserve, are free to focus either on reducing inflation or on stimulating an economy that is in recession, whichever goal then seems most important. SELF-COMPROMISING QUESTIONS Questions 15.1For why is it important for members of the Board of Governors of the Federal Reserve to have longer terms in office than elected officials, like the president? Click here to see AnswerQuestion 15.2Given risk of bank runs, why don't banks keep most deposits handy to meet savers' demands? Click here to see that answerquestion 15.3Bank trails are often described as self-fulfilling prophecies. Why is this phrase suitable for bank trips? Click here to see AnswerQuestion 15.4 If the central bank sells $500 of bonds to a bank that has issued $10,000 in loans and is exactly adjusting the 10% reserve requirement, what will happen to the loan amount and the supply of money in general? Click here to see AnswerQuestion 15.5This would be the effect of increasing banks' reserve requirements on cash supply? Click here to see AnswerQuestion 15.6 Why contraction monetary policy causes interest rates Rise? Click here to see AnswerQuestion 15.7 Why is expansionary monetary policy causing interest rates to fall? Click here to see AnswerQuestion 15.8For why might banks want to keep excess reserves in times of recession? Click here to see AnswerQuestion 15.9For why might the speed of money change unexpectedly? Click here to see AnswerREVIEW QUESTIONSQuestion 15.10How is the central bank different from a typical commercial bank? Click here to see AnswerQuestion 15.11List three traditional tools the central bank has for controlling cash stocks. Click here to see AnswerQuestion 15.12How is bank regulation related to monetary policy management? Click here to see AnswerQuestion 15.13Click here to see AnswerQuestion 15.14U deposit insurance program how it is managed in the United States, what is insured and who pays insurance premiums? Click here to see AnswerQuestion 15.15U government banking supervision programs, what is being monitored? Click here to see AnswerQuestion 15.16This is a lender of last resort? Click here to see AnswerQuestion 15.17Name and briefly describe the responsibilities of each of the following agencies: FDIC, NCUA and OCC. Click here to see AnswerQuestion 15.18Explain how to use an open market operation to expand its money offerings. Click here to see AnswerQuestion 15.19Explain how to use the reserve application to expand the money offer. Click here to see AnswerQuestion 15.20Explain how to use the discount rate to expand your money offer. Click here to see AnswerQuestion 15.21How does expansive and contractionary monetary policy affect the amount of money? Click here to see AnswerQuestion 15.22How does solid and loose monetary policy affect interest rates? Click here to see answerquestion 15.23How expansive, tight, contraction and loose monetary policy affect overall demand? Click here to see AnswerQuestion 15.24What kind of monetary policy would you expect in response to high inflation: expansionary or contractionary? Why? Click here to see AnswerQuestion 15.25Explain how to use quantitative easing to stimulate aggregate demand. Click here to see AnswerQuestion 15.26What kind of monetary policy would you expect in response to a recession: expansive or contractionary? Why? Click here to see AnswerQuestion 15.27To make each of the following factors complicate monetary policy implementation: debt and variable lags, excess reserves and speed movements? Click here to see AnswerQuestion 15.28Define cash stock speed. Click here to see AnswerQuestion 15.29This is the base quantity Money? Click here to see AnswerQuestion 15.30How does inflation target monetary policy work? Click here to see questions pondering answers 15.31For why presidents usually do Chairmen of the Federal Reserve Board even when they were originally appointed by the chairman of another political party? Click here to see AnswerQuestion 15.32U which ways could monetary policy be superior to fiscal policy? In what ways might it be inferior? Click here to see AnswerQuestion 15.33A call for moral hazard describes an increase in risky behavior resulting from efforts to make such behavior safer. How does the notion of moral hazard apply to deposit insurance and other banking regulations? Click here to see AnswerQuestion 15.34Explain what would happen if banks were notified that they had to increase their required reserves by one percentage point from, say, a 9% to 10% deposit. What would their options be if they got the money? Click here to see AnswerQuestion 15.35A well-known economic model called Phillips Curve (discussed in the Keynesian Perspective chapter) describes a short-term compromise usually observed between inflation and unemployment. Based on the discussion of expansionary and contraction monetary policy, explain why one of these variables usually falls when the other rises. Click here to see AnswerQuestion 15.36How is monetary policy based on rules different from discretionary monetary policy (that is, monetary policy not based on the rule)? What are some arguments for each of them? Click here to see AnswerQuestion 15.37Is which is advisable for central banks to primarily target inflation or unemployment? Why? Click here to see AnswerPROBLEMSQuestion 15.38Suppose The Fed is making an open-market purchase by purchasing $10 million in government bonds from Acme Bank. Sketch out the balance sheet changes that will occur as Acme converts proceeds from bond sales into new loans. Acme Bank's initial balance sheet contains the following information: Assets – Reserves 30, Bonds 50 and Loans 50; Liabilities – deposits 300 and equity 30.Click here to see AnswerQuestion 15.39Suppose The Fed conducts an open sale on the market selling $10 million of government bonds to Acme Bank. Sketch out the balance sheet changes that will occur while Acme returns the required reserves (10% of deposits) by reducing its loans. The initial balance sheet for Acme Bank contains the following information: Assets – reserves 30, bonds 50 and loans 250; Liabilities – deposits 300 and equity 30.Click here to see that AnswerQuestion 15.40 All other things are equal, for how much will nominal GDP expand if the central bank increases its money supply by $100 billion and the speed of money is 3? (Use this information as needed to answer the following 4 questions.) Click here to see AnswerQuestion 15.41Suppose now that economists expect the speed of money to increase by 50% as a result Incentives. What will be the overall increase in nominal GDP? Click here to see AnswerQuestion 15.42 If gdp is 1,500 and money money it's 400, what's speed? Click here to see AnswerQuestion 15.43 If GDP is now growing at 1,600, but the money supply is unchanged, how has the speed changed? Click here to see AnswerQuestion 15.44As GDP now drops to 1,500 and cash stock drops to 350, what is speed? Click here to see AnswerAnswersAnswer on question 15.1Longer terms isolating the Committee from political forces. Since the presidency can potentially be changed every four years, the independence of the Federal Reserve prevents drastic monetary policy changes with each new administration and allows political decisions to be made only on an economic basis. Click here to return to question 15.1Answer on question 15.2Banks to earn your money from issuing loans and charging interest. The more money stored in the bank's vault, the less available it is to lend, and the less money a bank can make. Click here to return to question 15.2Answer on question 15.3 Fear and uncertainty created by the suggestion that the bank might collapse may lead savers to withdraw their money. If many savers do so at the same time, the bank may not be able to meet their requirements and will indeed fail. Click here to return to question 15.10Answer when asked 15.4 Bank must keep $1,000 in reserves, so when it buys $500 of bonds, it will have to reduce its loans by $500 to make a difference. The monetary stock decreases by the same amount. Click here to return to question 15.4Answer on question 15.5 Increasing reserve requirements would reduce the offer of money, as more money would be kept in banks rather than circulating in the economy. Click here to return to question 15.5Answer when asked 15.6Contraction policy reduces the amount of borrowers in the economy. As with all goods, higher scaries lead to a higher price, so the interest rate, i.e. the price of borrowing money, is rising. Click here to return to question 15.6Answer on question 15.7 Increasing the amount of borrowers available means there are more people who want to borrow. They therefore bid on the borrowing price (interest rate) below. Click here to return to question 15.7Answer on question 15.8U a time of economic uncertainty, banks may worry that borrowers will lose the ability to repay their loans. They may also fear that panic is more likely and that they will need excess reserves to meet their obligations. Click here to return to question 15.8Answer on question 15.9 If consumer optimism changes, consumption can accelerate or slow. This could also happen if consumers have to buy a large number of items quickly, for example in the event of a national emergency. Click here to return to question 15.9Answer on question 15.10A the central bank does not provide loans or deposits from individuals, already regulates the cash supply of the entire economy. Click here to return 15.10Answer when asked 15.11You buy and sell bonds on the open market, changing the discount rate and changing reserve requirements. Click here to return to question 15.11Answer to Question 15.12Bank regulation affects the supply of money through mechanisms such as the reserve required ratio, which determines how much money banks must keep handy rather than borrowing. Click here to return to question 15.12Answer on question 15.13A bank run occurs when a large number of people want to withdraw their deposits, so the bank has no reserves to meet its obligations. Click here to return to question 15.13Answer on question 15.14 Deposits held by banks are insured and insurance premiums are paid by the banks themselves. Click here to return to question 15.14Answer on question 15.15In the operations of banks so that they do not engage in excessively risky behavior that could result in bank running and bank failuresClick here to return to question 15.15Answer when asked 15.16 The central bank is a lender of last resort, ensuring that funds are available even if other banks are unwilling to offer loans. Click here to return to question 15.16Answer on question 15.17 The Federal Deposit Insurance Corporation soothes deposits held in banks against losses, the National Credit Union Administration oversees and regulates credit unions. The Office of the Compjurent Currency oversees national banks and branches of foreign banks in the US Click here to return to question 15.17Answer when asked 15.18Buying bonds on the open market causes an increase in the supply of money. Click here to return to question 15.18Answer on question 15.19 Reserve requirements expands the offer of money as banks can issue more loans. Click here to return to question 15.19Answer on question 15.20 Lowering the discount rate reduces the cost of borrowing, so banks borrow more reserves and the money offer increases as reserves borrow. Click here to return to question 15.20Answer to Question 15.21Expansionary monetary policy causes an increase in the supply of money by a central bank offering currency in exchange for bonds and a reduction in bank borrowing and lending costs. Contraction monetary policy is reduced by the cash supply by selling bonds in exchange for the currency and increasing the price of borrowing and lending to banks. Click here to return to question 15.21Answer on question 15.22Loose monetary policy lowers interest rates, while strict monetary policy raises them. Click here to return to question 15.22Answer to Question 15.23Expansionary and monetary loose policy boosts aggregate demand, while contraction and strict monetary policy reduces it. Click here to return to question 15.23Answer on question 15.24Contraction monetary policy appropriate response. A reduction in the cash stock would rate and prevent prices from rising so quickly. Click here to return to question 15.24Answer on question 15.25Quantitative easing refers to a wide range of expansionary monetary actions taken by the central bank, all of which inject money into the economy and reduces borrowing and lending costs, in the hope of stimulating aggregate demand. Click here to return to question 15.25Answer to Question 15.26Expansionary, sin order to stimulate demand and boost employment to hasten a recovery from the recessionClick here to return to Question 15.26Answer to Question 15.27Lags complicate monetary policy as it takes time for the effects of the new policy to be felt. If economic conditions change before the effects of monetary policy occur, the actual outcome may be undesirable. Excess reserves can be a problem if the central bank tries to boost its money supply, but banks hold more than their required reserves for fear of deteriorating economic conditions. The central bank does its calculations with a certain amount of money in mind. If this changes, this may throw off the planned impact of monetary policy. Click here to return to question 15.27Answer on question 15.28 The speed of a cash offer is the rate at which money changes hands in the economyClick here to return to question 15.28Answer on question 15.29 Cash offer times is the speed of money equal to the level of the price times of total production. M x V = P x YClick here to return to question 15.29Answer when asked 3.30pm The central bank decides on a desirable inflation rate and expands or contracts cash supply until this rate is noticed. Click here to return to question 15.30Answer on question 15.31 Since the central bank is independent from the federal government, it is less advantageous to have a designated party appointed, while maintaining the same leadership ensures a coherent policy. Click here to return to question 15.31Answer on question 15.32Monetary policy is more agile than fiscal policy because it does not have to be approved by Congress. On the other hand, monetary policy tends to be more inflationary than fiscal policy. Click here to return to question 15.32Answer when asked 15.33Since banks know their deposits are secured, moral hazard would indicate that banks would be more likely to engage in risky lending behaviour than if there were no such protection. Click here to return to question 15.33Answer on question 15.34 Banks could either sell off some assets, such as government bonds, or start issuing fewer loans and foreclosures on delinquent loans. Click here to return to question 15.34Answer on question 15.35 When the central bank uses an expansionary policy to stimulate demand, the influx of money will cause prices to rise and lead to higher inflation rates, while increasing demand will create labour Unemployment. Click here to return to question 15.35Answer to Question 15.36 The monetary policy-based rule limits changes in money offerings based on some predefined rule, such as increasing the supply of money by 1% a year or increasing at the same rate as GDP growth, while discretionary monetary policy allows for more flexibility in response to unforeseen events. Rules-based monetary policy advocates argue that a decision taken by central bankers can be an overreaction based on fear or public opinion and that a stable, predictable policy is preferable. Proponents of discretionary policy argue that the rules cannot explain unforeseen changes in the economy, and central bankers must be able to respond with their own judgment. Click here to return to question 15.36Answer when asked 15.37Inflation is generally agreed to be a better target, although many central banks target both. Too narrow a focus on unemployment can result in wildly fluctuating price levels that can be very damaging to the economy. Click here to return to question 15.37Answer on question 15.38Nex's balance sheet will read: Click here to return to question 15.38Answer to question 15.39Nex's balance sheet will read: Click here to return to question 15.139Answer on question 15.39Next state will read: Click here to return to question 15.39Answer on question 15.39Nex balance sheet will read: Click here to return to question 15.39Answer on question 15.39 New balance sheets will read: Click here to return to question 15.39Answer on question 15.39Nex balance sheet will read: Click here to return to question 15.39Answer when asked 15.39Nex's balance sheet will read40Nomin The total GDP will increase by $300 billion ($100 billion x 3 = P x Y)Click here to return to question 15.40Answer to Question 15.41 The result will be $100 billion x (3 x 1.5) = $450 billion. Click here to return to question 15.41Answer on question 15.42Click here to return to question 15.42Answer on question 15.43 Speed will increase. 400 x V = 1600; V = 4Click here to return to question 15.43Answer when asked 15.44Click here to return to question 15.44 Download for free at 11.12.Page 2 Figure 8.1 Beyond business borders was one of many companies unable to recover from the 2008-2009 economic recession. (Credit: Modifying the Work of Luis Villa del Campo/Flickr Creative Commons) Chapter Outline8.1 How the unemployment rate is defined and calculated8.2 Unemployment patterns8.3 What causes changes in unemployment during the short run8.4 What causes changes in unemployment during the long runBring homeMisteristic case CandidatesNearly eight million U.S. jobs were lost during the Great Recession of 2008-2009, and unemployment peaked at 10 percent in October 2009. That's a number of positions gone. Some positions were added during the recovery, but since the summer of 2013, unemployment has remained persistently higher than the post-recession rate of less than 5%. Some economists and policymakers worried that the recovery would be out of work. With the economy growing, albeit slowly, why hasn't the number of unemployed fallen? Why are they You're not hiring? Peter Cappelli, noted Wharton professor of management and director of Wharton's Human Resources Centre, does not believe the job search process is similar to what he sees as a Home Depot view of employment. According to him, this view basically says that filling a job is like replacing a part in a washing machine. You just find someone who's doing exactly the same job as that broken part, plug them into the washing machine and that's it. The search for a job, both for a potential employee and an employer, is more complicated than that. In a recruitment situation, employers hold all the cards. They write job descriptions, set salaries, decide when and how they advertise positions, and determine the controls of software to verify employment applications. Advertising for positions has increased as the economic recovery progresses, but here's what employers say, there are no applicants meeting their needs. While the unemployment rate is now below 6% since the beginning of 2015, many economists and policymakers (including Federal Reserve Chair Janet Yellen) are still concerned about the labour market uptips. Therefore, the question arises: where are the job applicants? This question brings us to the topic of this chapter – unemployment. What makes it? How is it measured? And if the economy is growing, why isn't the pool of jobs growing along with it? Sounds like the economy has a case of missing candidates. Introduction to unemploymentWhat causes changes in unemployment during the long RunUnemployment can be a terrible and difficult life experience - such as a serious car accident or a messy divorce - the consequences of which can only be fully understood by someone who has gone through this. For unemployed individuals and their families, there is the daily financial stress of not knowing where the next salary comes from. There are painful adjustments, such as watching your savings account shrink, selling your car and buying it cheaper, or moving to a cheaper place to live. Even when an unemployed person finds a new job, they can pay less than the previous one. For many people, their work is an important part of their own worth. When unemployment separates people from the workforce, it can affect family relationships as well as mental and physical health. Only the human cost of unemployment would justify that low unemployment is an important public policy priority. However, unemployment also includes economic costs for wider society. When millions of unemployed but willing workers cannot find work, the economic resource is not used. An economy with high unemployment is like a company that operates with but an unused factory. The cost of being able to unemployment is the production that could have been produced by unemployed workers. This chapter will discuss how the unemployment rate is defined and calculated. It will examine patterns of unemployment over time, for the US economy as a whole, for different demographic groups in the US economy and for other countries. It will then look at the economic explanation of unemployment and how it explains patterns of unemployment and proposes public policies to reduce it,8.1 | As the unemployment rate is defined and calculated From the end of this section, you will be able to:Calculate the percentage of the workforce and the unemployment rateExcedure of hidden unemployment and what it means to be in the workforce or outside of it, Since the collection and interpretation of unemployment dataUnemployment is usually described in news or television reports as a percentage or rate. A recent report could say that, for example, since August 2009, 500,000 people have been killed in the country since 2009. At first glance, changes between percentages may seem small. But remember that the U.S. economy has about 155 million adults who either have jobs or are looking for them. A rise or fall of just 0.1% in the unemployment rate of 155 million potential workers translates into 155,000 people, roughly the total population of cities like Syracuse, New York, Brownsville, Texas or Pasadena, California. A big rise in the unemployment rate means a large number of job losses. In November 2009, at the height of the recession, about 15 million people were out of work. Even with the unemployment rate now at 5.5% since February 2015, around 8 million people are out of work overall. Connect it to the Bureau of Labor Statistics (monitors and reports on all data related to unemployment. Who's in or out of the workforce? Should everything without a job be counted as unemployed? Of course not. Children, for example, should not be counted as unemployed. Surely pensioners should not count as unemployed. Many full-time students have only part-time jobs, or no job at all, but it seems inappropriate to count them as suffering the pain of unemployment. Some people don't work because they raise children, the sick, on vacation or on parental leave. It's about dividing the adult population not just into the working and unemployed. There is a third group: people who do not have a job, and for some reason – retirement, childcare, voluntary break before a new job – are also not interested in work. It also includes those who want a job but have stopped looking, often because of discouragement over their inability to find suitable employment. Economists refer to this third group of those who are not and not looking for a job like from the workforce or not in the workforce. The U.S. unemployment rate, based on a monthly survey conducted by the U.S. Census Bureau, raises a number of questions to divide the adult population into working, unemployed or not in the workforce. To be classified as unemployed, a person must be out of work, currently available for work and actively looking for work in the previous four weeks. So a person who doesn't have a job but who isn't currently available for work or hasn't actively looked for a job in the last four weeks counts as being out of the workforce. Employed: currently working for payUnemployed: Out of work and actively looking for work In the workforce: No paid work and not actively looking for workLabor force: number of employees plus unemployedCalculation rateFigure 8.2 shows a three-month portion of the older than 16 adult population. In February 2015, about 62.8% of the adult population was in the workforce; that is, people are either employed or out of work, but they are looking for a job. Those in the workforce can be divided into employed and unemployed. These values are also shown in table 8.1. The unemployment rate is not a percentage of the total jobless adult population, but the percentage of adults who are in the workforce but do not have a job: Figure 8.2 Employed, Unemployed and Outside the distribution of the adult workforce (aged 16 and over), February 2015 Total adult, working-age population in February 2015. Of this total population, 148.3 were classified as employed and 8.7 million as unemployed. The remaining 92.9 are classified as out of the workforce. However, as you will learn, this seemingly simple chart does not tell the whole story. Table 8.1 U.S. Employment and Unemployment, February 2015 (Source: news.release/empsit.t01.htm)In this example, the unemployment rate can be calculated as 8.7 million unemployed people divided by 157 million people in the workforce, functioning to an unemployment rate of 5.5 percent. The following Work It Out feature will go through the steps of this calculation. Work It OutCalculating Labor Force PercentagesSo how do economists get percentages in and out of the workforce and the unemployment rate? We will use the values in Table 8.1 to illustrate the steps. To determine the percentage in the workforce:Step 1. Divide the number of people in the workforce (157 million) by the total adult (working age) population (249.9 million). Step two. Multiply by 100 to get a percentage. Determine the percentage from the workforce:Step 1. Divide the number of people from the workforce (92.9 million) by the total adult (working age) population (249.9 million). Step two. Multiply 100 to get a percentage. To determine the unemployment rate: step 1 Divide the number of unemployed people (8.7 million) by the total workforce (157 million). Step two. Multiply by 100 to get the rate. Hidden unemploymentJusted by a category outside the workforce, there are still some people who are mislabeled in the categorization of the employed, unemployed or out of the workforce. There are some people who only have part-time or temporary jobs and who are looking for full-time and full-time employment that count as employed, even though they are not employed the way they would like or should be. In addition, there are individuals who are insufficiently instiaded. This includes those who are trained or skilled for one type or level of work working in a lower-paid job or one who does not use their skills. For example, a person with a college degree in finance who works as a salesperson will be considered underemployed. However, they are also included in the working group. All these individuals fall under the wing of the term hidden unemployment. Discouraged workers, those who have stopped looking for employment and therefore no longer count themselves among the unemployed also belong to this groupLabor Force Participation RateNaj important statistic is the rate of participation of the workforce. This is the percentage of adults in the economy who are employed or unemployed and looking for work. So, using data from Figure 8.2 and Table 8.1, those included in this calculation would be 157 million individuals in the workforce. The rate is calculated by taking the number of people in the workforce, i.e. the number of employees and the number of unemployed, divided by the total adult population and multipliation by 100 in order to obtain a percentage. For february 2015 data, the labour force participation rate is 62.8%. Historically, the participation rate of civilian labor in the United States rose starting in the 1960s as women increasingly entered the workforce, peaking at about 68% at the end of 1999. Since then, the labor force participation rate has been steadily declining. The survey on wages in the institution When the unemployment report is published every month, the Bureau of Labor Statistics (BLS) also reports on the number of jobs created - which comes from the survey on salaries in the institution. The wage survey is based on a survey of about 140,000 companies and government agencies across the United States. It generates employment estimates on salaries according to the following criteria: all employees, average weekly hours and average hourly earnings, weekly and overtime hours. One of the criticisms of this research is that it does not count the self-employed. It also makes no distinction between a new, minimum wage, unsouthed or temporary jobs and full-time jobs with decent Is U.S. unemployment data collected? The unemployment rate released each month by the U.S. Bureau of Labor Statistics is based on the current Population Survey (CPS), which has been conducted every month since 1940. It is a great concern that this research is representative of the whole country. The country was first divided into 3,137 territories. The U.S. Census Bureau then selects 729 of these areas for research. These 729 areas are then divided into districts of about 300 households, with each district divided into clusters of about four housing units. Every month, Census Bureau employees call about 15,000 clusters with four households, for a total of 60,000 households. Households are interviewed for four consecutive months, then rotated from the survey for eight months and then re-interviewed for the same four months next year, before leaving the sample permanently. Based on this survey, unemployment rates are calculated by the state, industry, urban and rural areas, gender, age, race or ethnicity, and education levels. A wide range of other information is also available. For example, how long have people been unemployed? Did they become unemployed because they quit, or were they fired, or did their employer quit? Is an unemployed person the only person earning wages in the family? The current population survey is a treasure trove of information on employment and unemployment. If you're wondering what the difference is between CPS and EPS, read the following Clear it Up feature. Clear It UpWhat is the difference between CPS and EPS? The current Population Survey (CPS) conducted by the United States Census Bureau measures the percentage of the workforce that is unemployed. The Office of Labor Statistics's Wage Survey (EPS) is a survey on wages that measures the net change in jobs created for the month. Criticism of unemployment measurements Is always a complication in measuring the number of unemployed. For example, what about people who don't have jobs and who would be available to work but were discouraged by the lack of available jobs in their area and stopped looking? Such people and their families may be suffering the pain of unemployment. But research counts them as out of the workforce because they are not actively looking for work. Other people may tell the Census Bureau that they are willing to work and look for work, but, indeed, they are not so eager to work and do not bother at all. They count as unemployed, although they could more accurately be classified as out of the workforce. Still, other people may have jobs, they may be doing something like yard work, childcare or cleaning houses, but they don't report income earned to tax authorities. I can report that they're unemployed when in fact they're working. While unemployment is Getting most of the public and media attention, economic researchers at the Bureau of Labor Statistics publish a wide range of surveys and reports that try to measure these types of issues and develop a more nuanced and complete view of the job market. It's not exactly hot news that economic statistics are imperfect. However, even imperfect measures such as the unemployment rate can still be quite informative, when interpreted educatedly and sensibly. Link It UpClick here (to learn more about cps for reading FAQs about employment and work. 8.2 | Unemployment patterns End of this section, you will be able to:Explain the historical patterns of unemployment in the US Identify unemployment trends based on demographic value global unemployment Rates Look at how unemployment rates have changed over time and how different groups of people affect unemployment differently. The historic U.S. unemployment rateFigure 8.3 shows a historical pattern of U.S. unemployment since 1948. Figure 8.3 U.S. unemployment rate, 1948-2014 Over time, however, the unemployment rate appears to return to a range of 4 to 6%. There does not appear to be a long-term trend of the rate moving generally higher or generally lower. (Source: www.census.gov/cps) As we look at this data, several patterns stand out:1. Unemployment rates oscillate over time. During deep recessions in the early 1980s and 2007-2009, unemployment reached roughly 10%. By comparison, during the Great Depression of the 1930s, the unemployment rate reached nearly 25% of the workforce.2. Unemployment rates in the late 1990s and mid-2000s were fairly low by historical standards. The unemployment rate was below 5% from 1997 to 2000 and close to 5% during almost all of 2006-2007. Previously, unemployment was less than 5% three years in a row three decades earlier, from 1968 to 2011. The unemployment rate never drops all the way to zero. Indeed, it never seems to reach below 3%– and remains so low for only very short periods. (The reasons why this is the case are discussed later in this chapter.) 4. The timing of rising and falling unemployment coincides quite well with the timing of ups and downs in the overall economy. During periods of recession and depression, unemployment is high. During periods of economic growth, unemployment is usually lower,5. No significant upward or downward trend in unemployment rates is evident. This point is especially worth noting because the U.S. population has nearly quadrupled from 76 million in 1900. Moreover, a higher proportion of U.S. adults are now in the paid workforce as women have entered significant numbers over the past few decades. In 1900, women were awarded the 100m and 100m euros. But despite the increased number of workers, as well as other economic events such as globalisation and the continued invention of new technologies, the economy has provided jobs without causing a long-term upward or downward trend in unemployment rates. Unemployment rates according to GroupUnemployment are not evenly distributed across the U.S. population. Figure 8.4 shows unemployment rates spread in different ways: by gender, age and race/ethnicity. Figure 8.4 Unemployment rate by demographic group (a) by gender, 1972-2014 Male unemployment rates used to be lower than unemployment rates for women, but in recent decades these two rates have been very close, often with the unemployment rate for men slightly higher. (b) By age, 1972-2014 Unemployment rates are highest for the very young and become lower with age. (c) By race and ethnicity, 1972-2014 While unemployment rates for all groups tend to rise and fall together, the unemployment rate for whites has been lower than that of blacks and Hispanics in recent decades. (Source: www.bls.gov) The unemployment rate for women has historically been higher than that of men, perhaps reflecting a historical pattern of women being considered secondary earners. However, by about 1980, the unemployment rate for women was basically the same as for men, as shown in Figure 8.4 (a). During the 2008-2009 recession, the male unemployment rate exceeded the unemployment rate for women. By 2014, this pattern remained, although the gap is narrowing. Link it to this report (for detailed information on the 2008-2009 recession. It also provides some very useful information on unemployment statistics. Younger workers tend to have higher unemployment, while middle-aged workers tend to have lower unemployment, possibly because middle-aged workers feel the responsibility of needing more jobs. Younger workers are easier to move in and out of jobs (both in and out of the workforce). Older workers have extremely low unemployment rates, because those who do not have a job often leave the workforce by retiring, so they are not included in the unemployment statistics. Figure 8.4 (b) shows unemployment rates for women divided by age; pattern for men is similar. The african american unemployment rate is significantly higher than that for other racial or ethnic groups, which surely reflects, to some extent, a pattern of discrimination that limited black labor market opportunities. However, the disparities between white and black and Hispanic unemployment rates narrowed in the 1990s as figure 8.4 (c). In fact, black and Hispanic unemployment rates were at their lowest levels for several decades in the mid-2000s before rising during the recent Great Recession. Finally, those with less education tend to suffer higher unemployment. For example, in February 2015, the unemployment rate for college graduates was 2.7%; for those with a faculty but not a four-year degree, the unemployment rate was 5.1 %; for high school students without an additional diploma, the unemployment rate was 5.4 %; and for those without a high school diploma, the unemployment rate was 8.4%. This pattern may arise because additional education offers better links to the labour market and higher demand, or it can happen because labour market opportunities for low-skilled workers are less attractive than opportunities for higher skilled workers. Lower wages may make low-skilled workers less motivated to find work. Breaking unemployment in other ways bureau of labor statistics also provides information on the reasons for unemployment, as well as the length of time individuals are unemployed. Table 8.2, for example, shows four reasons for unemployment and the percentages of currently unemployed falling into each category. Table 8.3 shows the length of unemployment. For both, the data are from February 2015 (bls.gov) Table 8.2 Reasons for unemployed, February 2015 Table 8.3 Unemployment Length, February 2015Link It UpWatch this speech (on the impact of droids on the labour market. International unemployment comparisons From an international perspective, the U.S. unemployment rate typically looked a little better than average. Table 8.4 compares unemployment rates for 1991, 1996, 2001, 2006 and 2010. Table 8.4 International comparisons of unemployment ratesHow, comparisons of unemployment rates between countries must be treated as each country has slightly different research tools to measure unemployment and different labour markets. For example, japan's unemployment rates seem quite low, but Japan's economy has been 2016 in slow growth and recession since the late 1980s, and Japan's unemployment rate is probably too rosy a picture of its labour market. In Japan, workers who lose their jobs often leave the workforce quickly and are not looking for a new job, in which case they do not count as unemployed. In addition, Japanese companies are often quite reluctant to lay off workers, and so companies have a significant number of workers who are on reduced hours or officially employed, but do very little. This Japanese pattern is perhaps best seen as an unusual method for society to provide support for the unemployed, but a sign of a healthy economy. Link It Up We hear about the Chinese economy in the news all the time. The value of the Chinese yuan against the US dollar is likely to be part of the overnight business report. So why isn't the Chinese economy involved in this debate on international unemployment? The lack of reliable statistics is probably the reason. This article (explains why. It is very difficult to compare unemployment rates in the United States and other high-income economies with unemployment rates in Latin America, Africa, Eastern Europe and Asia. One reason is that statistical agencies in many poorer countries lack the resources and technical capabilities of the U.S. Census Bureau. But the more difficult problem with international comparisons is that in many low-income countries, most workers are not included in the labour market through an employer who pays them regularly. Instead, workers in these countries engage in short-term work, daily activities and bartering. Furthermore, the impact of unemployment varies greatly in high-income and low-income countries. Unemployed workers in developed economies have access to various national programmes such as unemployment insurance, social welfare and food stamps; such schemes barely exist in poorer countries. While unemployment is a serious problem in many low-income countries, it manifests itself in a different way than in high-income countries,8.3 | What causes changes in unemployment during the short runby end of this section, you will be able:Analyze cyclical unemploymentExplace the relationship between sticky wages and employment using different economic argumentsApply models of supply and demand for unemployment and wages We have seen unemployment vary through time and places. What causes changes in unemployment? There are different answers in the short term and in the long term. Let's take a look at the short drive first. Cyclical unemploymentIt seems a plausible assumption that in the short term, from a few months to several years, the amount of hours the average person is willing to work for a particular salary does not change much, so the labour supply curve does not move much. In addition, make a standard ceteris paribus assumption that there is no significant short-term change in the age structure of the workforce, institutions and laws that affect the labour market or other possibly relevant factors. One of the primary determinants of labour demand from companies is how they perceive the state of the macro economy. If companies believe that the business is expanding, then at any salary they will want to employ a larger amount of labor, and the demand curve for the workforce is shifting to the right. On the other hand, if companies perceive that the economy is slowing down or entering recession, then they will want to hire work at any salary, and the labour demand curve will move to the left. Variations in unemployment caused by the economy's transition from expansion to recession or from recession to expansion (i.e. business cycle) are known as cyclical unemployment. From the point of view of supply and demand models of competitive and flexible labour markets, unemployment poses a conundrum. In the labour market supply and demand model, as shown in the 8.5 number, the labour market should move towards equilible pay and quantity. By equilibrium pay (We), the amount of equilibrium (Qe) of the workforce supplied by workers should be equal to the amount of labour required by employers. Figure 8.5 Unemployment and balance in the labour market In a flexible wage labour market, the balance will appear on pay We and Qe quantity, where the number of people looking for work (shown by S) is equal to the number of jobs available (shows D). One possibility for unemployment is that unemployed people are those who are not willing to work at the current equilibial wage, say $10 an hour, but would be willing to work with a higher salary, like $20 an hour. The monthly Current Population Survey would count these people as unemployed, because they say they are ready and looking for work (at $20 an hour). But from the point of view of economists, these people choose to be unemployed. Probably a few people are unemployed because of unrealistic wage expectations, but they do not represent the majority of the unemployed. Instead, unemployed people often have friends or acquaintances of similar skill levels who are employed, and the unemployed would be willing to work in jobs and wages similar to those received by these people. But it seems that the employers of their friends and acquaintances do not hire. In other words, these people are inadvertently unemployed. What causes forced unemployment? Why wages might be sticky downwards If the flexible wage labour market model doesn't describe unemployment well – because it predicts that anyone willing to work on a paycheck that goes can always find work – then it may prove useful to consider economic models where wages are not flexible or adjust only very slowly. In particular, while wage increases can happen with relative ease, wage cuts are few and far between. One reason why wages may be sticky downwards, economists say, includes economic laws and institutions. For low-skilled workers who are paid the minimum wage, it is illegal to reduce their wages. For union workers operating under a multi-year contract with a company, a pay cut can violate a contract and create a labor dispute or strike. However, minimum wages and union contracts are not reason enough to keep wages sticky for the US economy as a whole. out of 150 million workers in the US economy, only around 1.4 million - less than 2% of the total - are paid the minimum wage. Similarly, only about 12% of American workers on wages and salaries represent the union. In other high-income countries, more workers can have their wages set by trade unions or the minimum wage can be set at a level that applies to a higher proportion of workers. But for the United States, these two factors together affect only one-fifth or less of the workforce. Economists looking for reasons why wages might be sticky downwards have focused on factors that can characterize most employment relationships in the economy, not just some. A number of different theories have been proposed, but they share a common tone. One argument is that even non-union employees often work under an implicit contract, which is that the employer will try to prevent wages from falling when the economy is weak or the business is having problems, and the employee will not expect a huge pay increase when the economy or business is strong. This wage-setting behavior acts as a form of insurance: an employee has some protection against falling wages in bad times, but pays that protection with lower wages in good times. Clearly, this type of implicit contract means that companies will hesitate to cut wages, so that workers do not feel betrayed and work less hard or even leave the company. The wage efficiency theory argues that workers' productivity depends on their pay, so employers will often find it worth paying their employees a little more than market conditions might in lie. One reason is that employees who are better paid than others will be more productive because they recognize that if they lost their current jobs, they would suffer a drop in pay. As a result, they are motivated to work more and stay with their current employer. In addition, employers know that it is expensive and time-consuming to hire and train new employees, so now they would rather pay workers a little more than lose them and have to hire and train new workers. Thus, by avoiding pay cuts, the employer minimizes the cost of training and hiring new workers, and reaps the benefits of well-motivated employees. In an unfavourable selection of arguments on wage cuts, it is pointed out that if the employer reacts to poor business conditions by reducing the wages of all workers, the most will go the best workers, those with the best alternatives to employment in other companies. The least attractive workers, with fewer alternatives to employment, are more likely to stay. Companies are therefore more likely to choose which workers should leave, redundancies and redundancies, rather than shortening wages at all levels. Sometimes companies that are going through difficult times can convince workers to cut wages in the short term, continue to retain the majority of the company's workers. But these stories are notable because they are so unorthodox. It's far more typical for companies to lay off some workers rather than cut everyone's wages. The insider-outsider model of the workforce, put simply, argues that those who already work for companies are insiders, while new employees are, at least for a while, outsiders. The company depends on its insiders to lubrise the wheels of the organization, be familiar with routine procedures, train new employees, and so on. But the pay cuts will alienate insiders and hurt the company's productivity and prospects. Finally, the relative argument of wage coordination points out that even if most workers are hypothetically willing to see their own wages fall in bad economic times as long as everyone else experiences such a downturn, there is no obvious way for a decentralised economy to implement such a plan. Instead, workers faced with the prospect of pay cuts will worry that other workers will not have such a pay cut, so pay cuts mean they are worse off both in absolute terms and in relation to others. As a result, workers are fiercely fighting pay cuts. These theories about why wages do not move downwards differ in their logic and implications, and understanding the strengths and weaknesses of each theory is a constant subject of research and controversy among economists. Everyone tends to imply that wages will only decrease very slowly, if at all, even when the economy or business is having difficult times. When wages are inflexible and unlikely to fall, then short- or long-term unemployment may occur. This can be seen at 8.6. Figure 8.6 Sticky wages in the labour market As the wage rate is stuck at W, above balance, the number of jobseekers (Qs) is higher than the number of jobs created (Qd). The result is unemployment, according to the bracket in the number. The interaction between shifts in labour demand and wages sticky downwards is shown at 8.7. Figure 8.7 (a) illustrates a situation where labour demand shifts to the right from D0 to D1. In this case, the pay balance rises from W0 to W1 and the balance of employees' work volumes increases from Q0 to Q1. It doesn't hurt employee morale at all to make wages go up. Figure 8.7 (b) shows a situation where labour demand shifts to the left, from D0 to D1, as it would normally do in a recession. Because wages are sticky downwards, they do not adapt to what would be a new equilible wage (Q1), at least not in the short term. Instead, after a shift in the labour demand curve, the same amount of workers are willing to work on that pay as before; however, the amount of workers required in this salary has decreased from the original balance (Q0) to Q2. The gap between the originals the amount (Q0) and the new quantity required of work (Q2) represents workers who would be willing to work on their way out but cannot find work. The gap represents the economic significance of unemployment. Figure 8.7 Wage growth and low unemployment: Where is unemployment in supply and demand? (a) In a labour market where wages can rise, increasing labour demand from D0 to D1 leads to an increase in the amount of labour balance employed from Q0 to Q1 and an increase in wages in balance from W0 to W1. (b) In a labour market where wages do not fall, a fall in labour demand from D0 to D1 leads to a decline in the amount of labour required on the original salary (W0) from Q0 to Q2. These workers will want to work at the prevailing salary (W0), but will not be able to find work. This analysis helps explain a previously recorded link: that unemployment tends to rise in recessions and decline during expansions. The overall state of the economy is pushing the labour demand curve and, combined with wages sticky downwards, unemployment is changing. The rise in unemployment resulting from the recession is cyclical unemployment. Link It UpThe St. Louis Federal Reserve Bank is the best resource for macroeconomic weather series data, known as Federal Reserve Economic Data (FRED). FRED (provides complete datasets on various measures of the unemployment rate, as well as a monthly report by the Bureau of Labor Statistics on the results of household surveys and employment. 8.4 | What causes changes in unemployment over a long periodYou will be able to:Explain friction and structural unemploymentAssess relations between the natural employment rate and potential real GDP, productivity and public policy Identification of recent patterns in the natural employment ratePropose ways to combat unemploymentCyclic unemployment explains why unemployment rises during the recession and decline during economic expansion. But what explains the remaining levels of unemployment even in good economic times? Why is the unemployment rate never zero? Even when the U.S. economy is growing strongly, the unemployment rate only rarely drops to 4%. Moreover, the debate earlier in this chapter highlighted that unemployment rates in many European countries such as Italy, France and Germany have often been extremely high at different times over the past few decades. Why is there a certain level of unemployment even when economies are growing strongly? Why are unemployment rates continually higher in certain economies, through good economic years and bad? Economists have a term that describes the remaining level of unemployment that occurs even when the economy is healthy: this is called the natural unemployment rate. Long term: Natural unemployment rate Natural unemployment is not natural in the sense that water freezes at 32 degrees Fahrenheit or boils at 212 degrees Fahrenheit. It is not a physical and unchanging law of nature. Instead, it's just a natural rate because the unemployment rate would be the result of a combination of economic, social and political factors that exist at the same time - assuming the economy is neither booming nor in recession. These forces include the usual pattern of expanding and housing the workforce in a vibrant economy, social and economic forces affecting the labour market or public policies affecting either people's desire to work or the willingness of businesses to hire. Let's talk about these factors in more detail. Frictional Unemployment In the market economy, some companies always pass without money for a variety of reasons: old technologies; mismanagement; good governance that has made poor decisions; changes in consumer tastes so that fewer company products are desired; a great customer who went broke; domestic or foreign competitors. Conversely, other companies will work very well for opposing reasons and want to hire more employees. In a perfect world, all those who lost their jobs would immediately find new ones. But in the real world, even if the number of jobseekers equals the number of vacancies, it takes time to find out about new jobs, to be interviewed and to figure out if the new job is good, or perhaps to sell the house and buy another near the new business. Unemployment, meanwhile, as workers move between jobs, is called friction unemployment. Friction unemployment is not a bad thing in itself. It takes time for both the employer and the individual to match the correct job creation. In order for individuals and companies to be successful and productive, you want people to find the job for which they are most complious, not just the first job offered. In the mid-2000s, before the 2008/2009 recession, it was true that about 7% of American workers saw their jobs disappear in any three-month period. But in times of economic growth, these destroyed jobs counterbalanced the economy as a whole with more jobs created. In 2005, for example, there were typically about 7.5 million unemployed at any one time in the U.S. economy. While about two-thirds of those unemployed found work in 14 weeks or less, the unemployment rate did little to change during the year, as those who found new jobs were largely compensated by others who lost their jobs. Of course, it would be desirable that people who have lost their jobs can immediately and easily move on to new jobs being created, but in the real world this is not possible. Someone who was fired by a textile factory in South Carolina. turn around and start working for a textile factory in California immediately. Instead, the adjustment process occurs in waves. Some people find new jobs near their old ones, while others feel they have to move to new locations. Some people can do very similar work with another company, while others have to start new careers. Some people may be close to retirement and choose to look for only part-time work, while others want an employer who offers a long-term career path. Friction unemployment resulting from the movement of people between jobs in a dynamic economy can account for one to two percentage points of total unemployment. The level of unemployment in friction will depend on how easy it is for workers to learn about alternative jobs, which may reflect the ease of communication about employment prospects in the economy. The extent of unemployment in friction will also depend to some extent on how many people are willing to move to new areas to find work – which in turn may depend on history and culture. Frictionless unemployment and the natural unemployment rate also seem to depend on the distribution of the age of the population. Figure 8.4 (b) showed that unemployment rates tend to be lower for people between 25 and 54 than for people younger or older. Striking age workers, as those in the 25-54 age group are sometimes called, are usually in place in their lives when they want to have a job and income coming in at all times. However, some of those under the age of 30 may still be trying out jobs and life options, with some of those over 55 considering retirement. In both cases, relatively young or old tend to worry less about unemployment than those in between, and their periods of friction of unemployment may be longer as a result. Thus, a society with a relatively high proportion of relatively young or old workers will tend to have a higher unemployment rate than a society with a higher proportion of its middle-aged workers. The structural factor of unemploymentIt is a significant factor that affects the natural unemployment rate is the amount of structural unemployment. The structurally unemployed are individuals who have no jobs because they do not have the skills valued by the labour market, either because demand has moved away from the skills they have or because they have never learned any skills. An example of the former would be unemployment among aerospace engineers after america's space program fell in the 1970s. An example of the latter would be dropping out of high school. Some people worry that technology causes structural unemployment. In the past, new technologies have put underqualified employees out of work, but at the same time create demand for highly skilled workers to use new technologies. Education seems to be key in reducing the amount of structural unemployment. Individuals who have can be retrained if they become structurally unemployed. For people without skills and little education, this option is more limited. Natural unemployment and potential real GDP The natural unemployment rate is linked to two other important concepts: full employment and potential real GDP. The economy is considered to be in full employment when the actual unemployment rate is equal to natural unemployment. When the economy is at full employment, the real GPD is the same as potential real GDP. On the other hand, when the economy is below full employment, the unemployment rate is higher than the natural unemployment rate and the real GDP is lower than the potential. Finally, when the economy is above full employment, then the unemployment rate is lower than the natural unemployment rate and the real GDP is higher than the potential. Work beyond potential is possible only briefly, as it is analogous to all workers working overtime. Productivity changes and the natural unemployment rateNexted productivity gains can have a strong effect on the natural unemployment rate. Over time, the level of wages in the economy will be determined by the productivity of workers. After all, if the company paid workers more than could be justified by their productivity, the business will ultimately lose money and go bankrupt. Conversely, if a company tries to pay workers less than their productivity, then in a competitive job market, it will pay other companies to hire these workers and pay them more. However, wage adjustments to productivity levels will not happen quickly or smoothly. Salaries are usually reviewed only once or twice a year. In many modern jobs, it is difficult to measure productivity on an individual level. For example, exactly how much would be measured by an accountant who is one of many people working in the tax department of a large corporation? As productivity is difficult to observe, wage increases are often determined on the basis of recent experience with productivity; if productivity rises to, say, 2% a year, then wages rise at that level as well. However, when productivity changes unexpectedly, it can affect the natural unemployment rate for some time. The US economy in the 1970s and 1990s provides two vivid examples of this process. In the 1970s, productivity growth unexpectedly slowed (as discussed in economic growth). For example, output per hour of American workers in the business sector increased at an annual rate of 3.3% annually from 1960 to 1973, but only 0.8% from 1973 to 1982. Figure 8.8 (a) illustrates a situation where labour demand – i.e. the amount of labour a job is willing to employ at any salary – shifts slightly every year due to productivity gains, from D0 to D1 to D2. As a result, wages grow on balance every year From W0 to W1 to W2. But when productivity slows unexpectedly, the pattern of wage increases is not immediately adjusted. Wages rise every year from W2 to W3 to W4. But the demand for labour is no longer changing. A gap opens up in which the amount of labour supplied at W4 salary level is greater than the required amount. The natural unemployment rate is rising; Indeed, after this unexpectedly low productivity in the 1970s, the national unemployment rate did not fall below 7% compared to May 1980. Over time, wage growth will adjust to match slower productivity gains and the unemployment rate will decrease. But this process can take years. Figure 8.8 Unexpected productivity changes and unemployment (a) Productivity is rising, increasing labour demand. Employers and workers get used to the pattern of wage increases. Then productivity suddenly ceases to increase. However, employers' and workers' expectations for wage increases do not change immediately, so wages continue to rise as before. But labour demand has not risen, so on W4 pay, unemployment exists where the amount of labor delivered exceeds the required amount. (b) The rate of productivity gains has been zero for some time, so employers and workers have come to accept the level of pay balance (W). Then productivity increases unexpectedly, shifting labour demand from D0 to D1. In salary (W), this means that the amount of labour required exceeds the amount delivered, and with job offers abundant, the unemployment rate will be low. it provides the opposite example in the late 1990s: instead of a surprising drop in productivity in the 1970s, productivity unexpectedly rose in the mid-1990s. The annual growth rate of real production per hour of work increased from 1.7% from 1980-1995 to an annual rate of 2.6% from 1995-2001. Let's simplify the situation a little bit, so that the economic lesson of the story is easier to see graphically, and let's say that productivity did not increase at all in earlier years, so the intersection of the labour market was in point E in Figure 8.8 (b), where the labour demand curve (D0) cuts the supply curve for work. As a result, real wages did not increase. Now, productivity is jumping upwards, shifting labour demand to the right, from D0 to D1. At least for a while, however, wages are still set according to earlier expectations that there will be no productivity growth, so that wages do not rise. As a result, at the prevailing wage level (W), the amount of labour required (Qd) will exceed the amount of labour delivered (Q) for some time, and unemployment will be very low – actually below the natural level of unemployment for some time. This pattern of unexpectedly high productivity helps explain why the unemployment rate remained below 4.5% – a fairly low level by historical In 1998, until the U.S. economy entered recession in 2001.Average unemployment levels will typically be slightly higher on average when productivity is unexpectedly low, and vice versa, it will usually be slightly lower on average when productivity is unexpectedly high. But over time, wages eventually adjust to reflect productivity levels. Public policy and the natural unemployment ratePubish policy can also have a strong impact on the natural unemployment rate. On the labour market supply side, public policies to help the unemployed can affect how eager people are to find work. For example, if a worker who loses his job is guaranteed a generous package of unemployment insurance, social benefits, food stamps and state medical benefits, then the cost of being able to unemployment is lower and that worker will be less eager to look for a new job. What seems to be most important is not only the amount of these benefits, but also how long they last. A company that provides generous assistance to the unemployed that is terminated after, say, six months, may provide less incentive for unemployment than a society that provides less generous assistance lasting several years. Conversely, government assistance to look for work or retrain in some cases can encourage people to return to work sooner. See Clear it Up to find out how the U.S. handles unemployment insurance. Clear it UpHow does U.S. unemployment insurance work? Unemployment insurance is a joint federal-state program, established by federal law in 1935. The federal government sets minimum standards for the program, but most administrations are done by state governments. Funding for the program is a federal tax collected from employers. The federal government is demanding that the tax be collected on the first $7,000 in wages paid to each worker; however, states can choose to charge taxes on a higher amount if they wish, and 41 states have set a higher limit. States can choose the time at which benefits will be paid, although most states limit unemployment benefits to 26 weeks , with possible extensions at times of particularly high unemployment. The fund is then used to pay benefits to those who become unemployed. Average unemployment benefits are equivalent to about one third of the salary earned by a person in their previous job, but the level of unemployment benefits varies considerably between countries. Table 8.5 Maximum weekly unemployment benefits by country in 2014(Source: Another interesting fact to note about unemployment classifications – an individual does not have to collect unemployment benefits to be classified as unemployed. While statistics on how many people collect unemployment insurance are kept and studied, this is not a source of unemployment Information. Link It UpView to this article (to explain who exactly is eligible for unemployment benefits. On the demand side of the labour market, the government rules social institutions, and the presence of trade unions can affect companies' willingness to hire. For example, if the government makes it harder for businesses to start or expand, by ending new businesses with bureaucratic bureaucracy, companies will become more discouraged about employment. Government regulations can make it harder to start a business by requiring a new company to get many licenses and pay many fees, or by limiting the types and quality of products that can be sold. Other government regulations, such as zoning laws, can limit where business can be done, or whether companies are allowed to be open during the evening or Sunday. Whatever defenses can be offered for such laws in terms of social value - such as the value some Christians have for not answering on Sundays - these kinds of restrictions impose a barrier between some willing workers and other willing employers, thereby contributing to a higher natural unemployment rate. Similarly, if the government makes it difficult to lay off or lay off workers, companies can react by trying not to hire more workers than is strictly necessary – since laying off these workers would be costly and difficult. High minimum wages can discourage companies from hiring low-quality workers. Government rules can encourage and support powerful unions, which can then raise wages for union workers, but at the cost of discousting businesses from hiring these workers. Natural unemployment rate in recent years The underlying economic, social and political factors that determine the natural unemployment rate may change over time, meaning that the natural unemployment rate can also change over time. Economists' estimates of the natural unemployment rate in the US economy in the early 2000s estimated about 4.5% to 5.5%. That's a lower estimate than before. The three common reasons proposed by economists for this change are listed below.1 The internet has provided an outstanding new tool for job seekers to find1. The Internet has provided an outstanding new tool through which job seekers can learn more about jobs in different companies and can make contact with relative ease. Searching the internet is far easier than trying to find lists of local employers and then searching for phone numbers for all their HR departments, searching for job lists and application forms, and so on. Social networks like LinkedIn have changed the way people find work.2. The growth of the temporary workers' industry has likely helped reduce the natural unemployment rate. In the early 1980s, only about 0.5% of all workers posts through temporary agencies; by the In the 2000s, the figure rose above 2%. Temporary agencies can provide jobs for workers while seeking permanent work. They can also serve as a clearing, helping workers learn about jobs with certain employers and to try out with the employer. For many workers, a temporary job is a stepping stone to a permanent job they may not have heard of or received any other way, so temporary job growth will also tend to reduce the friction of unemployment.3. The ageing baby boom generation - especially the large generation of Americans born between 1946 and 1963 - meant that the share of young workers in the economy was relatively high in the 1970s, as boomerangs entered the job market but are relatively low today. As previously pointed out, middle-aged workers are far more likely to keep permanent jobs than younger workers, a factor that seeks to reduce the natural unemployment rate. The combined result of these factors is that the natural unemployment rate was on average lower in the 1990s and early 2000s than in the 1980s. The Great Recession of 2008-2009 pushed monthly unemployment rates above 10% at the end of 2009. But even at the time, the Congressional Budget Office predicted that by 2015 there would be 100,000 new budgets. Since the beginning of 2015, policymakers continue to think that unemployment has not yet reached its natural rate. Natural unemployment rate in EuropeShade the standards of other high-income economies, the natural unemployment rate in the U.S. economy seems relatively low. During the good economic years and bad, many European economies have moved close to 10% or even higher since the 1970s. European unemployment rates were no longer because the recessions in Europe were deeper, but because the conditions in which underlying labour supply and demand differ in Europe, in a way that created a much higher natural unemployment rate. Many European countries have a combination of generous social and unemployment benefits, along with rules that impose additional costs on businesses when hiring. In addition, many countries have laws requiring companies to give workers months' notice before releasing them and to provide substantial severance or retraining packages after they are laid off. Statutory notice before dismissal of workers may exceed three months in Spain, Germany, Denmark and Belgium, and legally required severance pay may be as high as annual salary or higher in Austria, Spain, Portugal, Italy and Greece. Such laws will surely discourage the dismissal or dismissal of current workers. But when companies know it will be difficult to lay off or lay off workers, they also become hesitant about hiring in Place. Typically higher levels of unemployment in many European countries in recent years, which have prevailed even as economies grow at a solid pace, can be attributed to the fact that the types of laws and regulations that lead to high natural unemployment rates are much more prevalent in Europe than in the United States.An overview of anti-unemployment policies Government budgets and fiscal policy and macroeconomic policies around the world provide an in-depth discussion on how to combat unemployment , when these policies can be discussed in the context of a wide range of macroeconomic objectives and analysis frameworks. However, even at this preliminary stage, it is useful to review the main issues concerning anti-unemployment policies. The remedy for unemployment will depend on the diagnosis. Cyclical unemployment is a short-term problem, caused by the economy being in recession. So the preferred solution will be to avoid or minimize the recession. As government budgets and fiscal policy debate, this policy can be enacted by boosting overall purchasing power in the economy, so that companies perceive that sales and profits are possible, making them eager to hire. Dealing with the natural unemployment rate is more difficult. There is not much that can be done about the fact that in a market-oriented economy, companies will hire and lay off workers. There is also little to be done about how the evolving age structure of the economy or unexpected productivity gains will affect the natural unemployment rate for some time. But as the example of high unemployment rates under way for many European countries illustrates, government policy can clearly affect the natural unemployment rate that will last even as GDP grows. When the government adopts policies that will affect workers or employers, it must examine how these policies will affect the information and incentives that employees and employers must seek from each other. For example, the government may have a role to play in helping some unemployed look for work. Government programmes offering assistance to unemployed workers and protection for working workers may need to be reinvented so as not to unduly discourage labour supply. Similarly, rules that make it difficult for businesses to start or expand may need to be redesigned so as not to unduly discourage labour demand. The message is not that all laws affecting labour markets should be repealed, but only that when such laws are enacted, a society that cares about unemployment will have to consider the compromises involved. Bring it homeMister case of missing candidatesYou have read a chapter that you think the current conundrum of unemployment could be due to structural unemployment. Indeed, there is a lack of agreement between the skills employers have and skills that the unemployed possess. But Petar Cappelli has a slightly different view of this – it is called a purple squirrel. What? In his speech on human resources, the purple squirrel is a candidate for a job that fits perfectly into all the different responsibilities of the position. A purple squirrel candidate could step into a multilayered position without training and allow the company more people because the worker is so versatile. During the Great Recession, human resources (HR) positions were reduced. This means that today's hiring managers draw up job descriptions and requirements without much, if any HR feedback. It turns out that it's usually the case that employers' demands are crazy, that they don't pay enough, or their screening of applicants is so rigid that no one passes, Cappelli said in a 2012 interview with Knowledge@Wharton about the findings in his book, Why Good People Can't Find Jobs: Chasing After the Purple Squirrel. In short, managers look for purple squirrels when what they really need are just versatile workers. There is really no shortage of normal squirrels – candidates who are versatile workers. Managers simply can't find them because their requirements, verification processes and compensation will filter out everything but purple ones. KEY CONDITIONSSadverse the choice of wage cuts argument if employers reduce wages for all workers, the best will leave cyclical unemployment closely related to the business cycle, such as higher unemployment during recessionedscouraged workers those who stopped looking for employment due to the lack of adequate positions available to the wage theory of worker productivity, whether individually or as a group, it will increase if they are paid the multi-african unemployment unemployment that occurs as workers move between an unwritten labour market contract that the employer will try to prevent wages from falling when the economy is weak or the business is having problems, and the employee will not expect huge wage increases when the economy or business is a stronginsider-outsider model those who already work for the company are insiders who know the procedures; other workers are outsiders who are recent or potential renters of force participation rate that is the percentage of adults in the economy who are either employed or who are unemployed and are looking for an unemployment rate that would exist in a growing and healthy economy from a combination of economic, social and political factors that exist in a certain period of time of the workforce of those who do not work and are not looking for a job – whether they want to or not; it also states that the relative argument for wage coordination is not in the workforce wage cuts are difficult to implement for the economy, and workers are fighting against the unemployment imstructural unemployment that occurs because individuals lack the skills valued by individuals with employersunderemployed who are employed at work that is below their unemployment rate as a percentage of adults who are in the workforce and thus looking for work, but who do not have jobsKEY CONCEPTS AND SUMMARY8.1 How the unemployment and account rate is defined. Unemployed people suffer from loss of income and stress. An economy with high unemployment suffers the cost of untapped resources. The adult population can be divided into those in the workforce and those outside the workforce. On the other hand, those in the workforce are divided into employed and unemployed. A person without a job must be willing and able to work and actively look for a job that will count as unemployed; otherwise, a person without a job counts as being out of the workforce. The unemployment rate is defined as the number of unemployed people divided by the number of people in the workforce (not the total adult population). The current Population Survey (CPS) conducted by the United States Census Bureau measures the percentage of the workforce that is unemployed. The Establishment Wage Survey by the Bureau of Labor Statistics measures the net change in jobs created for the month.8.2 Unemployment patterns The U.S. unemployment rate rises in periods of recession and depression, but falls back to a range of 4% to 6% when the economy is strong. The unemployment rate never drops to zero. Despite huge growth in the size of the US population and workforce in the twentieth century, coupled with other major trends such as globalization and new technology, the unemployment rate does not show a long-term growing trend. Unemployment rates vary by group: more for African Americans and Hispanics than for whites; higher for the less educated than the more educated; more for young people than the middle-aged. Women's unemployment rates used to be higher than men's unemployment rates, but in recent years the unemployment rates for men and women have been very similar. In recent years, unemployment rates in the United States have compared favorably with unemployment rates in most other high-income economies.8.3 What causes changes in unemployment during short runcyclical unemployment rises and falls with the business cycle. In a flexible wage labour market, wages will be adjusted in such a market so that the amount required of work is always equal to the amount of labour delivered at a balance wage. Many theories have been suggested as to why wages may not be flexible, but instead they can only be adjusted in a sticky way, especially when it comes to downward adjustments: implicit contracts, wage efficiency theory, unfavorable selection cuts, insider model and relative wage coordination.8.4 What causes changes in unemployment in the long run The natural unemployment rate is the unemployment rate that economic, social and political forces in the economy would cause even when the economy is not in recession. These factors include frictionless unemployment that occurs when people are put out of work for some time shifting a vibrant and changing economy and all laws relating to employment and redundancy conditions have an unwanted side effect of discouraging job formation. They also include structural unemployment, which occurs when demand moves permanently away from a certain type of job skills. SELF-SUPERVISION QUESTIONS Inquiry 8.1Suppose of the adult population over the age of 16 is 237.8 million and the workforce is 153.9 million (of which 139.1 million are employed). How many people are not in the workforce? What are the shares of employees, the unemployed, and not in the workforce in the population? Tip: Proportions are percentages. Click here to see AnswerQuestion 8.2Using the above data, what is the unemployment rate? These data are U.S. statistics from 2010. How is it compared to the unemployment rate of February 2015, calculated earlier? Click here to see AnswerQuestion 8.3 At the end of the long term, is the US unemployment rate generally trending, trending or remaining on the same level? Click here to see answerquestion 8.4As unemployment rates tend to be higher in the U.S. economy: a. White or nonwhite? B. Young or middle-aged? c. Graduates or graduates? Click here to see AnswerQuestion 8.5Beginning in the 1970s and continuing for three decades, women have entered the American workforce in a big way. Assuming that wages are sticky in a downward direction, but that around 1970. Click here to see AnswerQuestion 8.6Is increase in the labour force participation rate among women better thought to cause cyclical unemployment increases or an increase in the natural unemployment rate? Why? Click here to see AnswerQuestion 8.7Many graduate students at the college before finding a job. When graduates start looking for work, they count as which category of unemployed? Click here to see AnswerREVIEW QUESTIONSQuestion 8.8This is the difference between unemployment and exiting the workforce? Click here to see AnswerQuestion 8.9How is the unemployment rate calculated? How is the labour force participation rate calculated? Click here to see AnswerQuestion 8.10Are all adults who do not hold jobs that count as unemployed? Click here to see 8.11A If you are out of school but working for a few hours, do you consider yourself employed or unemployed in American labour statistics? If you are a full-time student and work 12 hours a week in the faculty cafeteria, do you consider yourself employed or not in the workforce? If you're a senior citizen who collects Social Security and pensions and works as a greeter at Wal-Mart, do you consider yourself employed or not in the workforce? Click here to see AnswerQuestion 8.12 What happens to the unemployment rate when unemployed workers retrain into discouraged workers? Click here to see AnswerQuestion 8.13 What happens to the labour force participation rate when working individuals reclassify themselves as unemployed? What happens when they retrain into discouraged workers? Click here to see AnswerQuestion 8.14This are some of the problems with using the unemployment rate as an accurate measure of overall unemployment? Click here to see the AnswerQuestion 8.15What criteria bls uses to count someone as an employee? As unemployed? Click here to see AnswerQuestion 8.16Assess whether it will next count as unemployed in the Current Employment Statistics survey. A. The husband willingly stays at home with the children while his wife works. B. A manufacturing worker whose factory just closed. c. A student doing an unpaid summer internship. d. Pensioner. E. Someone who's been out of work for two years but is constantly looking for a job. F. Someone who's been out of work for two months but isn't looking for a job. Mr. Someone who hates her current job and is actively looking for another. H. Someone who decides to take a part-time job because she could not find a full-time position. Click here to see answerquestion 8.17Are U.S. unemployment rates typically higher, lower or about the same as unemployment rates in other high-income countries? Click here to see U.S. unemployment rates 8.18Are evenly distributed by population? Click here to see AnswerQuestion 8.19As you would expect cyclical unemployment to rise? Falling? Click here to see AnswerQuestion 8.20For why is there unemployment in the labour market with flexible wages? Click here to see AnswerQuestion 8.21Name and explain some of the reasons why wages are likely to be sticky, especially in downward adjustments. Click here to see answerquestion 8.22What term describes the remaining level of unemployment that occurs even when the economy is healthy? Click here to see AnswerQuestion 8.23This forces create a natural unemployment rate for the economy? Click here to see AnswerQuestion 8.24Would you expect the natural unemployment rate to be about the same in different countries? Click here to see AnswerQuestion 8.25Would you expect the natural unemployment to remain the same within one country for a long time a few decades? Click here to see AnswerQuestion 8.26 What is friction unemployment? For examples of friction of unemployment. Click here to see AnswerQuestion 8.27This is structural unemployment? Examples of structural unemployment. Click here to see AnswerQuestion 8.28 After a few years of economic growth, would you expect unemployment in the economy to be largely cyclical or mainly due to the natural unemployment rate? Why? Click here to see answerquestion 8.29This type of unemployment (cyclical, currental or structural) applies to each of the following: a. landscapes released in response to the decline of new apartment building during the recession. B. Coal miners fired over EPA regulations shutting down coal c. A financial analyst who quits his job in Chicago and cleans up a similar job in Arizona D. printers fired amid falling demand for printed catalogs and flyers as companies go online to promote advertising of their products. e. factory workers in the U.S. laid off as plants close and move to Mexico and Ireland.Click here to see answerCritical THINKING QUESTIONSQuestion 8.30Using definition of the unemployment rate, is increasing the unemployment rate necessarily a bad thing for the nation? Click here to see AnswerQuestion 8.31Is reducing the unemployment rate necessarily a good thing for the nation? Explain.Click here to see AnswerQuestion 8.32 If many workers become discouraged from looking for work, explain how the number of jobs could decrease, but the unemployment rate could fall at the same time. Click here to see AnswerQuestion 8.33Any thing you expect hidden unemployment to be higher, lower or about the same when the unemployment rate is high, say 10%, versus low, say 4%? Explain.Click here to see AnswerQuestion 8.34Is higher unemployment rates for minority workers necessarily an indicator of discrimination? What might be some other reasons for the higher unemployment rate? Click here to see AnswerQuestion 8.35 Although unemployment is very negatively associated with the level of economic activity, it corresponds in the real world with a backlog. In other words, companies do not immediately lay off workers in response to falling sales. They wait a while before they respond. Similarly, companies do not immediately hire workers when sales are picked up. What do you think explains the delay in response times? Click here to see AnswerQuestion 8.36For do you think unemployment rates are lower for individuals with more education? Click here to see AnswerQuestion 8.37This do you think it's rational for workers to prefer sticky wages to wage cuts, when the consequence of sticky wages is unemployment for some workers? Why or why not? How are the reasons for sticky explained in this section apply to your argument? Click here to see AnswerQuestion 8.38Under 8.38Under would reducing unemployment be bad for the economy? Click here to see AnswerQuestion 8.39Under what condition would an increase in the unemployment rate be a positive sign? Click here to see AnswerQuestion 8.40As baby boom generation retires, the ratio of retirees to workers will increase significantly. How will this affect the Social Security programme? How will this affect the standard of living of the average American? Click here to see AnswerQuestion 8.41Unemployment rates have been higher in many European countries in recent decades than in the United States. Is it more likely that the main reason for this long-term disparities in unemployment rates will be cyclical unemployment or the natural unemployment rate? Explain briefly. Click here to see AnswerQuestion 8.42Is it is desirable to follow the goal of zero unemployment? Why or why not? Click here to see AnswerQuestion 8.43Is it is desirable to eliminate natural unemployment? Why or why not? Tip: Think about what our economy would look like today and what assumptions would need to be met to have zero natural unemployment. Click here to see AnswerQuestion 8.44 Our U.S. unemployment rate has increased from 4.6% in July 2001 to 4.5% in July 2014. Without studying the topic in any detail, would you expect a change of this type to be more likely due to cyclical unemployment or a change in the natural unemployment rate? Why? Click here to see AnswerPROBLEMSQuestion 8.45A country with a population of eight million adults has five million employees, 500,000 unemployed, and the rest of the adult population is out of the workforce. What is the unemployment rate? What is the share of the population in the workforce? Sketch a pie chart that divides the adult population into these three groups. Click here to see answerquestion 8.46A government passes a family law that no company can have evening, night or weekend hours, so everyone can be at home with their families during these times. Analyze the effect of this law using a diagram of demand and supply for the job market: first assuming wages are flexible and then assuming wages are sticky downwards. Click here to see AnswerQuestion 8.47As generation baby boomers retire, what should happen to wages and employment? Can you graphically display this? Click here to see AnswerAnswersAnswer when asked 8.1Seal is divided into those in the workforce and those who are not in the workforce. Thus, the number of adults not in the workforce is 237.8 - 153.9 = 83.9 million. Since the workforce is divided into employed persons and unemployed persons, the number of unemployed persons is 153.9 - 139.1 = 14.8 million. Thus, the adult population has the following proportions:139.1/237.8 = 58.5% persons14.8/237.8 = 6.2% of unemployed persons83.9/237.8 = 35.3% of persons workforceClick here to return to question 8.1Answer on question 8.2Sease unemployment is defined as the number of unemployed persons as a percentage of the workforce or 14.8/153.9 = 9.6%. This is higher than the Unemployment rate of February 2015, calculated earlier, of 5.5%. Click here to return to question 8.2Answer on question 8.3In the end of the long term, the U.S. unemployment rate remained basically at the same level. Click here to return to question 8.3Answer on question 8.4Click here to return to question 8.4Answer on question 8.5Beaud the influx of women into the labour market, labour supply is shifting to the right. With wages sticky downwards, the increased labour supply is causing an increase in the number of people looking for work (Qs), but there is no change in the number of jobs available (Qe). As a result, unemployment increases by the amount of increase in labour supply. This can be seen in the following number. Over time, as labour demand rises, unemployment will decrease and eventually wages will start to rise again. But this increase in labour demand goes beyond the scope of this problem. Click here to return to question 8.5Answer on question 8.6 Increasing labour supply was a social demographic trend - this was not caused by the economy crashing into recession. Therefore, the influx of women into the workforce has increased the natural unemployment rate. Click here to return to question 8.6Answer on question 8.7Nex new workforce participants, either from college or otherwise, count as friction unemployed until they find work. Click here to return to question 8.7Answer when asked by 8.8A a person who is unemployed trying but ucannot, to find a job. A person outside the workforce does not work or look for a job, such as a student or pensioner. Click here to return to question 8.8Answer on question 8.9For the unemployed, the number of unemployed people is divided by labour. The labor force participation rate is the number of people in the workforce divided by the total population. Click here to return to question 8.9Answer on question 8.10 No, unemployed are only adults who do not hold jobs but are in the workforce. Click here to return to Question 8.10Answer on question 8.11This three of these examples count as employees, as they work in some kind of work. Click here to return to question 8.11Answer on question 8.12 The unemployment rate falls as the workforce declines. Click here to return to question 8.12Answer on question 8.13 When working workers become unemployed, the labour force participation rate remains unchanged, but when unemployed work becomes discouraged, the labor force participation rate drops.

Click here to return to question 8.13Answer on question 8.14 The unemployment rate does not make discouraged workers or workers underserved. When asked 8.14Answer to Question 8.15A A person is employed if they work, even on several working hours. A person is unemployed if they are looking for a job but cannot find one. Click here to return to question 8.15Answer on question 8.16Click here to return to question 8.16Answer on question 8.17U.S. unemployment rates are generally lower than in other high-income countriesClick here to return to question 8.17Answer on question 8.18No. Unemployment rates vary widely between demographics such as age and race. Click here to return to question 8.18Answer on question 8.19Cyclical unemployment rises during contraction and decline during the expansion of the economy. Click here to return to question 8.19Answer on question 8.20Some structural and friction unemployment is inevitable, even when wages are flexible. There may also be time delays as wages adjust during which there will be unemployment. Cyclical unemployment rises during contraction and decline during the expansion of the economy. Click here to return to question 8.20Answer on question 8.21 Contracts often prevent wage adjustments quickly, and workers have strong resistance to wage cuts, so it is politically difficult for companies to manage wage adjustment quickly. Click here to return to question 8.21Answer on question 8.22 Natural unemployment rate. Click here to return to question 8.22Answer on question 8.23 The natural unemployment rate is determined mainly by frictionless unemployment, unemployment that occurs when moving from work to work. Click here to return to question 8.23Answer on question 8.24But. Public policies can affect the natural unemployment rate by imposing floors of wages or regulations that make it difficult to move from job to job. Click here to return to question 8.24Answer on question 8.25 In general, the natural unemployment rate should remain about the same over time by prohibiting any drastic public policy reforms. Click here to return to question 8.25Answer on question 8.26Frictional unemployment occurs in time spent moving from one job to another. For example, if a worker leaves his job to pursue a different career or start his own business, he is undisturbed until he or she gets a new job. Click here to return to question 8.26Answer on question 8.27Structual unemployment occurs when workers' skills do not match what is required in the economy. For example, many detroit workers found themselves structurally unemployed when the U.S. automotive industry fell into decline. Click here to return to question 8.27Swer on question 8.28Since Us postwar recessions typically last less than a year, if the economy has had positive growth for several years, observed it is likely to be mainly marketable and structural, that is, mainly due to the natural unemployment rate rather than the cyclical unemployment rate. Unemployment. here go back to question 8.28Answer when asked 8.29Click here to return to question 8.29Answer when asked 8.30No. If discouraged workers re-enter the workforce, the unemployment rate will rise, even as more opportunities become available to workers. Click here to return to question 8.30Answer on question 8.31But. If workers become discouraged and give up work, the unemployment rate will decrease despite poor economic conditions. Click here to return to question 8.31Answer on question 8.32 If more people give up the workforce than become unemployed, the unemployment rate will decrease even when jobs are lost. Click here to return to question 8.32Swer on question 8.33 Hidden unemployment is generally higher when the unemployment rate is high, as this indicates a generally weak labour market. Click here to return to question 8.33Answer on question 8.34 Not necessarily. If minority workers have less education or less toned skills, we would expect their unemployment rate to be higher. Click here to return to question 8.34Answer when asked 8.35Beauless that there are significant costs for hiring and training new employees, companies will want to make sure that the change in sales, whether positive or negative, will last before they lay off workers or hire new ones. This causes a residual response. In addition, some companies have long-term contracts with their employees that prevent them from laying off workers at will. Click here to return to Question 8.35Answer on question 8.36 Workers with more education are more in demand and fewer are in demand for less and less, so it is easier for them to find work than for unsuseed workers. Click here to return to question 8.36Answer on question 8.37 Workers who are able to keep their jobs are decidedly better off with sticky wages, although those who lose their jobs may disagree. Workers generally prefer the security of long-term contracts that prevent wages from falling, as they personally do not face the consequences of unemployment because their wages here are stickyClick to return to question 8.37Sswer on question 8.38As the decrease is driven by discouraged workers leaving the workforce. Click here to return to question 8.38Answer on question 8.39 When discouraged workers become more optimistic and start trying to find work again. Click here to return to question 8.39Answer on question 8.40Baby Boomers will put more pressure on the Social Security program, with either cuts in benefits or wage tax hikes to maintain current benefits. Either way, the effect on living standards will be negative. Click here to return to question 8.40Answer on question 8.41 The natural unemployment rate mainly drives this difference, as public policies in European favour workers' unions more strongly and the high minimum minimum increase the natural unemployment rate. Click here to return to question 8.41Answer on question 8.42But. A certain amount of unemployment is needed to keep the economy flexible in creating new jobs and new industriesClick here to return to question 8.42Answer on issue 8.43A the natural zero unemployment rate would mean that no one in the economy is looking for work. This would make it impossible to start a new business and would not be a good goal. Click here to return to question 8.43Answer on the question 8.44Changes in the unemployment rate over one year is more likely to be cyclical than changes in the natural rate, which usually takes a long time. Click here to return to question 8.44Answer on question 8.45 The unemployment rate is 500,000/5,500,000 x 100 = 11% The labour force participation rate is 5.500,000 / 8,000,000 x 100 = 68.75%Click here to return to question 8.45Answer on question 8.46 Mandatory reduction in hours imposes a limit on labour demand. Because companies can no longer get as many hours from workers, they won't be willing to pay that much, and they require left-to-left shifts. The result is either a reduction in wages, if wages are flexible, or unemployment, if wages are sticky. Alternatively, existing wages are likely to include a premium for working during evening, night or weekend hours. Mandatory reductions will result in the loss of this premium, which means that the average salary will decrease, and there will be fewer working hours, namely those that would occur in less favorable times. Click here to return to question 8.46Answer on question 8.47As workers leave the workforce for retirement, supply shifts work left, wage increases and staff cuts. However, the unemployment rate may fall as Baby Boomers leave the workforce. Click here to return to question 8.47 Download for free at 11.12.Page 3 Figure 5.1 Netflix On-Demand Media Netflix, Inc. Is a U.S. provider of on-demand internet streaming media in many countries around the world, including the United States, and a flat-rate DVD by mail in the United States. (Credit: Modifying the Work of Traci Lawson/Flickr Creative Commons) Chapter Outline5.1 Price Elasticity of demand and price Elasticity of supply5.2 Polar cases of elasticity and constant elasticity5.3 Elasticity and price5.4 Elasticity in areas other than pricesBring to HomeImagine goes to your favorite café and that waiter informs you the price has changed. Instead of $3 for a cup of coffee, you will now be charged $2 for coffee, $1 for cream and $1 for your choice of sweetener. If you pay the usual $3 for a cup of coffee, you need to choose between creams and sweeteners. If you want both, you now face an additional charge of $1. Absurd? Well, that's the situation Netflix users found themselves in - a 60% price hike to keep the same service 2011.In early 2011, Netflix consumers were paying about $10 a month for a package consisting of streaming video and DVD rentals. In July 2011, he was sentenced to 10 years in Customers who want to keep both streaming video and DVD rental would be charged $15.98 per month, a price increase of about 60%. In 2014, Netflix also raised its streaming video subscription price from $7.99 to $8.99 a month for new U.S. customers. The company also changed its 4K streaming content policy from $9.00 to $12.00 a month that year. How would the customers of an 18-year-old company react? Would you leave Netflix? Would ease of access to other places change the way consumers reacted to Netflix's price change? The answers to these questions will be explored in this chapter: a change in quantity versus a price change, a concept that economists call elasticity. Introduction to Elasticity In this chapter you will find out:Price elasticity of demand and price elasticity SupplyPolar Cases of elasticity and constant elasticityElasticity and price elasticity in areas other than PriceAnyone who studied economics knows the law of demand: a higher price will lead to less asking quantity. What you may not know is how much less the required amount will be. Similarly, the law of supply shows that a higher price will lead to higher quantities delivered. The question is: How much more? This chapter will explain how to answer these questions and why they are critically important in the real world. To find the answers to these questions, we need to understand the concept of elasticity. Elasticity is an economics concept that measures the reactivity of one variable to changes in another variable. Suppose you throw two objects off the second-floor balcony. The first item is a tennis ball. The second object is a brick. Which one's going to bounce higher? Obviously a tennis ball. We'd say a tennis ball has greater elasticity. Consider the economic example. Cigarette taxes are an example of a sin tax, a tax on something that's bad for you, like alcohol. Cigarettes are taxed at the state and national level. State taxes range from a low of 17 cents per pack in Missouri to $4.35 per pack in New York. The average state tax on cigarettes is $1.51 per pack. The 2014 federal tax rate on cigarettes was $1.01 per pack, but in 2015 the Obama administration proposed raising the federal tax nearly $1.95 per pack. The key question is: How many cigarette purchases would you refuse? Cigarette taxes serve two purposes: to increase tax revenues for the government and discourage cigarette consumption. However, if a higher cigarette tax discourages consumption by quite a lot, which means that the amount of cigarettes has been significantly reduced then the cigarette tax on each box will not increase big revenues for the government. Alternatively, a higher cigarette tax that doesn't discourage spending for much will actually increase tax revenues for the government. So when a government agency tries to calculate the effects of changing the cigarette tax, it has to analyze how much the tax affects the amount of cigarettes consumed. The issue goes beyond governments and taxes; each society faces a similar problem. Each time a company considers raising the price it charges, it must take into account how much the price increase will reduce the amount of asking from what it sells. On the other hand, when a company puts its products on sale, it must expect (or hope) that a lower price will lead to a significantly higher asking quantity,5.1 | Price Elasticity of demand and price Elasticity of supply If we end this section, you will be able to:Calculate the elasticity of the demand priceCalculation of the supply priceBoth demand and supply curve shows the relationship between the price and the number of units requested or delivered. Price elasticity is the ratio between percentage change in asking quantity (Qd) or supplied (Qs) and corresponding percentage price change. Price elasticity of demand is a percentage change in the amount of requested from a good or service divided by a percentage change in price. The elasticity of the price offer is a percentage change in the quantity delivered divided by a percentage change in price. Elasticities can be usefully divided into three broad categories: elastic, inelastic and unitary. Elastic demand or elastic supply is one in which elasticity is greater than one, indicating high responsiveness to price changes. Elasticities that are less than one indicate low reactivity to price changes and correspond to inelastic demand or inelastic supply. Unitary elasticities indicate proportional reactivity of demand or supply, as summarized in Table 5.1 . Table 5.1 Elastic, Inelastic and Unitarian: Three Cases of ElasticityLink It UpBefore enter the nits of gnit combativeness of elasticity, we enjoy this article (about elasticity and ticket prices at the Super Bowl. To calculate elasticity, rather than using simple percentage changes in quantity and price, economists use the average percentage change in both quantity and price. This is called the Midpoint Method for Elasticity, and is represented in the following equations: The advantage of the middle point method is that it acquires the same elasticity between the two price points regardless of whether there is a price increase or decrease. That's because the formula uses the same base for both cases. Calculating demandlet price elasticity calculates elasticity between points A and B and between points G and H shown at 5.2. Figure 5.2 Price calculation demand elasticity of the demand price is calculated as a percentage change in quantity divided by a percentage change in price. First, apply the formula for calculating elasticity as the price decreases from $70 in point B to $60 at point A: Therefore, the elasticity of demand between these two points is 6.9%/15.4% which is 0.45%, an amount less than one, which shows that demand at this interval is inelastic. Price elasticity of demand is always negative because the asking price and quantity always move in opposite directions (on the demand curve). By convention, we always talk about elasticity as positive numbers. So, mathematically, we take the absolute value of the results. From now on, we will ignore this detail, while remembering elasticities as positive figures.. This means that, with the demand curve between point B and A, if the price changes by 1%, the asking quantity will change by 0.45%. The price change will result in a smaller percentage change in the required quantity. For example, a price increase of 10% will result in a reduction in the required quantity by only 4.5%. A 10% reduction in price will only result in a 4.5% increase in the required volume. Demand price elasticities are negative figures that suggest the demand curve is falling but read as absolute values. The following Work It Out feature will walk you through calculating the elasticity of demand prices. Work It OutFinding the Price Elasticity of DemandCalculate demand price elasticity using data from Image 5.2 to increase the price from G to H. Has elasticity risen or decreased? Step two. From the Middle Point Formula we know that:Step 3. So we can use the values provided in the image in each equation:Step 4. Then these values can be used to determine the elasticity of demand prices:Therefore, the elasticity of demand from G to H is 1.47. The size of elasticity increased (in absolute value) as we progressed along the demand curve from point A to B. Recall that the elasticity between these two points was 0.45. Demand was inelastic between points A and B and elastic between points G and H. This shows us that the elasticity of demand changes in different places along the flat demand curve. Calculating the price of SupplyAssume elasticity that the apartment rents for $650 per month and at that price 10,000 units is rented as shown in Figures 5.3. When the price increases to $700 per month, 13,000 units are delivered to the market. By what percentage does the offer of apartments increase? What is price sensitivity? Figure 5.3 The elasticity of the offer is calculated as a percentage change in quantity divided by a percentage change in price. Using the Midpoint method,Again, as with the elasticity of demand, the elasticity of supply is not followed by any unit. is the ratio of one percent change from the second percent change — nothing more — and reads as absolute value. In this case, a price increase of 1% causes an increase in the amount delivered of 3.5%. Greater than one elasticity of the offer means that the percentage change in the quantity delivered will be more than one percent of the price change. If you're starting to wonder if the tilt concept fits into this calculation, read the next Clear It Up box. Clear It UpIs elasticity tilt? It is a common mistake to confuse the slope of the supply or demand curve with its elasticity. Slope is the rate of change in units along the curve, or increase/run (change in y over change in x). For example, at 5.2, each point shown on the demand curve, the price drops by $10, and the number of units requested increases by 200. Thus, the slope is –10/200 along the entire demand curve and does not change. Price elasticity, however, changes along the curve. The elasticity between points A and B was 0.45 and increased to 1.47 between points G and H. Elasticity is a percentage change, which is a different calculation from the slope and has a different meaning. When we are at the upper end of the demand curve, where the price is high and the required quantity is low, a small change in the required quantity, even in, say, one unit, is quite large in percentages. The price change of, say, the dollar, will be much less important in percentage terms than it would be at the bottom of the demand curve. Likewise, at the bottom of the demand curve, that one unit that changes when the requested quantity is high will be small as a percentage. So at one end of the demand curve, where we have a big percentage change in the volume required because of the small percentage change in price, the value of elasticity would be high, or demand would be relatively elastic. Even with the same price change and the same change in the required quantity, at the other end of the demand curve the quantity is much higher and the price is much lower, so the percentage change in the required quantity is lower and the percentage change in price is much higher. This means that at the bottom of the curve we would have a small number over a large denominator, so the measure of elasticity would be much lower or inelastic. As we move along the demand curve, values for quantity and price go up or down, depending on which direction we are moving, so will the percentages for, say, a difference of $1 in price or one unit difference in quantity, which means that the ratios of these percentages will change,5.2 | Polar cases of elasticity and constant elasticity At the end of this section you will be able to:Different between infinite and zero elasticityAnalyze graphs to classify elasticity as permanent unitary, infinite or zeroThere are two extreme cases of elasticity: when equal to zero and when it is infinite. The third case is constant unitary elasticity. We'll describe each case. Infinite elasticity or perfect elasticity refers to an extreme case in which the amount requested (Qd) or delivered (Qs) changes by an infinite amount in response to any price change. In both cases, the supply and demand curve is horizontal as shown in the number 5.4 . While perfectly elastic supply curves are unrealistic, goods with readily available inputs and whose production can be easily expanded will contain highly elastic supply curves. Examples include pizza, bread, books and pencils. Similarly, perfectly elastic demand is an extreme example. But luxury goods, goods that take a large share of the income of individuals and goods with many substitutes are likely to have very elastic demand curves. Examples of such goods are Caribbean cruises and sports vehicles. Figure 5.4 Infinite elasticity Horizontal lines indicate that an infinite amount will be required or delivered at a certain price. This illustrates cases of perfectly (or infinitely) elastic demand curves and supply curves. The quantity supplied or requested corresponds greatly to price changes, moving from zero for near P to infinite when the price reaches P.Zero elasticity or perfect inelasticity, as shown in figure 5.5 refers to an extreme case where a percentage change in price, no matter how large, results in a zero change in quantity. While perfectly inelastic supply is an extreme example, goods with limited input supply are likely to have very inelastic supply curves. Examples include diamond rings or housing in prime locations such as central park-facing apartments in New York City. Similarly, while perfectly inelastic demand is an extreme case, needs without close substitutions are likely to have very inelastic demand curves. It's a case of life-saving drugs and gasoline. Figure 5.5 Zero elasticity Vertical supply curves and vertical demand curves indicate that there will be a zero percentage change in the quantity (a) or (b) required, regardless of price. This illustrates the case of zero elasticity (or perfect inelasticity). The quantity supplied or requested does not match the price changes. Constant unitary elasticity, whether in the supply or demand curve, occurs when a one percent price change results in a one percent change in volume. Figure 5.6 shows the demand curve with the constant elasticity of the unit. As we move down the demand curve from A to B, the price drops by 33%, and the required amount increases by 33%; as you range from B to C, the price drops by 25%, and the requested quantity increases by 25%; as you move from C to D, the price drops by 16%, and the quantity increases by 16%. Notice that in absolute value, the price drop, as you stay down the demand curve, is not identical. instead of It drops by $3 from A to B, by a smaller amount of $1.50 from B to C, and by a still smaller amount of $0.75 from C to D. As a result, the demand curve with constant unitary elasticity ranges from a steeper slope to the left and a flatter slope on the right – and a curved shape overall. Figure 5.6 Constant unitary demand curve Elasticity Demand curve with constant unitary elasticity will be a curved line. Note how the asking price and quantity change by the same amount in each step down the demand curve. Unlike the demand curve with unitary elasticity, the supply curve with unitary elasticity is represented by a straight line. In moving the supply curve from left to right, any increase in quantity from 30, from 90 to 120 to 150 to 180, is equal to absolute value. However, in percentage terms, the steps decrease, from 33.3% to 25% to 16.7%, because the original amount of points in each percentage calculation is higher and higher, which expands the denominator in the calculation of elasticity. Consider price changes moving up the quote curve to 5.7. From points D to E to F and to G on the supply curve, each step of $1.50 is the same in absolute value. However, if price changes are measured in terms of percentage change, they are also decreasing, from 33.3% to 25% to 16.7%, as the original price points in each percentage calculation are higher and higher in value. Along the constant unitary elasticity curve of supply, the percentage increase in the horizontal axis exactly corresponds to the percentage increase in prices on the vertical axis - so this supply curve has a constant unitary elasticity at all points. Figure 5.7 Constant unitary elasticity supply curve The constant unitary curve of the elasticity supply is a straight line that reaches from origin. Between each point, the percentage increase in the quantity delivered is the same as the percentage increase in price,5.3 | Elasticity and pricing If the end of this section, you will be able to:Analyze how price elasticity affects incomeEvaluate how elasticity can cause shifts in demand and supplyPresience how long-term and short-term influences of elasticity affect the balance OfExpllain how the elasticity of demand and supply determines the frequency of taxes on buyers and sellersStudying elasticity is useful for a number of reasons. , prices are paramount. Let's explore how elasticity relates to income and prices, both long term and short term. But first, let's look at the elasticity of some common goods and services. Table 5.2 shows the choice of elasticity of demand for different goods and services that economists have extracted from various studies, listed to increase elasticity. Table 5.2 Some of DemandNote's chosen elasticity that necessities such as housing and electricity are inelastic, while non-essential items are such restaurant meals are more affordable. If the price of a meal in a restaurant increases by 10%, the required amount will decrease by 22.7%. A 10% increase in the price of housing will cause a slight 1.2% drop in the amount of housing required. Link it to GoreRead this article (for an example of price elasticity that may have affected you. Does raising the price bring in more revenue? Imagine a band on tour playing in a 15,000-seat auditorial venue. To make this example simple, assume that the band keeps all the money from ticket sales. Assume further that the band pays the cost for their appearance, but that these costs, such as travel, stage setting and so on, are the same no matter how many people are in the audience. Finally, assume that all tickets have the same price. (The same insights apply if ticket prices are more expensive for some seats than others, but calculations become more complicated.) The band knows it faces a downward demand curve; that is, if the band raises the price of tickets, they will sell fewer tickets. How should the band determine the ticket price for bringing in the most total revenue, what in this example, because the costs are fixed, will mean the highest earnings for the band? Should the band sell more tickets at a lower price or fewer tickets at a higher price? A key concept in thinking about collecting the most revenue is the price elasticity of demand. Total revenue is the price of times the amount of tickets sold. Imagine if the band started thinking about a certain price, which will result in the sale of a certain amount of tickets. Three options are set out in Table 5.3. If demand is elastic at this price level, then the band should reduce the price, as the percentage drop in price will result in an even greater percentage increase in the volume sold - thereby increasing total revenues. However, if demand is inelastic at this original volume level, then the band should raise the ticket price, as a certain percentage increase in price will result in a smaller percentage reduction in the volume sold - and total revenues will rise. If demand has unitary elasticity in this amount, then the moderate percentage change in price will be offset by the same percentage change in quantity – so the band will earn the same income regardless of whether it increases (moderately) or reduces the price of tickets. Table 5.3 Will the band earn more revenue by changing ticket prices? What if the band continues to cut the price, as demand is elastic, until it reaches the level at which all 15,000 seats in the available arena are sold? If demand remains elastic in this amount, the band could try to move to a larger arena, so that it can further reduce ticket prices and see a higher percentage increase in ticket volumes. Of if the 15,000-seat arena is all that's available, or if a larger arena would add substantial costs, then that option might not work. Conversely, several bands are so familiar, or have such fanatical followers, that ticket demand can be inelastic right up to the point where the arena is full. These bands can, if they wish, continue to raise the price of tickets. Ironically, some of the most popular bands could generate more revenue by setting prices so high that the arena isn't filled - but those who buy tickets should pay very high prices. However, bands sometimes choose to sell tickets for less than the absolute maximum they could charge, often in the hope that fans will feel happier and spend more on recordings, T-shirts and other paraphernalia. Can costs be passed on to consumers? Most businesses face a daily struggle to understand production methods at a lower price, as one of the paths to the higher profit earnings target. However, in some cases, the price of a key listing over which the company has no control can rise. For example, many chemical companies use oil as a key gateway, but they have no control over the world market price of crude oil. Coffee shops use coffee as a key gateway, but have no control over the world's market price for coffee. If the cost of a key input contribution rises, can a company pass on these higher costs to consumers in the form of higher prices? On the other hand, if new and cheaper production methods are invented, can the company retain the benefits in the form of higher profits, or will the market press them to pass on the gains to consumers in the form of lower prices? Price demand elasticity plays a key role in answering these questions. Imagine as a consumer of legal pharmaceutical products you read a news story that there has been a technological breakthrough in aspirin production, so that any aspirin factory can now make aspirin cheaper than before. What does this discovery mean to you? Figure 5.8 illustrates two possibilities. Figure 5.8 (a) draws the demand curve equally inelastic. In this case, a technological breakthrough that shifts supply to the right, from S0 to S1, so that the balance shifts from E0 to E1, creates a much lower price for a product with a relatively small impact on the quantity sold. In Figure 5.8 (b), the demand curve is attracted to be very elastic. In this case, the technological breakthrough leads to a much larger quantity being sold on the market at very close to the original price. Consumers benefit more, in general, when the demand curve is more inelastic because the shift in supply results in a much lower price for consumers. Figure 5.8 Passing on cost savings to consumers Cost savings causes the offer to shift right from S0 to S1; that is, at any price, companies will be ready quantity. If demand is inelastic, as in (a), the result of this cost-saving technological improvement will be much lower prices. If the demand is elastic, as in (b), the result will be only slightly lower prices. Consumers benefit in any case from a higher quantity at a lower price, but the benefit is greater when demand is inelastic, as in (a). Aspirin manufacturers can find themselves in a nasty relationship here. The situation shown at 5.8, with extremely inelastic demand, means that a new invention can cause a dramatic drop in price, while the volume changes slightly. As a result, new manufacturing technology can lead to a drop in the revenue companies earn from aspirin sales. However, if there is strong competition between aspirin manufacturers, each manufacturer may have little choice but to seek and implement any progress that allows it to reduce production costs. After all, if one company decides not to implement such cost-saving technology, it can get it out of the business of another company that does. As food demand is generally inelastic, farmers can often face the situation in Figure 5.8 (a). That is, the rise in production leads to a serious price drop that can actually reduce the total incomes received by farmers. On the other hand, bad weather or other conditions that cause a terrible year for agricultural production can sharply raise prices so that the total income received increases. The Clear It Up box talks about how these problems relate to coffee. Clear It UpHow do coffee prices oscillate? Coffee is an international crop. The top five countries exporting coffee are Brazil, Vietnam, Colombia, Indonesia and Ethiopia. In these nations and others, 20 million families depend on selling coffee beans as their main source of income. These families are at enormous risk, as the world price of coffee jumps up and down. For example, in 1993, the world price of coffee was about 50 cents per pound; In 1995, it was four times higher, at $2 a pound. By 1997, it had fallen by half to $1.00 a pound. In 1998 it jumped back up to $2 a pound. by 2001 it had fallen back to 46 cents a pound; By early 2011 it had gone back up to about $2.31 per pound. By the end of 2012, The reason for these price bounces lies in a combination of inelastic demand and shifts in supply. The elasticity of the demand for coffee is only about 0.3; that is, a 10% rise in the price of coffee leads to a drop of about 3% in the amount of coffee consumed. When a major frost hit Brazil's coffee crop in 1994, coffee supply shifted to the left with an inelastic demand curve, leading to much higher prices. Conversely, when Vietnam entered the world coffee market as a major producer in the late 1990s, the supply curve shifted to the right. With a very inelastic demand curve, coffee prices fall This situation is shown in Figure 5.8 (a). Elasticity also reveals whether companies can pass on the higher costs they in place on consumers. Addictive substances usually fall into this category. For example, the demand for cigarettes is relatively inelastic among ordinary smokers who are somewhat addicted; Economic research shows that a 10% increase in the price of cigarettes leads to about a 3% reduction in the amount of cigarettes smoked by adults, so the elasticity of demand for cigarettes is 0.3. If society raises taxes for companies that make cigarettes, the result will be, as in Figure 5.9 (a), that the supply curve shifts from S0 to S1. However, as the balance shifts from E0 to E1, these taxes are mainly passed on to consumers in the form of higher prices. These higher cigarette taxes will increase tax revenues for the government, but they won't affect the amount of smoking much. If the aim is to reduce the amount of cigarettes requested, this must be achieved by shifting this inelastic demand to the left, perhaps to public schemes to discourage cigarette use or to help people quit smoking. For example, anti-smoking advertising campaigns have shown some ability to reduce smoking. However, if the demand for cigarettes were more elastic, as in Figure 5.9 (b), then increasing the tax shifting supply from S0 to S1 and the balance from E0 to E1 would significantly reduce the amount of cigarettes smoked. Youth smoking seems to be more elastic than adult smoking – that is, the amount of youth smoking will fall by a higher percentage than the amount of adult smoking in response to a certain percentage increase in price. Figure 5.9 Passing on higher costs to consumers of higher costs, such as a higher tax on cigarette companies as an example provided in the text, leads to supply shifting to the left. This shift is identical in (a) and (b). However, in (a), where demand is inelastic, cost increases can largely be passed on to consumers in the form of higher prices, without a big drop in the amount of balance. In (b) demand is elastic, so the shift in supply results primarily in a smaller amount of balance. Consumers suffer in both cases, but in (a) suffer from paying a higher price for the same amount, while in (b) they suffer from buying a smaller amount (and probably need to shift their consumption elsewhere). Elasticity and tax incidence An example of a cigarette tax has shown that because demand is inelastic, taxes are not effective in reducing the amount of smoking balance, and are mainly passed on to consumers in the form of higher prices. The analysis or manner in which the burden of tax is shared between consumers and manufacturers is called a tax incidence. Usually, the frequency or burden of tax falls on both consumers and producers of taxed goods. But if anyone wants to. which group will bear most of the burden, all it has to do is examine the elasticity of demand and supply. In the example of tobacco, the tax burden falls on the most inelastic side of the market. If demand is more inelastic than supply, consumers bear most of the tax burden, and if supply is more inelastic than demand, sellers bear most of the tax burden. The intuition for this is simple. When demand is inelastic, consumers do not respond exactly to price changes, and the amount requested remains relatively constant when a tax is introduced. In the case of smoking, the demand is inelastic because consumers are dependent on the product. The government can then pass on the tax burden to consumers in the form of higher prices, without a greater drop in the amount of balance. Similarly, when a tax is imposed on a market with inelastic supply, such as beach hotels, for example, and sellers have no alternative but to accept lower prices for their business, taxes do not greatly affect the amount of balance. The tax burden is now passed on to sellers. If supply were elastic and sellers had the ability to reorganize operations to avoid supplying taxed good, the seller's tax burden would be much lower. The tax would result in a much smaller amount sold instead of lower prices received. Figure 5.10 illustrates this relationship between tax incidence and elasticity of demand and supply. Figure 5.10 Elasticity and tax incidence Excise introduces a wedge between the price paid by consumers (Pc) and the price received by manufacturers (pp). (a) When demand is more elastic than supply, the tax incidence on consumers Pc - Pe is lower than the tax incidence on Pe-Pp. manufacturers (b) When supply is more elastic than demand, the lower the tax incidence on consumers PC – Pe is higher than the tax incidence on Pe-Pp manufacturers. The more elastic the demand and supply curves, the lower the tax revenues. In Figure 5.10 (a), the supply is inelastic and the demand is elastic, as in the example of a beachfront hotel. While consumers may have other holiday choices, sellers can't easily move their businesses. By introducing the tax, the government essentially creates a wedge between the price paid by PC consumers and the price received by manufacturers PP. In other words, of the total price paid by consumers, part is retained by sellers, and part of it is paid to the government in the form of taxes. The distance between pc and pp is the tax rate. The new market price is Pc, but sellers only get Pp per unit sold, as they pay pc-pp to the government. Since the tax can be considered as raising production costs, this could also represent a shift in the supply curve to the left, where a new supply curve would intercept demand at the new Qt quantity. in the supply curve. Tax revenue provides a shaded area, which is obtained by multiplying taxes per unit with the total Qt. Tax incidence for consumers is given by the difference between the price of the paid computer and the initial price of the Pe balance. The tax incidence on the seller is given by the difference between the initial price of the Pe balance and the price they receive after the introduction of the pp tax. Figure 5.10 (a) the tax burden falls disproportionately on the seller, and the higher proportion of tax revenues (shaded area) is due to the resulting lower price received by sellers than due to the incurred higher prices paid by buyers. An example of excise duty on tobacco could be described in Figure 5.10 (b) in which supply is more elastic than demand. The tax incidence now falls disproportionately on consumers, showing a big difference between the price they pay, pc and the initial equilibrium price, Pe. Sellers get a lower price than before tax, but this difference is much smaller than changing the price of consumers. From this analysis it can also be predicted whether the tax is likely to generate a large income or not. The more elastic the demand curve, the easier it is for consumers to reduce the amount instead of paying higher prices. The more elastic the supply curve, the easier it is for sellers to reduce the amount sold, rather than taking lower prices. In a market where both demand and supply are very elastic, the introduction of excise duty generates low revenues. Excise duties are considered to mainly harm certain industries they target. For example, the excise duty on medical devices, which has been in place since 2013, is controversial because it can delay industry profitability and therefore hamper start-ups and medical innovation. But ultimately, whether the tax burden falls the most on the medical device industry or on patients depends simply on the elasticity of demand and supply. Long-term vs. Short ImpactElasticities are often lower in the short term than in the long term. On the demand side of the market can sometimes be difficult to change Qd in the short term, but in the long run easier. Energy consumption is a clear example. In the short term, it is not easy for a person to make significant changes in energy consumption. Maybe you can carpool to work sometimes or adjust your home thermostat by a few degrees if the price of energy rises, but that's about all. However, in the long run you can buy a car that gets more miles to the gallon, choose a job that is closer to where you live, buy more energy efficient household appliances or install more insulation in your home. As a result, the elasticity of energy demand is somewhat inelastic in the short term, but much more elastic in the long run. Figure 5.11 is an example, based roughly on historical experience, for Qd on price changes. In 1973, the price of crude oil was $12 per barrel, and total consumption in the U.S. economy was 17 million barrels per day. That year, nations that were members of the Organization of the Petroleum Exporting Countries (OPEC) cut off oil exports to the United States for six months because OPEC Arab members disagreed with U.S. support for Israel. OPEC did not return exports to its earlier levels until 1975 - a policy that can be interpreted as a shift in the supply curve to the left in the US oil market. Figure 5.11 (a) and Figure 5.11 (b) show the same original equilibrium point and the same identical shift of the supply curve to the left from S0 to S1. Figure 5.11 How a shift in supply can affect the price or quantity of Intersection (E0) between the demand curve D and the S0 supply curve is the same in (a) and (b). The offer offset to the left from S0 to S1 is identical in both (a) and (b). The new balance (E1) has a higher price and a smaller amount than the original balance (E0) in both (a) and (b). However, the form of demand curve D differs in (a) and (b). As a result, a shift in supply can result in either a new balance with a much higher price and only slightly less quantity, as in (a), or in a new balance with only a small price increase and a relatively larger reduction in quantity, as in (b). Figure 5.11 (a) shows inelastic demand for oil in the short term similar to that that existed for the United States in 1973. Pictured at 5.11 (a), the new balance (E1) is happening at $25 a barrel, roughly double the price before the OPEC shock and a balance of 16 million barrels per day. Figure 5.11 (b) shows what the outcome would have been if U.S. oil demand had been more elastic, which is more likely in the long run. This alternative balance (E1) would result in lower price increases to $14 per barrel and a greater reduction in the balance to 13 million barrels per day. In 1983, for example, U.S. oil consumption was 15.3 million barrels per day, which was lower than in 1973 or 1975. U.S. oil consumption was declining even though the U.S. economy was about one-quarter larger in 1983. The main reason for the smaller volume was that higher energy prices have spurred conservation efforts, and after decades of home insulation, more efficient fuel cars, more efficient appliances and machinery, and other fuel conservation choices, the energy demand curve has become more elastic. On the supply side of markets, producers of goods and services tend to expand production more easily in the long term of several years rather than in the short term of a few months. After all, in the short term it can be expensive or difficult to build a new factory, hire many new workers or open new stores. over several years, all this is possible. Indeed, in most commodity and service markets, prices bounce more than quantities in the short term, but volumes often move higher than prices in the long run. The fundamental reason for this pattern is that supply and demand are often inelastic in the short term, so shifts in demand or supply can cause prices to change relatively more. But since supply and demand are more elastic in the long run, long-term price movements are more muted, while the volume is easier to adjust in the long run,5.4 | Elasticity in areas other than PriceBy end of this section, you will be able to:Calculate demand elasticity and interdevaluated demand elasticity Calculate elasticity in labour and financial capital markets by understanding the elasticity of labour supply and elasticity of savingsApply price elasticity concepts to real situations Basic idea of elasticity – how a percentage change in one variable causes a percentage change in another variable – does not only apply to the response of supply and demand to changes in the price of the product Remember that the required quantity (Qd) depends on income, tastes and preferences, prices of related goods and so on, as well as price. Similarly, the quantity (Q) supplied depends on production costs and so on, as well as price. Elasticity can be measured for any determinant of supply and demand, not just price. Elasticity of demand in incomeWork elasticity of demand is a percentage change in the required amount divided by a percentage change in income. For most products, most of the time, the elasticity of demand revenues is positive: that is, the increase in revenues will cause the required amount to increase. This pattern is common enough to refer to these goods as normal goods. For a few goods, however, the increase in revenue means that less good could be bought; for example, those with higher incomes can buy fewer burgers, because instead they buy more steak, or those with higher incomes can buy less cheap wine and more imported beer. When the supply elasticity of demand is negative, it is well called inferior good. Concepts of normal and inferior goods are introduced in demand and supply. A higher level of income for normal good causes the demand curve to move to the right for the normal good, which means that the elasticity of demand is positive. How much demand changes depends on the elasticity of demand in revenues. The elasticity of higher incomes means a bigger shift. However, for the worse good, i.e. when the elasticity of demand is negative, a higher level of revenue would cause the demand curve for this good to move to the left. Again, how much moves depends on how much the (negative) elasticity of income is. Cross price change in the price of one good can move the required quantity for another good. If the two goods are complements, such as bread and peanut butter, then the drop in the price of one good will lead to an increase in the amount demanded from the other good. However, if these two goods are replacements, such as plane tickets and train tickets, then the drop in the price of one good will cause people to imagine it well and reduce the consumption of the other good. Cheaper plane tickets lead to fewer train tickets and vice versa. The intersteasal elasticity of demand puts a little flesh on the bones of these ideas. The term cross-price refers to the idea that the price of one good affects the amount of other good requested. In particular, the intersteasal elasticity of demand is a percentage change in the amount of goods A required as a result of the percentage change in the price of good B.Replacement goods have positive interstane elasticity of demand: if good A is a substitute for good B, such as coffee and tea, then a higher price for B will mean a higher amount of consumed A. Supplementary goods have negative interstane elasticities. : if good A is a complement to a good B, such as coffee and sugar, then a higher price for B will mean a smaller amount of A.Elasticity consumed in labour and financial capital markets The concept of elasticity applies to any market, not just commodity and service markets. In the labour market, for example, wage elasticity in labour supply - that is, a percentage change in working hours divided by a percentage change in wages - will determine the shape of the labour supply curve. Specifically: It is generally considered that the elasticity of wages for teenage workers is quite elastic: that is, a certain percentage change in wages will lead to a greater percentage change in the amount of working hours. Conversely, the elasticity of pay for adult workers in their 30s and 40s is considered to be quite inelastic. When wages move up or down by a certain percentage amount, the amount of hours they grew up in their prime earnings years are ready to deliver changes, but by a smaller percentage amount. In financial capital markets, the elasticity of savings – i.e. a percentage change in the amount of savings divided by a percentage change in interest rates – will describe the shape of the financial capital supply curve. That is: Sometimes laws are proposed that aim to increase the amount of savings by offering tax breaks to make the return on savings higher. Such a policy will increase the amount if the supply curve for financial capital is elastic, because then a certain percentage increase in the return on savings will cause a larger percentage increase in the amount of savings. However, if the supply curve for financial capital is very inelastic, a percentage increase in the return on savings will only cause a small increase in the amount of savings. Evidence of a financial capital supply curve is controversial, but, at least in the short term, the elasticity of savings relative to the interest rate seems rather inelastic. Expansion of the concept of elasticity The concept of elasticity does not have to refer at all to a typical supply or demand curve. For example, imagine studying whether the Internal Revenue Service should spend more money auditing tax returns. The question may be framed as to the elasticity of tax collection in terms of tax enforcement spending; that is, what percentage change in tax collection came from the percentage change in spending on tax implementation? In addition to all the just described concepts of elasticity, some of which are listed in Table 5.4, there is a possibility of confusion. When you hear expressions of demand elasticity or elasticity of supply, they refer to elasticity with respect to price. Sometimes, whether extremely clear or because a wide range of elasticity is discussed, demand elasticity or demand elasticity will be called price demand elasticity or demand elasticity relative to price. Similarly, the elasticity of supply or elasticity of supply is sometimes referred to as, in order to avoid any possibility of confusion, elasticity of the supply of prices or elasticity of supply with respect to the price. But in any context elasticity is invoked, the idea always refers to a percentage change in one variable, almost always a price or money variable, and how it causes a percentage change in another variable, usually some kind of quantity variable. Table 5.4 Formulas for Calculating ElasticityBring it HomeHow's 60% Price Increase in 2011 End for Netflix? It was a very bumpy ride. Before the price hike, there were about 24.6 million U.S. subscribers. After the price hike, 810,000 insubscribed U.S. consumers canceled their Netflix subscriptions, dropping the total number of subscribers to 23.79 million. Fast forward to June 2013, when there were 36 million streaming Netflix subscribers in the United States. This is an increase of 11.4 million subscribers since the price increase – an average growth per quarter of about 1.6 million. This growth is less than the 2 million per quarter increase netflix experienced in the fourth quarter of 2010 and the first quarter of 2011. During the first year after the price hike, the company's share price (a measure of future expectations for the company) fell from about $300 per share to just under $54. In 2015, however, the share price was at $448 per share. Today, Netflix has 57 million subscribers in fifty countries. What happened? Obviously, Netflix company officials understood Demand. Company officials reported, when announcing the price hikes, that it could result in the loss of about 600,000 existing subscribers. Using the elasticity of the demand formula, it's easy to see that company officials expected an inelastic response: In addition, Netflix officials predicted that price hikes would have little impact on attracting new customers. Netflix expected to add up to 1.29 million new subscribers in the third quarter of 2011. The truth is that this was slower growth than the company experienced – about 2 million per quarter. Why is it estimated that customers have gone so far? In the 18 years since Netflix was founded, there has been an increase in the number of close but not perfect replacements. Consumers now had choices ranging from Vudu, Amazon Prime, Hulu and Redbox to retail stores. Jaime Weinman reported at Maclean's that Redbox kiosks are a five-minute drive for less than 68 percent of Americans, and it seems that many still find a five-minute ride more convenient than uploading a movie online. It seems that in 2012, many consumers still prefer a physical DVD disc over streaming video. What misstep did Netflix management make? In addition to misjudging the elasticity of demand, by not saying about close replacements, it seems that they may have misjudged both customer preferences and tastes. Still, as the population increases, the propensity to stream video can overtake physical DVD discs. Netflix, the source of a number of late-night talk show laughs and directs in 2011, may have one last laugh. KEY CONCEPTSConstant unitary elasticity when a certain percentage change in price leads to the same percentage change in the required quantity or elasticity of demand at a price as a percentage change in the quantity of good A required as a result of a percentage change in good belastic demand when the elasticity of demand is greater than one, indicating the high reactivity of the required quantity or delivered by changes in price supply when the elasticity of any supply is greater than one , pointing to the high reactivity of the required quantity or delivered by changes in price, an economic concept that measures the reactivity of one variable to changes in another savings variable, a percentage change in the amount of savings divided by a percentage change in the interest rate ofinelastic demand when the elasticity of demand is less than one, indicating that a 1 percent increase in the price paid by the consumer leads to less than 1 percent change in purchases (and vice versa); This indicates low consumer responsiveness to changing supply prices when supply elasticity is less than one, suggesting that a 1 per cent increase in the price paid to a business will result in a 1 per cent increase in production for this indicates the low reactivity of society to price increases (and vice versa if prices fall)the infinite elasticity of an extremely elastic demand or supply situation in which the quantity changes by an infinite amount in response to any price change; horizontal in appearanceperfekt elasticity see infinite elastic inelastic inelasticity see zero elasticity of elasticity relationship between percentage price changes resulting in corresponding percentage change in the amount of requested or deliveredprice elasticity of percentage change in demand in the required amount of good or service divided the percentage change in price elasticity as a percentage of the offer in the quantity supplied divided by the percentage change in the price incidence in which the tax burden is divided between the buyers and the sales elasticity when the elasticity is calculated is the same as that indicating that the change in the price of a good or the service results in a proportional change in the required quantity or the elasticity of labour supply delivered, the percentage change in working hours divided by a percentage change in inelasticity of wages is a highly inelastic case of demand or supply in which the percentage changes in price. , no matter how large, results in a zero change in quantity; Vertical in layoutKEY CONCEPTS AND SUMMARY5.1 Price Elasticity of demand and price Elasticity of supplyPrice elasticity measures the responsiveness of the amount of requested or delivered good changes in its price. It is calculated as a percentage change in the requested (or supplied) quantity divided by a percentage change in price. Elasticity can be described as elastic (or very responsive), a unit elastic or inelastic (not very responsive). Elastic demand or supply curves indicate that the quantity requested or supplied corresponds to price changes in a more than proportional way. The inelastic demand or supply curve is one in which a certain percentage change in price will cause a smaller percentage change in the quantity requested or delivered. Unitary elasticity means that a certain percentage change in price leads to the same percentage change in the required or delivered quantity.5.2 Polar cases of elasticity and constant elasticityInfinite or perfect elasticity refer to an extreme case in which the amount of change requested or delivered for an infinite amount in response to any price change at all. Zero elasticity refers to an extreme case in which a percentage change in price, no matter how large, results in a zero change in quantity. Constant unitary elasticity in the supply or demand curve refers to a situation where a one percent price change results in a change in quantity of one percent.5.3 Elasticity and prices In the goods and services market, the quantity supplied and the quantity requested are often relatively slow to react short-term price, but react more significantly in the long run. As a result, demand and supply often (but not always) tend to be relatively inelastic in the short term and relatively elastic in the long run. The tax incidence depends on the relative price elasticity of supply and demand. When supply is more elastic than demand, customers bear most of the tax burden, and when demand is more elastic than supply, manufacturers bear most of the cost of tax. Tax revenues are higher the more inelastic demand and supply.5.4 Elasticity in areas Besides priceElasticity is a general term, referring to a percentage change in a single variable divided by a percentage change in the associated variable that can be applied to many economic connections. For example, the elasticity of demand in income is a percentage change in the required amount divided by a percentage change in income. The intercase elasticity of demand is a percentage change in the required amount that is well divided by the percentage change in the price of another good. Elasticity applies in labour markets and financial capital markets just like in commodity and service markets. The elasticity of the labour supply is a percentage change in the amount of hours delivered divided by a percentage change in salary. The elasticity of saving with respect to interest rates is a percentage change in the amount of savings divided by a percentage change in interest rates. SELF-CHECK QUESTIONS Question 5.1Exece the data shown in Table 5.5 on demand for smartphones calculate price elasticity from: point B to point C, point D to point E and point G to point H. Classify elasticity at all times as elastic, inelastic or unit elastic. Click here to see AnswerQuestion 5.2In relation to the data shown in Table 5.6 on the supply of alarm clocks, calculate the elasticity of the supply price from: point J to point K, point L to point M and point N to point P. Classify elasticity at all times as elastic, inelastic or unit elastic. Click here to see AnswerQuestion 5.3For why is the demand curve with constant unitary elasticity concave? Click here to see AnswerQuestion 5.4For why is the supply curve with constant unitary elasticity a straight line? Click here to see AnswerQuestion 5.5 The federal government decides to require automakers to install new anti-pollution equipment costing $2,000 per car. Under what conditions can automakers pass on almost all this cost to car buyers? Under what conditions can automakers pass on very little of this cost to car buyers? Click here to see AnswerQuestion 5.6Suppose which you are in charge of selling at a pharmaceutical company, and your company has a new drug that causes bald men to grow hair. Suppose the company wants to earn as much revenue as it can from Medicine. If the elasticity of the demand for the company's product at the current price is 1.4, would you advise the company to raise the price, lower the price or keep the price the same? What if the elasticity is 0.6? What if it's 1? Explain your answer. Click here to see AnswerQuestion 5.7 What would the elasticity of the gasoline supply mean UPS or FedEx? Click here to see AnswerQuestion 5.8 Average annual income rises from $25,000 to $38,000, and the amount of bread consumed in a year by the average person drops from 30 loaves to 22 loaves. What is the elasticity of bread consumption? Is bread normal or inferiorly good? Click here to see AnswerQuestion 5.9Suppose apple interclocity considering the price of oranges is 0.4, and the price of oranges drops by 3%. What will happen to the demand for apples? Click here to see AnswerREVIEW QUESTIONSQuestion 5.10This is the formula for calculating elasticity? Click here to see AnswerQuestion 5.11This is the price of demand elasticity? Can you explain that in your own words? Click here to see AnswerQuestion 5.12This is the price of offer elasticity? Can you explain that in your own words? Click here to see AnswerQuestion 5.13Written the general appearance of demand or supply curves with zero elasticity. Click here to see AnswerQuestion 5.14Deece the general appearance of demand or supply curves with infinite elasticity. Click here to see AnswerQuestion 5.15 If demand is elastic, will the on-offer changes have a greater effect on the balance volume or on the price? Click here to see AnswerQuestion 5.16 If demand is inelastic, will the changes on offer have a greater effect on the price of balance or on quantity? Click here to see AnswerQuestion 5.17 If the supply is elastic, will the in-demand changes have a greater effect on the balance volume or on the price? Click here to see AnswerQuestion 5.18 If supply is inelastic, will in-demand changes have a greater effect on the price of balance or quantity? Click here to see AnswerQuestion 5.19You usually expect the elasticity of demand or supply to be higher in the short term or in the long term? Why? Click here to see AnswerQuestion 5.20Under what circumstances does the tax burden fall entirely on consumers? Click here to see AnswerQuestion 5.21This is the formula for the elasticity of revenue demand? Click here to see AnswerQuestion 5.22What is a formula for inter-valued demand elasticity? Click here to see AnswerQuestion 5.23This is the formula for wage elasticity in the labour supply? Click here to see AnswerQuestion 5.24This is the formula for saving elasticity with respect to interest rates? Click here to see questions answercritical thinking 5.25Transatlantic air travel in business class has an estimated elasticity 0.40 less than transatlantic economy class air travel, with elasticity of the price of 0.62. Why do you think that is? Click here to see AnswerQuestion 5.26This is the relationship between price elasticity and position on the demand curve? For example, as you navigate the demand curve towards higher prices and lower volumes, what happens to measured elasticity? How would you explain it? Click here to see AnswerQuestion 5.27 Do you think of an industry (or product) with almost infinite supply elasticity in the short term? That is, what is an industry that could increase Qs almost without restrictions in response to price hikes? Click here to see AnswerQuestion 5.28Would you expect supply to play a more significant role in pricing essentials like food or luxury perfume? Explain. Tip: Think about how the elasticity of demand will differ between needs and luxury. Click here to see AnswerQuestion 5.29A the city has built a bridge over the river and decides to charge a toll to anyone who crosses. For one year, the city charges a variety of different tolls and records information on how many drivers cross the bridge. The city thus collects information on the elasticity of demand. If the City wants to collect as much toll revenue as possible, where will the city decide to charge tolls: in the inelastic part of the demand curve, the elastic part of the demand curve, that is, the elastic part of the unit? Explain.Click here to see the AnswerQuestion 5.30In a market where the supply curve is perfectly inelastic, how does excise duty affect the price paid by consumers and the amount purchased and sold? Click here to see AnswerQuestion 5.31Normal goods are defined as having a positive elasticity of income. Normal goods can be divided into two types: those whose elasticity of income is less than one and those whose elasticity of income is greater than one. Think about products that would fall into each category. Can you come up with a name for each category? Click here to see AnswerQuestion 5.32Suppose you can buy shoes one by one, not in pairs. What do you predict will be intersteasal elasticity for left shoes and right shoes? Click here to see AnswerPROBLEMSQuestion 5.33 The equation for the demand curve is P = 48 - 3Q. What is the elasticity in movement from the amount of 5 to the amount of 6? Click here to see AnswerQuestion 5.34 The equation for the demand curve is P = 2 / Q. What is the elasticity of demand because the price falls from 5 to 4? What is the elasticity of demand as the price drops from 9 to 8? Would you expect these answers to be the same? Click here to see AnswerQuestion 5.35 The equation for the supply curve is 4P = Q. What is the elasticity of the offer because the price rises from 3 to 4? What is the elasticity of supply because the price rises from 7 to 8? Would you expect these answers to be the same? Click here to see AnswerQuestion the equation for the supply curve is P = 3Q-8. What is the elasticity in moving from a price of 4 to a price of 7? Click here to see AnswerQuestion 5.37A great picture of Leonardo Da Vinci, who painted The Leaves and the Last Supper and died in 1519, is very inelastic. Sketch a diagram of supply and demand, paying attention to the appropriate elasticity, to illustrate that the demand for these images will determine the price. Click here to see AnswerQuestion 5.38Say that a designated professional football stadium has 70,000 seats. What is the shape of the offer curve for tickets to football matches in that stadium? Explain.Click here to see AnswerQuestion 5.39 When someone's kidneys are failing, a person must be treated with a dialysis machine (unless or until they have a kidney transplant) or they will die. Sketch a diagram of supply and demand, paying attention to the appropriate elasticity, to illustrate that the supply of such dialysis machines will primarily determine the price. Click here to see AnswerQuestion 5.40Assume that the supply of low-skilled workers is quite elastic, but employer demand for such workers is quite inelastic. If the policy aims to expand the employment of low-skilled workers, is it better to focus on policy tools to shift the supply of unskilled labour or to tools to shift demand for unskilled labour? What if the policy aims to increase the wages of this group? Explain your answers with supply and demand diagrams. Click here to see AnswerAnswersAnswer on question 5.1Ad point B to point C, the price rises from

$70 to $80, and Qd decreases from 2,800 to 2,600. So: The demand curve is inelastic in this area; that is, its value of elasticity is less than one. The answer from point D to point E:Demand curve is inelastic in this area; that is, its value of elasticity is less than one. The answer from point G to point H:The demand curve is still inelastic at this interval, but the unit's elasticity is approaching. Click here to return to question 5.1Answer on question 5.2Ad point J to point K, the price rises from $8 to $9 and the volume rises from 50 to 70. So: The supply curve is elastic in this area; that is, its value of elasticity is greater than one. From point L to point M, the price rises from $10 to $11, while Qs rises from 80 to 88: The supply curve has unitary elasticity in this area. From point N to point P, the price rises from $12 to $13, and Qs rises from 95 to 100:The supply curve is inelastic in this supply curve region. The supply curve is inelastic in this area of the supply curve. Click here to return to question 5.2Answer on question 5.3Brasing demand with constant unitary elasticity is concave because at high prices, a price drop of one result in an increase of more than one percent. As we move down the demand curve, the price falls by up to one per cent price causes less than one percent increase in quantity. Click here to return to question 5.3Answer to Question 5.4 Constant unitary elasticity is a straight line as the curve falls upwards and price and quantity increase proportionally. Click here to return to question 5.4Answer to Question 5.5Carmakers can pass this cost on to consumers if demand for these cars is inelastic. If the demand for these cars is elastic, the manufacturer must pay for the equipment. Click here to return to question 5.5Answer when asked 5.6 If the elasticity is 1.4 at current prices, you would advise the company to lower its price on the product, as the price reduction will be offset by an increase in the amount of the drug sold. If the elasticity is 0.6, then you would advise the company to increase its price. The price increase will offset the decrease in the number of units sold, but increase your total revenue. If elasticity is 1, total revenues are already maximized, and we advise that the company maintain the current price level. Click here to return to question 5.6Answer when asked 5.7In percentage change in quantity delivered as a result of a certain percentage change in the price of gasoline. Click here to return to question 5.7Answer to Question 5.8U this example, bread is worse good as its consumption falls as revenue grows. Click here to return to question 5.8Answer to Question 5.9 The formula for elasticity at the price is % of Qd changes for apples / % change in P orange. Multiplication of both sides with % change in orange P yield:% change in Qd for apples = change in elasticity at the price of X% in P orange = 0.4 × (-3%) = -1.2%, or decrease in apple demand by 1.2 %. Click here to return to question 5.9Answer to Question 5.10Elasticity is calculated by dividing the percentage change in quantity relative to the percentage price change. E = %ΔQ/%ΔPClick here to return to question 5.10Answer when asked 5.11Seales of demand is the extent to which the requested quantity responds to a price change. Click here to return to question 5.11Answer when asked 5.12Add offer's ethics is the extent to which the quantity delivered responds to the price change. Click here to return to question 5.12Answer on question 5.13A vertical line, since the quantity will not change at all in response to the price change. Click here to return to question 5.13Answer to Question 5.14A horizontal line, since as many products can be sold or purchased at one price if desired. Click here to return to question 5.14Answer on question 5.15Click here to see question 5.15Answer on question 5.16Click here to return to question 5. 16Answer when asked 5.17Click here to return to question 5.17Answer when asked 5.18Click here to return to question 5.18Answer on 5.19Most expect demand to be more elastic in the short term, as it takes time to change production to make supply more or less good. In the long run, however, supply is likely to be more elastic as manufacturers have a potentially limitless ability to change supply with prices. Click here to see question 5.19Swer to Question 5.20 For the tax burden to fall entirely on consumers, the supply curve must be perfectly elastic. Graphically, the supply curve must be horizontal. Click here to return to question 5.20Answer on question 5.21In percentage of quantity changes required relative to percentage change in revenue. E = %ΔQ/%ΔIClick here to return to question 5.21Answer on question 5.22Na percent change in the amount requested compared to a percentage change in the replacement price or a good update. E = %ΔQ/%ΔPs or %ΔQ/%ΔPcClick here to return to question 5.22Answer when asked 5.23A change in the amount of work delivered over percent of changes and wage rates. E = %ΔQ/%ΔWClick here to return to question 5.23Answer when asked 5.24Sas change in savings relative to the percentage change in interest rates. E = %ΔS/%ΔIrClick here to return to question 5.24Answer to Question 5.25Due at the length of time it takes to travel across the Atlantic and the discomfort of the traveling economy class, we would expect that people who buy first class tickets are generally unwilling to reduce their penchant for comfort, which gives inelastic demand. In addition, many transatlantic tickets are paid for by large companies on behalf of their employees, where the cost is less worrisome than for individuals traveling economy class. Click here to return to question 5.25Answer on question 5.26 Demand becomes less elastic as we move up demand curves, as elasticities are calculated as percentages. A big increase in an already high price can only be a small percentage increase, while a small decrease in an already very low amount can be a fairly large percentage reduction. Click here to return to question 5.26Answer to Question 5.27 Many internet companies fall into this model, where adding another user to the website has almost zero costs. Any site working on a subscription service could do so, at least in the short term. Click here to return to question 5.27Answer to Question 5.28Supply plays a bigger role in determining the price of supplies, since the demand for these items is inelastic and people cannot easily give them up. Prices of luxury goods are determined primarily by demand, because there are many simple substitutes for these items. Click here to return to question 5.28Answer when asked 5.29O the city should charge a toll in the elastic part of the demand curve. Charging more than that will lead to a greater reduction in drivers and charging less than that will not increase traffic enough to increase lost revenues. Click here to return to question 5.29Answer when asked 5.30 If the supply curve is perfectly inelastic, it is represented by a vertical curve. Sellers bear the entire tax burden, and the quantity purchased and sold remains unchanged with the tax. The price paid by consumers remains the same, and the price received by sellers is reduced by the amount of tax. Click here to return to question 5.30Answer on question 5.31Goods with high income elasticity can be classified as a luxury. We buy more of them as our incomes grow, but we can easily give them up if our incomes fall. Low-income goods of elasticity can be classified as a necessity, where we don't change spend much no matter how much money we make. Click here to return to question 5.31Answer on question 5.32Space price elasticity would be very almost unitary, as few people would benefit for a left shoe without a right shoe and vice versa. Click here to return to question 5.32Answer on question 5.33E = %ΔQ/%ΔP= [(6 - 5)/5]/[(30 - 33)/33] = -2.2Click here to return to the question 5.33Sswer on question 5.34Presidently resolve for Q at both prices:E = %ΔQ/%ΔP = [0.5 - 0.4)/0.4]/[(4 - 5)/5] = -1 ,25Ot expect elasticity to be lower at higher prices:E = %ΔQ/%ΔP = [(0.25 - 0.22)/0.22]/[(8 - 9)/9] = -1.12Click here to return to Question 5.34Answer to Question 5.35E = %ΔQ/%ΔP = [(16 - 12)/12]/[(4 - 3)/3] = 1At higher price, elasticity should be the same. E = %ΔQ/%ΔP = [(32 - 28)/28]/[(8 - 7)/7] = 1Click here to return to question 5.35Answer when asked 5.36E = %ΔQ/%ΔP = [(5 - 4)/4]/[(7 - 4)/4] = 0.33Click here to see question 5.36Answer to Question 5.37 The supply of Da Vinci images will be represented by a vertical line, as no amount of price fluctuation can change them. The price is therefore fully determined by the position of the demand curve Click here to see the question 5.37Answer to Question 5.38 The supply curve is almost perfectly inelastic, since the amount of seats is fixed and will therefore be represented by a vertical line. In the short term, no increase in demand can result in the supply of more than 70,000 seatsClick here to return to question 5.38Answer when asked 5.39Given that the patient will die without the help of a dialysis machine, their request will be almost perfectly inelastic, as they will be willing to pay any amount of money to survive. The demand curve is therefore almost a vertical line, and the price is determined by the position of the supply curve. Click here to return to question 5.39Swer to Question 5.40It expand employment, the best option is to shift demand, as employers will not greatly respond to price changes. On the other hand, if increasing wages, switching offers is a better option as employers will not be able to easily reduce their workforce and will therefore have to pay a higher salary. Click here to return to question 5.40 Download for free at 11.12.Page 4 Figure 7.1 Average daily calorie consumption Not only has the number of calories burned per day increased, so is the amount of food calories that people are able to afford based on their working wages. (Credit: Modification of Lauren Manning/Flickr Creative Commons Work) Chapter Outline7.1 Relatively recent arrival of economic growth7.2 Labour productivity and economic growth7.3 Components of economic growthBring it HomeCalories and Economic GrowthOn average, people need about 2,500 calories per day to survive depending on height, weight and gender. Economist Brad DeLong estimates that the average worker in the early 1600s earned wages that could afford him 2,500 calories of food. This worker lived in Western Europe. 200 years later, that same worker could afford 3,000 calories of food. However, between 1800 and 1875, just a time span of just 75 years, economic growth was so rapid that workers from the Western European Union could buy 5,000 calories of food a day. By 2012, a low-skilled worker in the wealthy Western European/North American country could afford to buy 2.4 million calories of food a day. What caused such a rapid rise in living standards between 1800 and 1805? Why can many countries, especially those in Western Europe, North America and parts of East Asia, feed their populations more than adequately, while others cannot? We will look at these and other issues as we examine long-term economic growth. Introduction to economic growth In this chapter, you will learn about:Relatively recent arrival of economic growthLabor productivity and economic growthComponents of economic growthEconomic convergence Of all countries takes care of economic growth. In the United States and other high-income countries, the question is whether economic growth continues to provide the same remarkable gains in our standard of living as during the twentieth century. Meanwhile, can middle-income countries like South Korea, Brazil, Egypt or Poland catch up with higher-income countries? Or do they have to stay in the second tier of per capita income? Of the world's population of about 6.7 billion, about 2.6 billion are scraping by revenues that are on average less than $2 a day, which is not so different from living standards 2,000 years ago. Can the world's poor rise from their terrible poverty? As the 1995 Nobel Laureate in Economics, Robert E. Lucas Jr., once noted: The consequences for human well-being involved in issues like these are simply staggering: Once you start thinking about them, it's hard think about anything else. Dramatic improvements to the nation's living standards are possible. After the Korean War in the late 1950s, the Republic of Korea, often referred to as South Korea, was one of the poorest economies in the world. Most South Koreans worked in peasant farming. According to British economist Angus Maddison, whose life's work was to measure GDP and population in the world economy, GDP per capita in 1990 was 1.5% higher than in 2000. From the 1960s to the early twenty-first century, a period of time well in life and the memory of many adults, the South Korean economy grew rapidly. Over these four decades, GDP per capita has increased by more than 6% per year. According to the World Bank, GDP for South Korea now exceeds $30,000 in nominal amount, placing it firmly among high-income countries such as Italy, New Zealand and Israel. Measured by total GDP in 2012, South Korea is the 13th largest economy in the world. For a nation of 49 million people, this transformation is remarkable. South Korea is a prominent example, but this is not the only case of rapid and sustainable economic growth. Other East Asian nations, such as Thailand and Indonesia, have also seen very rapid growth. China has grown significantly since the adoption of market-oriented economic reforms around 1980. Since the Civil War, the U.S. economy has been transformed from primarily rural and farming to a service, manufacturing and technology-based economy.7.1 | Relatively recent arrival of economic growth If we end this section, you will be able to:Explain the conditions that have enabled modern economic growth in the last two centuriesAnalyze the impact of public policies on the long-term economic growth of the economyDo you start by briefly reviewing the spectacular patterns of economic growth around the world over the last two centuries , which is commonly referred to as the period of modern economic growth. (Later in the chapter, we will discuss lower economic growth rates and some key ingredients for economic progress.) Rapid and sustainable economic growth is a relatively recent experience for the human race. The last two centuries ago, although rulers, nobles and invaders could afford some extravagances and although economies rose above the level of existence, the living standards of the average person have not changed much for centuries. Progressive, strong economic and institutional changes began to have a significant impact in the late eighteenth and early nineteenth centuries. According to Dutch economic historian Jan Luiden van Zanden, slavery-based societies, favourable demography, global trade routes and standardised trade institutions spreading across different set the stage for the success of the Industrial Revolution. The Industrial Revolution refers to the widespread use of energy-powered machinery and the economic and social changes that resulted in the first half of the 1800s. Ingenious machines – steam engine, looms and steam locomotive – performed tasks that would otherwise require many workers. The Industrial Revolution began in the UK and soon spread to the United States, Germany and other countries. Jobs for ordinary people working with these machines were often dirty and dangerous by modern standards, but the alternative jobs of the time in peasant farming and small country industry were often dirty and dangerous. The new jobs of the Industrial Revolution typically offered higher pay and the opportunity for social mobility. The cycle of self-hardening began: New inventions and investments generated profits, profits provided funds for new investments and inventions, and investments and inventions provided opportunities for further profit. Slowly, a group of national economies in Europe and North America emerged from centuries of slugging to a period of rapid modern growth. Over the last two centuries, the average GDP per capita growth rate in leading industrialised countries has averaged around 2% per year. How were the times before that? For an answer, see the following Clear It Up feature. Clear It UpWhat are economic conditions like before 1870? Angus Maddison, a quantitative economic historian, led the most adjudential inquiry into national incomes before 1870. Its methods have recently been refined and used to compile estimates of GDP per capita as of 1 January 2014. Table 7.1 is an important counterpoint to most narratives in this chapter. It shows that nations can decline and grow. The drop in revenues is explained by a wide range of forces, such as epidemics, natural and time-related disasters, the inability to manage large empires, and the extremely slow pace of technological and institutional progress. Institutions are traditions, laws and so on by which people in the community agree to behave and govern themselves. Such institutions include marriage, religion, education and governance laws. Institutional progress is the development and codification of these institutions in order to strengthen social order and thus economic growth. One example of such an institution is the Magna Carta (Great Charter), which english nobles forced King John to sign in 1215. Magna Carta codified the principles of due process, whereby a free man could not be punished unless his peers reached a lawful verdict against him. The concept was later adopted by the United States in its own constitution. This social order may have contributed to England's GDP per capita in 1348. Italy.In economic growth studies, the country's institutional framework plays a key role. Table 7.1 also shows relative global equality over almost 1,300 years. After that, we begin to see significant differences in income (not shown in the table). Table 7.1 GDP per capita Estimated in current international dollars as of January 1, 2015. First update to the Maddison project. Reassessment of growth before 1820 2013)Another fascinating and underreported fact is the high level of income, compared to others at the time, achieved by the Abbasid Caliphate Islamic Empire - which was founded in what is now Iraq in 730 AD. At its peak, the empire stretched over large areas of the Middle East, North Africa and Spain until gradual decline over 200 years. The Industrial Revolution has led to an increase in inequality between nations. Some economies took off, while others, like many in Africa or Asia, remained close to living standards. General calculations show that the world's 17 countries with the most developed economies had, on average, 2.4 times the GDP per capita of the world's poorest economies in 1870. By 1960, the most developed economies had 4.2 times the GDP per capita of the poorest economies. By the middle of the twentieth century, however, some countries had shown that sussing up was possible. Japan's economic growth took off in the 1960s and 1970s, with the growth rate of real GDP per capita averaging 11% a year during those decades. Certain Latin American countries experienced a boom in economic growth in the 1960s. In Brazil, for example, GDP per capita has expanded by an average annual rate of 11.1% since 1968. In the 1970s, some East Asian economies, including South Korea, Thailand and Taiwan, saw rapid growth. In these countries, GDP per capita growth rates of 11 to 12 per cent per year were not uncommon. More recently, China, with its population of 1.3 billion, has grown at a per capita rate of 9% annually since 1984. India, with a population of 1.1 billion, showed promising signs of economic growth, with GDP per capita growth of about 4% a year during the 1990s and climbing towards 7% to 8% a year in the 2000s. Connect Him UpVisit this website (to read about the Asian Development Bank. These waves of scoring economic growth have not reached all shores. In certain African countries like Niger, Tanzania and Sudan, for example, GDP per capita in the early 2000s was still less than $300, not much higher than it was in the nineteenth century and centuries before that. In the context of the overall situation of low-income people around the world, the good economic news from China (population: 1.3 billion) and India (population: 1.1 billion) is nevertheless staggering and earth-shattering. Economic In the last two centuries he has made a striking change in the human condition. Richard Easterlin, an economist at the University of Southern California, wrote in 2000: By many measures, a revolution in the human condition is sweeping the world. Most people today are better fed, dressed and placed than their predecessors two centuries ago. They're healthier, they live longer and they're better educated. Women's lives are less focused on reproduction, and political democracy has gained a foothold. Although Western Europe and its branches have been leaders of this progress, most less developed nations joined during the 20th century. While the picture is not one of universal progress, it is the greatest advancement in the human condition of the world's population ever made in such a short period of time. The rule of law and economic growthEconomic growth depends on many factors. Among these factors, adherence to the rule of law and the protection of property rights and contractual rights by the state authorities is essential so that markets can function effectively and effectively. Laws must be clear, public, fair, enforced and equally applicable to all members of society. Property rights, as you may recall from m Environmental Protection and Negative Externality (are the rights of individuals and companies to own property and use it as they see fit. If you have $100, you have the right to use that money, whether you spend it, borrow it or keep it in a jar. It's your property. The definition of property includes physical property as well as the right to your training and experience, especially since your training is what determines your life. The use of this property includes the right to contracts with other parties with your property. Individuals or businesses must own the property in order to enter into the contract. Contractual rights, therefore, are based on property rights and allow individuals to enter into agreements with others in the event of non-compliance with others in connection with the use of their property providing recourse through the legal system. One example is an employment contract: a qualified surgeon operates on a sick person and expects to be paid. Nonpayment would constitute the theft of property by a patient; property is a service provided by a surgeon. In a company with strong property rights and contractual rights, the terms of the patient and surgeon's contract will be met, as the surgeon would have a recourse through the court system for extracting payments from that individual. Without a legal system implementing contracts, people would probably not enter into contracts for current or future services because of the risk of non-payment. This would make it more difficult to operate and economic growth. The World Bank considers the country's legal system effective if it respects property rights and contractual rights. The World Bank has developed a system of ranking countries' legal systems based on effective protection of property rights and rule-based governance using a scale of 1 to 6, with 1 being the lowest and 6 being the highest rating. In 2013, the world average scale was 2.9. The three countries with the lowest ranking of 1.5 were Afghanistan, central African Republic and Zimbabwe; their GDP per capita was $679, $333 and $1,007, respectively. The World Bank cites Afghanistan as low living standards, weak government structure and a lack of compliance with the rule of law, which has reduced its economic growth. The landless Central African Republic has poor economic resources as well as political instability and is a source of children used in human trafficking. Zimbabwe has had a decline in growth since 1998. Land redistribution and price controls have disrupted the economy, and corruption and violence have dominated the political process. Although global economic growth has increased, these countries that do not have a clear property rights system and an independent, corruption-free court system lagged far behind,7.2 | Labour productivity and economic growth At the end of this section you will be able to:Identify the role of labour productivity in promoting economic growthAnalyza sources of economic growth using aggregate manufacturing function Measure the rate of growth of the economy ProductivityAnsustain the strength of sustainable growthSustained long-term economic growth comes from increasing worker productivity, which essentially means how well we do things. In other words, how effective is your nation with its time and its workers? Labour productivity is the value each employed person creates per unit of their contribution. The easiest way to understand labor productivity is to imagine a Canadian worker who can make 10 loaves in an hour compared to an American worker who can only make two loafs of bread in the same hour. In this fictional example, Canadians are more productive. Being more productive essentially means you can do more in the same time period. This in turn frees up resources to be used elsewhere. What determines how productive workers are? The answer is quite intuitive. The first determinant of labour productivity is human capital. Human capital is accumulated knowledge (from education and experience), skills and expertise that the average worker in the economy possesses. Usually the higher the average level of education in the economy, the higher the accumulated human capital and the higher the productivity of work. Another factor determining labour productivity is technological change. Technological change is a combination of inventions – advances in knowledge – that puts this advance up for use in a new product or service. For example, the transistor was invented in 1947. This allowed us to miniaturize the footprint of electronic devices and use less energy than the pipe technology that came before it. Since then, innovation has produced smaller and better transistors that are ubiquitous in products as different as smartphones, computers and escalators. The development of transistors has allowed workers to be anywhere with smaller devices. These devices can be used to communicate with other workers, measure product quality, or any other task in less time, improving worker productivity. The third factor determining labour productivity is economies of scale. Remember that economies of scale are cost advantages that industries get because of their size. (Read more about economies of scale in cost structure and industry (. Think again about the case of a fictional Canadian worker who could produce 10 loaves in an hour. If this productivity gap is due only to economies of scale, it could be that Canadian workers had access to a large industrial-sized oven while an American worker used a standard residential-sized oven. Now that we have explored the determinants of worker productivity, let's turn to how economists measure economic growth and productivity. Sources of economic growth: Aggregate function of productionIt is to analyze sources of economic growth, it is useful to think about the production function, which is the process of converting economic inputs such as labour, machinery and raw materials into production such as goods and services used by consumers. Microeconomic manufacturing function describes the contributions and results of the company, or perhaps the industry. In macroeconomics, the link from input to output for the entire economy is called aggregate production function. Components of aggregate production functionEconomists construct different production functions depending on the focus of their studies. Figure 7.2 presents two examples of aggregate production functions. In the first production function, shown in Figure 7.2 (a), production is GDP. The contributions in this example are labour, human capital, physical capital and technology. We discuss these contributions further in the Economic Growth Components module. Figure 7.2 Aggregate production functions Aggregate production function shows what goes into production production for the overall economy. (a) This aggregate production function has GDP as its production. (b) This aggregate production function has a GDP per capita as its production. Since it is calculated per person, the work entry is already included in other factors and does not have to be specifically stated. Measuring the rate of productivity growth in the economy in productivity is closely linked to the growth rate per capita, although the two are not identical. For example, if the percentage of the population holding jobs in the economy increases, GDP per capita will increase, but this will not affect the productivity of individual workers. In the long term, the only way GDP per capita can grow continuously is if the productivity of the average worker rises or if there is a complementary increase in capital. A common measure of American productivity per worker is the dollar-per-hour value that a worker contributes to an employer's production. This measure excludes state workers, as their production is not sold on the market and therefore their productivity is difficult to measure. It also excludes agriculture, which accounts for only a relatively small share of the U.S. economy. Figure 7.3 shows the hourly production index, with 2009 as the base year (when the index is equal to 100). In 2014, the index In 1972, the index was equal to 50, showing that workers have more than doubled their productivity since then. Figure 7.3 Output per hour of work in the U.S. economy, 1947-2011 Hourly production is a measure of worker productivity. In the U.S. economy, worker productivity rose faster in the 1960s and mid-1990s compared to the 1970s and 1980s. However, these differences in growth rates are only a few percentage points per year. Look carefully to see them on the variable slope of the line. The average U.S. worker produced more than twice as much per hour in 2014 than in the early 1970s. According to the Department of Labor, U.S. productivity growth was fairly strong in the 1950s, but then declined in the 1970s and 1980s before rising again in the second half of the 1990s and first half of the 2000s. In fact, the productivity rate measured by changing output per hour of work has averaged 3.2% per year since 1950 to 1.9% a year since 1970 and then climbed to more than 2.3% since 1991. Figure 7.4 shows average annual productivity growth rates on average over time since 1950. Figure 7.4 Productivity growth Since 1950, U.S. worker productivity growth was very high between 1950 and 2010. Then in the 1970s and 1980s it fell to lower levels. In the late 1990s and early 2000s there was a jump in productivity, but then productivity jumped a bit in the 2000s. Some think the productivity recovery in the late 1990s and early 2000s marks the beginning of a new economy built on higher productivity growth, but this cannot be determined until more time has passed. (Source: U.S. Department of Labor, Bureau of Labor Statistics.) Controversy about the new economy In recent years, controversy has been brewing among economists about the re-rise of American productivity in the second half of the 1990s. One school claims that the United States developed a new economy based on outstanding advances in communications and information technology in the 1990s. The most optimistic proponents argue that this would create higher average productivity growth in the decades to come. Pessimists, on the other hand, argue that even five or 10 years of stronger productivity growth does not prove that higher productivity will last in the long term. It is difficult to conclude anything about long-term productivity trends during the later part of the 2000s, as the steep recession of 2008-2009, with its sharp but not fully synchronised decline in manufacturing and employment, complicates any interpretation. Although productivity growth was high in 2009 and 2010, the number of productivity growth increased by 1.5% compared to 2010. Productivity growth is also closely linked to the average level of wages. Over time, the amount companies are willing to pay workers will depend on the value of the output these workers produce. If several employers tried to pay their workers less than what these workers produced, then these workers would receive offers for higher wages from other employers seeking profits. If several employers mistakenly paid their workers more than what these workers produced, those employers would soon end up with losses. In the long term, hourly productivity is the most important determinant of the average level of wages in any economy. To learn how to compare economies in this regard, follow the steps in the following Work It Out feature. Work It OutComparing the Economies of Two Countries The Organisation for Economic Co-operation and Development (OECD) tracks data on the annual growth rate of real GDP per hour of work. This information can be found on the OECD's Labour Productivity Growth website on the (website. Step 1. Visit the OECD website above and select two countries for comparison. Step two. In the Variable drop-down menu, select Real GDP, annual growth, in percentage terms, and note the data for the countries you've selected for the last five years. Step 3. Return to the papad head coach and select Real GDP per hour of work, annual growth rate, in percentage terms and select data for the same years for which you selected GDP data. Step 4. Compare real GDP growth for both countries. Table 7.2 provides an example of the comparison between Australia and Belgium. Table 7.2Step 5. Consider many factors that can affect growth. For example, one factor that may have affected Australia is its isolation from Europe, which may have insulated the country from the effects of the global recession. In the case of Belgium, the global recession appears to have affected both GDP and real GDP by working hours between 2009 and 2013. The power of a sustainable economy is more important for people's living standards than sustainable economic growth. Even small changes in the growth rate, when maintained and complex over long periods of time, make a huge difference to living standards. Consider Table 7.3, in which rows of tables show several different GDP growth rates per capita and columns show different time periods. Let's assume that the economy starts with a GDP per capita of 100. The table then applies the following formula for calculating GDP by default growth rate in the future: For example, an economy that starts at a GDP of 100 and grows at 3 % a year will reach GDP of 209 after 25 years; that is, the slowest gdp growth rate per capita in the table, only 1% per year, is similar to what the United States experienced during the weakest years of productivity growth. The second highest rate, at 3% a year, is close to what the US economy experienced during a strong economy in the late 1990s and 2000s. Higher per capita growth rates, such as 5% or 8% per year, represent a rapid growth experience in economies such as Japan, Korea and China.Table 7.3 shows that even a few percentage points difference in economic growth rates will have a profound effect if sustained and complex over time. For example, an economy growing at an annual rate of 1% over 50 years will see GDP per capita grow by a total of 64%, from 100 to 164 in this example. However, a country growing at an annual rate of 5% will see (almost) the same amount of growth – from 100 to 163 – over just 10 years. Rapid economic growth rates can bring profound transformation. (See the following Clear It Up feature on the relationship between complex growth rates and compound interest rates.) If the growth rate is 8%, young adults starting at age 20 will see their country's average standard of living more than double by the time they are 30 and grow nearly sevenfold by the age of 45. Table 7.3 GDP growth in the different Time HorizonClear It UpHow are complex growth rates and compound interest rates linked? The formula for GDP growth rates over different time periods, as shown in figure 7.3, is exactly the same as the formula for growing a certain amount of financial savings at a certain interest rate over time, as shown in Choice in a World of Scaries. Both formulas have the same ingredients: the original initial amount, in one case GDP, and in the other the amount of financial savings;percentage increase over time, in one case the GDP growth rate, and in the other the interest rate;and the amount of time during which this effect occurs. Remember that a complex interest is an interest that is easusing on past interest rates. This causes the total amount of financial savings to rise dramatically over time. Similarly, complex rates of growth, i.e. a complex growth rate, means that the growth rate is multiplied by a base that includes past GDP growth, with dramatic effects over time. In 2013, for example, the World Fact Book, produced by the Central Intelligence Agency, reported that South Korea had a GDP of $1.67 trillion with a growth rate of 2.8 percent. We can estimate that at this rate of growth, South Korea's GDP will be $1.92 trillion in five years. If we apply the growth rate to the annual end GDP for the next five years, we will calculate that at the end of the year one, GDP is $1.72 trillion. In the second year, we start with one value of $1.67 and increase it by 2%. Year three starts with the end of the year two GDP, and we increase it by 2% and so on, as shown in Table 7.4. Table 7.4 The only way to calculate the growth rate is to apply the following formula:Where the future value of GDP is five years therefore, the present value is the initial GDP amount of $1.64 trillion, g is the growth rate of 2%, and n is the number of periods for which we calculate growth.7.3 | Components of economic growthIssuching the end of this section, you will be able to:Discuss components of economic growth, including physical capital, human capital and technologyIssing capital and its significanceAnalysis methods used in accounting studies of economic growth Identification of factors contributing to a healthy climate for economic growthOver for decades and generations, seemingly small differences of several percentage points in the annual rate of economic growth make a huge difference in GDP per capita. In this module, we discuss some components of economic growth, including physical capital, human capital and technology. The physical capital category includes the plant and equipment used by companies, as well as things such as roads (also called infrastructure). Again, higher physical capital implies more production. Physical capital can affect productivity in two ways: (1) increasing the amount of physical capital (for example, multiple computers of the same quality); and (2) increasing the quality of physical capital (the same number of computers, but computers are faster and so on). Human capital and physical accumulation of capital are similar: In both cases, investment now pays off in longer-term productivity in the future. The technology category is the joker on deck. Earlier, we described it as a combination of invention and innovation. When most people are thinking about new technology, the invention of new products like lasers, smartphones or some new miracle cure comes to mind. In food production, the development of seeds more residual to the driest is another example of technology. Technology, as economists use the term, however, includes even more. Includes new ways to organise work, such as the invention of the assembly new methods to ensure better production quality in factories and innovative institutions that facilitate the process of converting inputs into production. In short, technology encompasses all the advances that make existing machines and other inputs better, as well as brand new products. There may be no point comparing Chinese GPs and saying, Benin, simply because of the large difference in population size. To understand economic growth, which is really concerned with the growth of the living standards of the average person, it is often useful to focus on GDP per capita. Using GDP per capita also makes it easier to compare countries with smaller numbers of people, such as Belgium, Uruguay or Zimbabwe, with countries that have larger populations, such as the United States, the Russian Federation or Nigeria.To which receive a per capita production function, share each contribution in Figure 7.2 (a) with the population. This creates a second aggregate production function in which GDP per capita production (i.e. GDP is divided by population). Contributions are the average level of human capital per person, the average level of physical capital per person and the level of technology per person – see Figure 7.2 (b). The result of the population in the denominter is mathematically appealing. Population increase lower per capita. However, population increase is only important for the average person if the rate of income growth exceeds population growth. A more important reason for building a production function per capita is understanding the contribution of human and physical capital. Capital DeepeningAs a company increases the level of capital per person, the result is called deepening capital. The idea of deepening capital can be applied to both additional human capital per worker and additional physical capital per worker. Recall that one way to measure human capital is to look at average levels of education in the economy. Figure 7.5 illustrates the deepening of human capital for American workers by showing that the share of the U.S. population with a high school and college degree is growing. In 1970, for example, only about half of U.S. adults had at least a high school diploma; By the beginning of the twenty-first century, more than 80% of adults had graduated from high school. The idea of deepening human capital also applies to the years of experience that workers have, but the average level of experience of American workers has not changed much in recent decades. Therefore, the key dimension of deepening human capital in the US economy focuses more on additional education and training than on a higher average level of work experience. Figure 7.5 Human capital deepens in the U.S. Rising levels of education for people 25 and older show deepening human capital in the U.S. economy. Even today, relatively few adults completed a four-year college degree. It is clear that there is scope for further deepening of human capital. (Source: U.S. Department of Education, National Center for Education Statistics) The physical deepening of capital in the US economy is shown at 7.6. The average U.S. worker in the late 2000s worked with physical capital worth nearly three times the average worker in the early 1950s. The increase may have leveled off a bit in the 1970s and 1980s, which were not, coincidentally, times of slower-than-usual growth in worker productivity. We see a renewed increase in physical capital per worker in the late 1990s, followed by flattening in the early 2000s. (Source: Center for International Production, Revenue and Price Comparisons, University of Pennsylvania) Not only does the current U.S. economy have better-educated workers with more and improved physical capital than they did decades ago, but these workers have access to more advanced technologies. The growth of technology is impossible to measure with a simple line on the chart, but the evidence that we live in an age of technological wonders is all around us – discoveries in the genetics and structure of particles, wireless internet and other inventions are almost too numerous to count. The U.S. Patent and Trademark Office has typically issued more than 150,000 patents a year in recent years. This recipe for economic growth – investing in labour productivity, investing in human capital and technology, as well as increasing physical capital – also applies to other economies. In South Korea, for example, universal primary school enrollment (the equivalent of kindergarten by sixth grade in the United States) was already realized by 1965, when Korea's GDP per capita was still near its lowest rock bottom level. By the late 1980s, Korea had achieved near universal secondary education (the equivalent of secondary education in the United States). In terms of physical capital, investment rates in Korea were about 15% of GDP at the beginning of the 1960s, but doubled to 30-35% of GDP by the late 1960s and early 1970s. In terms of technology, South Korean students went to universities and colleges around the world to receive scientific and technical training, and South Korean companies reached out to study and form partnerships with companies that could offer them technological insights. Together, these factors have fuelled South Korea's high economic growth rate. Bookkeeping growth studiesSince in the late 1950s, economists conducted accounting growth studies to determine the extent to which physical and human capital technology has contributed to growth. The usual approach uses the aggregate function of production to estimate how much economic growth per capita can be attributed to the growth of physical capital and human capital. Those two entrances can be measured, at least approximately. Some of the growth that is inexplicable by the measured inputs, called remaining, is then attributed to the growth of technology. Accurate numerical estimates vary from study to study and from country to country, depending on how the researchers measured these three main factors during which time horizons. For studies of the U.S. economy, three lessons typically stem from accounting growth studies. First, technology tends to contribute the most to U.S. economic growth. The growth of human capital and physical capital often explains only half or less of the economic growth that is happening. New ways of doing things are tremendously important. Second, while investing in physical capital is key to labour productivity and GDP per capita growth, building human capital is at least as important. Economic growth is not just a matter of more machinery and buildings. One vivid example of the power of human capital and technological knowledge occurred in Europe in the years after World War II (1939-45). During the war, much of Europe's physical capital, such as factories, roads and vehicles, was destroyed. Europe has also lost an enormous amount of human capital in the form of millions of men, women and children who died during the war. However, a strong combination of skilled workers and technological know-how, working in a market-oriented economic framework, has restored Europe's production capacity to an even higher level within less than two decades. The third lesson is that these three factors of human capital, physical capital and technology work together. Workers with higher levels of education and skills often come in better at new technological innovations. These technological innovations are often ideas that cannot increase production until they become part of new investments in physical capital. New machines that embody technological innovation often require additional training, further building workers' skills. If the recipe for economic growth is to succeed, the economy needs all the ingredients of the aggregate production function. See the following Clear It Up feature for an example of how human capital, physical capital, and technology can be combined to significantly impact lives. Clear It UpHow do girls' education and economic growth relate in low-income countries? In the early 2000s, according to the World Bank, around 110 million children aged between 6 and 11 were out of school – and about two-thirds of them were girls. In Bangladesh, for example, the illisibility rate for those aged 15-24 was 78% for women compared to 75% for men. In Egypt, for this age group, illiance was 84% for women and 91% for men. Cambodia had 86% illiteracy for women and 88% for men. Nigeria had 66% illivity for women in the 15 to 24 age group and 78% for men. Whenever any child doesn't get a primary education, it's both a human and an economic loss. In low-income countries, wages typically increase by an average of 10 to 20% with each additional year of education. However, there is some intriguing evidence that helping girls in low-income countries close the education gap with boys could be particularly important, because of the social role many girls will play as mothers and housewives. Girls in low-income countries that receive more education tend to grow up and have fewer, healthier and better educated children. Their children are more likely to be better fed and given basic health care such as immunisations. Economic research on women in low-income economies backs up these findings. When 20 women receive one additional year of schooling, as a group, on average, they will have one less child. When 1,000 women receive one additional year of schooling, on average one to two fewer women in that group will die in childbirth. When a woman stays in school for an extra year, only this factor means that, on average, each of her children will spend an additional half year in school. Education for girls is a good investment because it is an investment in economic growth with advantages beyond the current generation. A healthy climate for economic growth Although physical and human deepening of capital and better technology are important, equally important for the well-being of the nation is the climate or system within which these entries are grown. Both the type of market economy and the legal system governing and maintaining property rights and contractual rights are an important contribution to a healthy economic climate. A healthy economic climate usually involves some kind of market orientation at a microeconomic, individual or solid level of decision-making. Markets that provide personal and business rewards and incentives to increase human and physical capital drive overall macroeconomic growth. For example, when workers participate in a competitive and functioning labour market, they have an incentive to acquire additional human capital, as additional education and skills will pay off in higher wages. Companies have an incentive to invest in physical capital and in training workers, as they expect to earn more profits for their shareholders. Both individuals and companies are looking for new technologies, because even small inventions can make it easier to work or lead to product improvements. Collectively, such individual and business decisions taken within the market structure constitute macroeconomic growth. Much of the rapid growth since the late nineteenth century harnessing the power of competitive markets to allocate resources. This market orientation usually transcends national borders and involves openness to international trade. General orientation towards markets does not exclude important government roles. There are times when markets do not allocate capital or technology in a way that provides the greatest benefit to society as a whole. The role of government is to correct these failures. In addition, the government may lead or influence markets according to certain outcomes. The following examples highlight some important areas in which governments around the world have chosen to invest to facilitate capital deepening and technology:Education. The Danish government requires all children under the age of 16 to attend school. They can choose to attend a public school (Folkeskole) or a private school. Students don't pay tuition to participate in Folkeskole. Thirteen percent of primary/secondary (primary/secondary) school is private, and the government procures vouchers to citizens who choose a private school. Savings and investments. In the United States, as in other countries, private investment is taxed. Taxes on low capital gains stimulate investment, including economic growth. Infrastructure. The Japanese government undertood significant infrastructure projects to improve roads and public works in the mid-1990s. This in turn increased physical capital stocks and ultimately economic growth. Special economic zones. The island of Mauritius is one of the few African countries that encourages government-backed international trade in special economic zones (SEZ). These are areas of the country, usually with access to a port where, among other things, the government does not tax trade. As a result of its SEZ, Mauritius has enjoyed above-average economic growth since the 1980s. However, free trade does not have to take place in sez. Governments can encourage international trade at all levels or surrender to protectionism. Scientific research. The European Union has strong programmes to invest in scientific research. Researchers Abraham García and Pierre Mohnen show that companies backed by the Austrian government actually increased their research intensity and had higher sales. Governments can support scientific research and technical training that helps create and disseminate new technologies. Governments can also provide a legal environment that protects an inventor's ability to profit from their inventions. There are many other ways in which the government can play an active role in promoting economic growth; we explore them in other chapters, in particular macroeconomic policy around the world. A healthy climate for GDP growth per capita and labour productivity include deepening human capital, deepening physical capital and technological gains acting market-oriented supported by government policies.7.4 | Economic convergence At the end of this section you will be able to:Explain the economic convergenceAnalyza different arguments for and against economic convergenceEvalue the rate of economic convergence between high-income countries and the rest of the worldSome low- and middle-income economies around the world have shown a pattern of convergence, in which their economies are growing faster than those in high-income countries. GDP increased by an average rate of 2.7% annually in the 1990s and 2.3% annually from 2000 to 2008 in high-income countries in the world, which include the United States, Canada, European Union countries, Japan, Australia and New Zealand.Table 7.5 lists 10 countries in the world belonging to an informal rapid growth club. On average, these countries had GDP growth (after adjusting for inflation) of at least 5% a year for both time periods from 1990 to 2013. As economic growth in these countries has exceeded the average of the world's high-income economies, these countries can converate with high-income countries. The second part of Table 7.5 lists the slow growth club, which consists of countries that average GDP growth of 2% a year or less (after adjusting for inflation) over the same period of time. The last section of Table 7.5 shows GDP growth rates for countries in the world divided by income. Table 7.5 Economic Growth Worldwide (Source: variableSelection/selectvariables.aspx?source=world-development-indicators#c_u)Each of the countries in Table 7.5 has its own unique story of investments in human and physical capital, technological gains, market forces, government policies and even happy events, but the general pattern of convergence is clear. Low-income countries have GDP growth that is faster than that of middle-income countries, which in turn have GDP growth that is faster than that of high-income countries. Two prominent members of the fast-growing club are China and India, which between them have almost 40% of the world's population. Some prominent members of the slow-growth club are high-income countries like the United States, France, Germany, Italy and Japan.Will this pattern of economic convergence continue in the future? This is a controversial issue among economists that we will consider looking at some of the main arguments on both sides. Arguments conducive to convergence arguments suggest that low-income countries could have an advantage in achieving higher worker productivity and economic growth in the future. The first argument is based on a decrease in marginal yields. While deepening human and physical capital will tend to increase GDP per capita, the yield reduction law suggests that the economy continues its human and physical capital, marginal gains for economic growth will decrease. For example, raising the average level of education of the population by two years from the level of tenth grade to a secondary school diploma (with the constant holding of all other inputs) would produce some increase in production. An additional two-year increase, for the average person to have a two-year college degree, would further increase production, but marginal gains would be lower. Another additional two-year increase in education levels, so that the average person has a four-year bachelor's degree, would further increase production, but the marginal increase would again be lower. A similar lesson applies to physical capital. If the amount of physical capital available to the average worker increases, by, say, $5,000 to $10,000 (again, holding all other input constants), it will increase production levels. A further increase from $10,000 to $15,000 will further boost production, but the marginal increase will be smaller. Low-income countries like China and India tend to have lower levels of human capital and physical capital, so investing in deepening capital should have a greater marginal impact in these countries than in high-income countries, where levels of human and physical capital are already relatively high. Declining returns imply that low-income economies could converate to levels achieved by high-income countries. Another argument is that low-income countries could more easily improve their technologies than high-income countries. High-income countries have to constantly invent new technologies, while low-income countries can often find ways to apply technology that has already been invented and is well understood. Economist Alexander Gerschenkron (1904-1978) gave this phenomenon a memorable name: the benefits of backwardness. Of course, he didn't literally think it was an advantage to have a lower standard of living. He noted that the country has additional potential to come up behind it. Finally, optimists argue that many countries have looked at the experiences of those who grew and learned from it faster. Moreover, once people in the country begin to enjoy the benefits of higher living standards, they are more likely to build and support market-friendly institutions that will help deliver this standard of living. Link It UpView to this video (to learn more about economic growth around the world. Arguments that convergence is neither inevitable nor likely If the growth of the economy depended only on the deepening of human capital and physical capital, then the growth rate of this economy would be expected to slow in the long run due to the decrease in marginal yields. However, there is a key factor in the function of aggregate production: technology. The development of new technology can provide a way for the economy to bypass the deducy marginal returns of deepening capital. Figure 7.7 shows how. The horizontal figure-level wassuing measures the amount of capital deepening, which is an overall measure on this figure involving deepening both physical and human capital. The amount of human and physical capital per worker increases as you move from left to right, from C1 to C2 to C3. The vertical diagram axe measures production per capita. Start by considering the lowest line in this diagram, labeled Technology 1. Along this aggregate production function, the level of technology is kept constant, so that the line shows only the relationship between deepening capital and production. As capital deepens from C1 to C2 to C3 and the economy shifts from R to W, output per capita increases - but the way the line starts steeper on the left but then leveled as it moves to the right shows a decrease in marginal returns, as additional marginal amounts of capital deepen production increases by deduce amounts. The form of the aggregate production line (Technology 1) shows that the ability to deepen capital, in itself, to generate sustainable economic growth is limited, since yield reductions will eventually be set. Figure 7.7 Deepening capital and new technology Imagine that the economy starts at point R, with the level of physical and human capital C1 and the production per capita at G1. If the economy relies only on deepening capital while remaining at the technological level shown in the Technology 1 line, then it would face a reduction in marginal returns as it moved from point R to point R to show you at point W. However, now imagine that capital deepening combines with improvements in technology. Then, as capital deepens from C1 to C2, technology improves from technology 1 to technology 2, and the economy moves from R to S. Similarly, as capital deepens from C2 to C3, technology increases from technology 2 to technology 3, and the economy moves from S to T. With technology improvements, there is no longer any reason for economic growth to necessarily slow down. Now, bring improvements in technology to the picture. Improved technology means that with a specific set of inputs, more production is possible. The technology 1-in-number production function is based on one level of technology, but technology 2 is based on an improved level of technology, so for each level of capital deepening on the horizontal wasg, it produces a higher level of output on the vertical wasx. On the other hand, the technology 3 production function represents an even higher level of technology, so for each level of input on the horizontal aggregate production functions. Most healthy, growing economies deepen their human and physical capital while increasing technology. As a result, the economy can move from point R on the Technology 1 aggregate production line to a point such as the S on Technology 2 and a point like T on an even higher aggregate production line (Technology 3). With a combination of technology and deepening capital, GDP per capita growth in high-income countries does not have to fade due to declining returns. Gains from technology can offset the deducy returns involved in deepening capital. Will technological improvements eventually lead to a decrease in yields? That is, will it be constantly getting harder and more expensive to discover new technological improvements? Perhaps one day, but, at least during the last two centuries since the Industrial Revolution, improvements in technology have not encountered a decrease in marginal yields. Modern inventions, such as the Internet or discoveries in genetics or materials science, do not seem to provide smaller production gains than earlier inventions such as a steam engine or railway. One of the reasons tech ideas don't seem to smell of yield reduction is that ideas of new technology can often be widely applied at a marginal price that is very low or even zero. A particular additional machine or additional year of education must be used by a particular worker or group of workers. New technology or invention can be used by many workers throughout the economy at very low marginal costs. The argument that it is easier for a low-income country to copy and adapt existing technology than it is for a high-income country to invent new technology is also not necessarily true. When it comes to adapting and using new technology, the performance of society is not necessarily guaranteed, but is the result of whether the economic, educational and public political institutions of the country support it. In theory, perhaps, low-income countries have many opportunities to copy and adapt technology, but if they do not have adequate supportive economic infrastructure and institutions, the theoretical possibility that backwardness could have certain advantages is of little practical importance. Connect It UpVisit this website (to read more about economic growth in India. Slow convergence Although economic convergence between high-income countries and the rest of the world seems possible and even likely, it will continue slowly. Consider, for example, a country that starts with a GDP per capita of $40,000, which today would roughly represent a typical high-income country, and another country starting at $4,000, which is roughly the level in low-income but not impoverished countries like Indonesia, Guatemala, Egypt. Let's say the rich country has a 2% annual GDP growth rate per capita, while the poorer country is growing at an aggressive rate of 7% a year. After 30 years, gdp per capita in the wealthy country will be $72,450 (that is, $40,000 (1+0.02)30) while in a poor country it will be $30,450 (that is, $4,000 (1+0.07)30). Convergence has occurred; The rich country used to be 10 times richer than the poor, and is now only about 2.4 times richer. But even after 30 consecutive years of very rapid growth, people in a low-income country are still likely to feel pretty bad compared to people in a rich country. Moreover, as the impoverished country catches up, its opportunities to catch up with growth are diminishing, and the growth rate may slow somewhat. The slowness of convergence again illustrates that small differences in annual economic growth rates become huge differences over time. High-income countries have been building their advantage in living standards over decades – in some cases for more than a century. Even in an optimistic scenario, it will take decades for low-income countries to catch up substantially. Bring it homeCalories and economic growth The story of modern economic growth can be told by looking at calorie consumption over time. The dramatic rise in income allowed the average person to eat better and consume more calories. How did these revenues increase? The consensus on neoclassical growth uses aggregate manufacturing function to suggest that the period of modern economic growth was due to an increase in inputs such as technology and physical and human capital. Also important was the way technological progress combined with physical and human capital deepens to create growth and convergence. Regardless of the issue of income distribution, it is clear that the average worker can afford more calories in 2014 than in 1875.In addition to increasing income, there is another reason why the average person can afford more food. Modern agriculture has allowed many countries to produce more food than they need. But despite having more than enough food, many governments and multilateral agencies have not solved the problem of food distribution. In fact, food shortages, hunger or general food insecurity are more often caused by the failure of the government's macroeconomic policies, according to economist Amartya Sen. Sen, a Nobel Laureate, has conducted extensive research on issues of inequality, poverty and the government's role in improving living standards. Macroeconomic policies aiming for stable inflation, full employment, women's education and the preservation of property rights are more likely to eliminate fasting and ensure a more even distribution of food. As we have more food per capita, global food prices have declined since 1875. The (song) some foods, however, have decreased more than the prices of others. For example, researchers at the University of Washington have shown that in the United States, calories from zucchini and lettuce are 100 times more expensive than calories from oil, butter and sugar. Research from countries like India, China and the United States suggests that as incomes rise, individuals want more calories from fats and proteins and less from carbohydrates. This has very interesting implications for global food production, obesity and environmental consequences. Wealthy urban India has an obesity problem similar to many parts of the United States. The forces of convergence are at work. KEY CONCEPTSSagregе the productive function of a process in which the economy as a whole turns around economic contributions such as human capital, physical capital, and technology in production measured as GDP per capitacapital deepening of increases by society in the average level of physical and/or human capital per personcompound growth rate of growth rate when multiplied by a base that includes past GDP growth rights the right of individuals to enter into agreements with others regarding the use of their assets providing recourse through the legal system in the legal system. a non-compliation event in which low-income economies per capita grow faster than high-income economies per capita, accumulated skills and worker education Industrial revolution is a widespread use of energy-powered machinery and economic and social changes that occurred in the first half of the 1800sinfrastructure of the physical capital component such as roads. , railway systems, and thus the oninnovation of putting advances in knowledge for use in a new product or serviceinvention advances in knowledge productivity value of what is produced per worker, or hourly radio (sometimes called worker productivity)modern economic growth period of rapid economic growth since 1870 nawardphysical capital plants and equipment used by companies in manufacturing; This includes the infrastructure function of the process by which a company converts economic inputs such as labor force, machinery and raw materials into products such as goods and services used by consumers who use the law to pass laws that protect individual and entity rights to use their assets as they see fit. Laws must be clear, public, fair and enforced and applicable to all members of the Social Economic Zone (SEZ) area of the country, usually with access to a port where, among other things, the government does not tax a trade-technological change in the combination of inventions - advances in knowledge - and innovation technologies of all ways in which existing inputs produce higher or higher quality, as well as different and completely new productsKEY CONCEPTS AND SUMMARY7.1 The recent arrival of economic growthSince at the beginning of the nineteenth century, there was a spectacular process of long-term economic growth during which the world's leading economies - mainly those in Western Europe and North America - expanded GDP per capita at an average rate of about 2% per year. In the last half century, countries such as Japan, South Korea and China have shown the potential to catch up. The extensive process of economic growth, often referred to as modern economic growth, is facilitated by the Industrial Revolution, which has increased the productivity and trade of workers, as well as the development of management and market institutions.7.2 Labour productivity and economic growth productivityProductivity, the value of what is produced per worker, or per hour of work, can be measured as the level of GDP per worker or GDP per hour. The United States experienced a slowdown in productivity between 1973 and 1980. Since then, U.S. productivity has recovered (regardless of the current global recession). It is not clear whether current productivity growth will be sustained. The rate of productivity growth is the primary determinant of the rate of long-term economic growth of the economy and higher wages. Over decades and generations, seemingly small differences of a few percentage points in the annual economic growth rate make a huge difference to GDP per capita. The overall function of production determines how certain contributions in the economy, such as human capital, physical capital and technology, lead to output as measured as GDP per capita. Compound interest rates and complex growth rates behave in the same way as productivity rates. Seemingly small changes in percentage points can have major impacts on income over time.7.3 Components of economic growthOver decades and generations, seemingly small differences of a few percentage points in the annual rate of economic growth make a huge difference in GDP per capita. Capital deepening refers to an increase in the amount of capital per worker, whether human capital per worker, in the form of higher education or skills, or physical capital per worker. Technology, in its economic sense, largely refers to all new production methods, which includes large scientific inventions as well as small inventions and even better forms of governance or other types of institutions. A healthy climate for GDP per capita growth consists of improving human capital, physical capital and technology in a market-oriented environment with supportive public policies and institutions. When countries with lower LEVELS of GDP per capita reach countries with higher levels of GDP per capita, the process is called convergence. Convergence can occur even when both high- and low-income countries increase investments in physical and human capital with a view to GDP growth. This is because the impact of New investments in physical and human capital in a low-income country can result in huge gains as new skills or equipment are combined with the workforce. In higher-income countries, however, an investment level equal to that of a low-income country is unlikely to have such a big impact, as a more developed country is most likely to have a high level of capital investment. Therefore, the marginal gain on this additional investment is usually successively decreasing. Higher-income countries are more likely to have reduced returns on their investments and have to continuously invent new technologies; this allows lower-income economies to have the opportunity for convergent growth. However, many high-income economies have developed economic and political institutions that provide a healthy economic climate for the ongoing flow of technological innovation. Continuous technological innovation can counterbalance the reduction of returns on investments in human and physical capital. SELF-ENTRUST QUESTIONS Questions 7.1Expede what the Industrial Revolution was and where it began. Click here to see AnswerQuestion 7.2Explain difference between property rights and contractual rights. Why are they important for economic growth? Click here to see AnswerQuestion 7.3Are there are other ways we can measure productivity besides the amount produced per hour of operation? Click here to see AnswerQuestion 7.4Assume there are two countries: South Korea and the United States. South Korea rises to 4% and the United States rises to 1%. For simplicity's sake, let's assume they both start at the same fictitious income level, $10,000. What will the U.S. and South Korean revenues be in 20 years? How many multiples will each country's revenues grow in 20 years? Click here to see AnswerQuestion 7.5This conclusion of accounting growth studies growth determinants? What is more important, determinants or how do they combine? Click here to see the AnswerQuestion 7.6What policy that a free market economy government can implement to boost economic growth? Click here to see the AnswerQuestion 7.7What policy that a free market economy government can implement to boost economic growth? Click here to see an example of AnswerQuestion 7.8Use to explain why, after a period of rapid growth, a low-income country that has not sussed up a high-income country may feel bad. Click here to see AnswerQuestion 7.9The latest events usually lead to a deepening of capital? Why or why not? A. A weak economy where companies are reluctant to make long-term investments in physical capital. B. The rise of international trade. c. A trend in which many more adults participate in the continuation of educational courses through their employers and at faculties and universities. Click here to see AnswerQuestion backlog for economic growth? Click here to see AnswerQuestion 7.11Would you expect capital deepening to result in reduced returns? Why or why not? Do you expect improvements in technology to result in reduced returns? Why or why not? Click here to see AnswerQuestion 7.12 Why is productivity growth in high-income economies not slowing as it moves to reduce returns from additional investments in physical capital and human capital? Does this show one area where yield reduction theory does not apply? Why or why not? Click here to see AnswerREVIEW QUESTIONSQuestion 7.13How has the Industrial Revolution increased the rate of economic growth and income levels in the United States? Click here to see AnswerQuestion 7.14How should the nation be concerned if its economic growth rate is only 2% slower than other nations? Click here to see AnswerQuestion 7.15How does GDP per capita calculate differently from labour productivity? Click here to see AnswerQuestion 7.16How gains in labour productivity lead to an increase in GDP per capita? Click here to see AnswerQuestion 7.17This is the aggregate production function? Click here to see AnswerQuestion 7.18This deepens capital? Click here to see AnswerQuestion 7.19 What do economists think when it comes to technology improvements? Click here to see AnswerQuestion 7.20For a high-income economy like the United States, which elements of aggregate manufacturing function are most important in bringing GDP growth per capita? What about a middle-income country like Brazil? A low-income country like Niger? Click here to see AnswerQuestion 7.21List some arguments for and against the likelihood of convergence. Click here to see answerCritical THINKING QUESTIONSQuestion 7.22 Over the past 50 years, many countries have experienced an annual growth rate of real GDP per capita higher than the growth rate in the United States. Some examples are China, Japan, South Korea and Taiwan. Does that mean the United States is going backwards to other countries? Does this mean that these countries will eventually overtake the United States at the rate of real GDP growth per capita? Explain.Click here to see AnswerQuestion 7.23Labor Productivity and economic growth has outlined the logic of how increased productivity is associated with increased wages. Describe in detail the situation in which this is not the case and explain why it is not. Click here to see AnswerQuestion 7.24Change in Labour Productivity is one of the most watched international growth statistics. Visit the St. Louis Federal Reserve website and find the data section ( ). Find comparisons of labour productivity, listed in the Fred Economic Database (Overall Labour Productivity Growth Rate) and compare the two countries in the recent past. Get what you are reasons for differences in labour productivity may be. Click here to see AnswerQuestion 7.25Refer back in Work It Out about comparing the economies of the two countries and review the data for the two countries you selected. How are they alike? By which are they different? Click here to see AnswerQuestion 7.26Education seems to be important for deepening human capital. As people become better educated and more educated, are there limits to how much additional benefits more education can provide? Why or why not? Click here to see AnswerQuestion 7.27 Write some of the political and social compromises that could happen when a less developed country adopts a strategy to promote workforce participation and economic growth through investment in girls' education. Click here to see AnswerQuestion 7.28For why is it investing in the education of girls useful for growth? Click here to see AnswerQuestion 7.29How is the concept of technology, defined by aggregate manufacturing function, different from our daily use of words? Click here to see AnswerQuestion 7.30Ono the types of policies governments can implement to encourage convergence? Click here to see AnswerQuestion 7.31As technological changes makes us more sedentary and food costs increase, obesity is likely. What factors do you think can limit obesity? Click here to see AnswerPROBLEMSQuestion 7.32A economy starts with GDP per capita of $5,000. What will the GDP per capita be if it grows at an annual rate of 2% for 20 years? 2% in 40 years? 4% in 40 years? 6% in 40 years? Click here to see AnswerQuestion 7.33A economy starts with GDP per capita of 12,000 euros. What will the GDP per capita be if it grows at an annual rate of 3% for 10 years? 3% in 30 years? 6% in 30 years? Click here to see AnswerQuestion 7.34Say that the average worker in Canada has a productivity level of $30 per hour, while the average UK worker has a productivity level of $25 per hour (both measured in US dollars). Over the next five years, let's say worker productivity in Canada is growing at 1% a year, while worker productivity in the UK is growing at 3% a year. After five years, who will have a higher level of productivity, and by how much? Click here to see AnswerQuestion 7.35Say that the average worker in the U.S. economy is eight times more productive than the average worker in Mexico. If the productivity of American workers rises to 2% for 25 years and the productivity of Mexican workers rises to 6% in 25 years, which country will have higher worker productivity at that point? Click here to see AnswerAnswersAnswer on question 7.1 The Industrial Revolution refers to the widespread use of energy-powered machines and the economic and social changes the first half of the 1800s. Ingenious machines – steam engine, power and steam loom tasks for which a large number of workers would be taken. The Industrial Revolution began in the UK and soon spread to the United States, Germany and other countries. Click here to return to question 7.1Answer when asked 7.2Property are the rights of individuals and companies to own property and use it as they see fit. Contractual rights are based on property rights and allow individuals to make arrangements with others regarding the use of their property that provides recourse through the legal system in case of non-compliance with others. Economic growth occurs when living standards increase in the economy, which is what happens when production increases and incomes rise. For this to happen, companies must create a legal environment that gives individuals the opportunity to use their assets for the most and most advantage, including the right to trade or sell those assets. Without a legal system implementing contracts, people would probably not enter into contracts for current or future services because of the risk of non-payment. This would hamper business and slow economic growth. Click here to return to question 7.2Answer on question 7.3Yes. Since productivity is production per unit of input, we can measure productivity using GDP (output) per worker (input). Click here to return to question 7.3Answer on question 7.4In 20 years the United States will have revenue of 10,000 × (1 + 0.01)20 = $12,201.90, and South Korea will have revenue of 10,000 × (1 + 0.04)20 = $21,911.23. South Korea has grown by multiple 2.1 and the United States by multiple 1.2.Click here to return to question 7.4Answer on question 7.5Capitous deepening and technology are important. What seems more important is how they combine. Click here to return to question 7.5Swer to Question 7.6Government can contribute to economic growth by investing in human capital through the education system, building a strong physical transportation and trade infrastructure, increasing investment by reducing capital gains taxes, creating special economic zones that allow reduced tariffs, and investing in R&D. Click here to return to question 7.6Answer to Question 7.7Public education, low investment taxes, funding for infrastructure projects, special economic zonesClick here to return to Question 7.7Answer to Question 7.8A good way to think about this is how a runner who's fallen behind in a race feelsly and physical as he is co-hosting. Playing catch-up can be more taxing than maintaining a position at the head of the pack. Click here to return to question 7.8Answer on question 7.9a. no. Capital deepening refers to an increase in the amount of capital per person in the economy. The reduction in corporate investment will actually cause the opposite of a deepening of capital (as will grow over time) .b. There is no direct link between both increasing international trade and deepening capital. One might imagine certain scenarios in which trade could lead to a deepening of capital (for example, if the international capital inflow that is counterpart to increasing the trade deficit) lead to an increase in investment in physical capital), but generally not.c. I do. Capital deepening refers to an increase in physical capital or human capital per person. Continuing education or any time of lifelong learning contributes to human capital, thereby creating a deepening of capital. Click here to return to question 7.9Answer on question 7.10 The benefits of backwardness include faster growth rates due to the convergence process, as well as the ability to adopt new technologies that were developed first in leader countries. While being backwards is not a good thing in itself, Gerschenkron stressed that there are certain benefits that countries are trying to catch up with. Click here to return to question 7.10Answer on question 7.11Capital deepening, by definition, should lead to reduced returns as you invest more and more but use the same production methods, leading to a decrease in marginal productivity. This is shown on the production function as a movement along the curve. Improvements in technology should not lead to reduced returns as you find new and more efficient ways to use the same amount of capital. This can be illustrated as a shift up the production function curve. Click here to return to Question 7.11Answer on question 7.12 The growth of productivity from new advances in technology will not slow down as new production methods will be adopted relatively quickly and easily, at a very low marginal cost. Also, countries that see the growth of technology typically have a huge and powerful set of institutions to train workers and build better machines, allowing the maximum amount of people to benefit from new technology. These factors have the added impact of even greater technological progress for these countries. Click here to return to question 7.12Answer on question 7.13Answer's resushing of mass production has allowed workers a greater degree of specialization, which increased the efficiency and gains of tradeClick here to return to question 7.13Answer on question 7.14In the long run, the 2% difference in economic growth rates can be extremely significant, so tenation should be reasonably concerned about thisClick here to return to question 7.14Answer on question 7.15 The amount a worker can produce and that workers' incomes are not always exactly the same, so that these numbers may vary. Click here to return to question 7.15Answer on question 7.16 As workers produce more, their wages will rise and they will have more disposable income which leads to an increase in GDP per capita. Click here to return to question 7.16Answer to Question 7.17A aggregate production function describes the output of the entire economy based on various inputs such as capital, labor and technology. Click here to return to question 7.17Answer on question 7.18 Deepening capital is when capital increases relative to the number of workers, which allows workers to become more productive. Click here to return to question 7.18Answer on question 7.19Nex machines or techniques that improve labor productivity, or which can be mistaken for laborClick here to return to question 7.19Answer on question 7.20 Countries with incomes typically benefit the most from the growth of human capital, while middle- and lower income countries benefit more from physical capital, since a little mechanization can go a long way for countries still developingClick here to return to the question 7.20Answer when asked 7.21Convergence is likely to occur due to a dedily marginal return to education. Implementing fundamental reforms can lead to huge growth surges for developing countries, but an already developed country will already pick low-hanging fruit and will find it harder to achieve rapid growth. Convergence, on the other hand, has only testified to a limited extent in the real world, and there is a case that the factors that make the country poor or rich are more innate than just a product of changes in public policy. In addition, continuous technological innovation can prevent marginal yields from decreasing, which also prevents convergence. Click here to return to question 7.21Answer when asked 7.22Some models show that as a country it industrializes, it experiences very high growth rates that eventually level off. In all likelihood, these countries are simply suffoting the US and will see their growth rates drop as they are fully industrialised. Click here to return to question 7.22Answer on question 7.23In cases where increased productivity reduces the skill required to perform a task, the market for workers in a particular industry can suddenly see a big increase in supply, leading to lower wages due to higher competition. Click here to return to question 7.23Answer on question 7.24Exercise left to student. Click here to return to question 7.24Answer on question 7.25Exercise left to the student. Click here to return to question 7.25Answer on question 7.26In the short term there are certainly limitations to increasing productivity from education, but in the long run as human knowledge improves these limits may become less pronounced. Click here to return to question 7.26Swer on question 7.27 There could not be many different consequences depending on the situation, but for less developed countries one option is difficulty in and child-rearing in the environment in which both sexes work. There are also social norms and prejudices to overcome that could make such a strategy less effective than it otherwise would be. Click here to return to question 7.27Answer on question 7.28A a more educated population is more productive, meaning they can produce more, earn more and consumers more, which is all good for growth. There is no reason to expect intelligence to be found in men, but not in women, so a nation that does not educate women has renounced half the intelligence in its population. In addition, there is some evidence that women's education performs better for family health and education. Click here to return to question 7.28Answer to Question 7.29Technology refers to any type of process that improves productivity. It does not have to be mechanical or electronic for the technologyClick to be considered here to return to question 7.29Swer when asked 7.30Developmental countries should implement rapidly growth-boosting reforms, such as better protection of private property and the transition from agriculture to industry. Developed nations can help by fostering peaceful, uncorrupted institutions in other countries that can drive growth. Click here to return to question 7.30Answer on question 7.31 Increased education will limit obesity as well as increased wealth that allows us to afford healthier foods and more free time for physical activity. Click here to return to question 7.31Answer on question 7.32 $5000 x 1.02^20 = $7429.74$5000 x 1.02^40 = $11,040.. 20$5000 x 1.06^40 = $51,428.59Click here to return to question 7.32Answer on question 7.3312,000 x 1.03^10 = 116,127 euros12,000 x 1.03^30 = 29,127 euros12,000 x 1.06^30 = 68,922 eurosClick here to return to question 7.33Ans 30 x 1.01^5 = 31.53 USD per hour, and uk worker productivity will be 25 x 1.03^5 = 28.98 USD per hour. Click here to return to question 7.34Answer on question 7.35 If the Mexican worker's M productivity is initially, then eventually for 25 years the Mexican worker will have productivity M x 1.06^25 = 4.3M. A worker in the US will have productivity of 8M x 1.02^25 = 13.1M. So U.S. worker productivity will be just over three times higher than Mexican productivity at the end of the 25 years. Click here to return to Question 7.35 Download for free at 11.12.Page 5 Figure 9.1 This account was worth 100 billion Zimbabwean dollars when it was issued in 2008. There were even bills with a nominal value of 100 trillion Zimbabwean dollars. The bills said $100,000,000,000,000,000. Unfortunately, they were almost worthless. At one point 621,984,228 Zimbabwean dollars were one U.S. dollar. In the end, the country abandoned its own currency and allowed foreign foreign which will be used for purchase. (Credit: Modification of Samantha Marx/Flickr Creative Commons Work) Chapter Outline9.2 How are changes in the cost of living measured9.3 How does the US and other countries experience inflation9.4 Confusion over inflation9.5 Indexing and its limitationsBring it HomeA $550 Million loaf of bread? If you were born in the last three decades in the United States, Canada or many other countries in the developed world, you probably don't have real experience with a high inflation rate. Inflation is when most prices across the economy are rising. But there is an extreme form of inflation called hyperinflation. This happened in Germany between 1921 and 1928, and more recently in Zimbabwe between 2008 and 2009. In November 2008, he was sentenced to 10 years in prison. By contrast, the United States had an average annual inflation rate of 1.6 percent in 2014. The inflation rate in Zimbabwe was so high that it is difficult to fathom. Let's put it in context. This is the equivalent of a price increase of 98% per day. This means that, day by day, prices essentially double. How is life in an economy plagued by hyperinflation? Not like anything you're familiar with. Commodity prices in Zimbabwean dollars are adjusted several times each day. There was no desire to stick to the currency because it lost value by the minute. People there spent a lot of time getting rid of any cash they gained from buying any food or other goods they could find. At one point a loaf of bread cost 550 million Zimbabwean dollars. Teachers were paid in the bilians per month; however, this was equivalent to only one US dollar per day. At its peak it took 621,984,228 Zimbabwean dollars to buy one US dollar. Government agencies didn't have the money to pay their workers, so they started printing money to pay the bills instead of raising taxes. Rising prices have prompted the government to implement price controls on private companies, leading to shortages and the emergence of black markets. In 2009, the country was awarded the 2008 World Cup. How did that happen? How can both the government and the economy not function to the most basic level? Before we consider these extreme cases of hyperinflation, let's first look at inflation itself. Introduction to inflationIn this chapter, you will learn about:Inflation monitoringHow changes in the cost of living Are measuredHow the US and other countries experience inflation Confusion about inflationIndexing and its limitationsInflation is a general and sustained rise in price levels throughout the economy. Inflation is not about changing relative prices. The relative price change happens when you see the price of tuition go up, but the price of laptops has dropped. Inflation, on which means that there is pressure for prices to rise in most markets in the economy. In addition, price increases in the supply and demand model were events that represented a shift from the previous equilibrium to the new one. Inflation implies a steady rise in prices. If inflation happened for a year and then stopped – well, then it would no longer be inflation. This chapter begins by showing how to combine the prices of individual goods and services to create a measure of headline inflation. It talks about the historical and recent experience of inflation, both in the United States and in other countries around the world. Other chapters sometimes included a message under the exhibition or a parentheal reminder in the text stating that the numbers were adjusted for inflation. In this chapter, it's time to show how to use inflation statistics to adjust other economic variables, so you can tell how much, say, GDP growth in different 20s can be attributed to the actual increase in production of goods and services and how much should be attributed to the fact that prices for most things have gone up. Inflation has implications for people and businesses across the economy, in their roles as lenders and borrowers, wage earners, taxpayers and consumers. The chapter concludes with a discussion on some imperfections and biases in inflation statistics, and a review of anti-inflation policies to be discussed in other chapters.9.1 | Inflation trackingAs the end of this section, you will be able to:Calculate the annual inflation rateExplace and use the index and base year numbers when simplifying the total amount spent more than a year for productsCalculated inflation rates using index numbersDinner table conversations in which you may have heard about inflation usually entail remembering when everything seemed to cost much less. You used to be able to buy three gallons of gasoline for a dollar and then go see an afternoon movie for another dollar. Table 9.1 compares some common goods prices in 1970. Of course, the average prices shown in this table may not reflect the prices you live in. The cost of living in New York city is much higher than in Houston, Texas, for example. In addition, certain products have evolved over recent decades. A new car in 2014, loaded with anti-nuclear equipment, safety equipment, computerized engine controls and many other technological advances, is a more advanced machine (and more fuel efficient) than your typical 1970s car. However, put details like these to one side for now and look at the overall pattern. The primary reason for the price rises in Table 9.1 – and any price increases for other products in the economy – is not specific to the housing or car or petrol or film ticket market. Instead, it is part of the general at the level of all prices. In 2014, $1 had roughly the same purchasing power in the total amount of goods and services as 18 cents did in 1972, due to the amount of inflation that occurred during that time period. Table 9.1 Price comparisons, 1970 Moreover, the power of inflation affects not only goods and services, but also wages and income levels. The last row of Table 9.1 shows that the average hourly wage for a production worker has increased almost sixfold since 1970. Of course, the average worker in 2014 was better educated and more productive than the average worker in the 1970s - but not six times more productive. Of course, GDP per capita increased significantly from 1970 to 2014, but is the average person in the US economy really more than eight times better off in just 44 years? It's not likely. The modern economy has millions of goods and services whose prices continuously tremble in the breeze of supply and demand. How can all these price changes be reduced to a single inflation rate? As with many economic measurement problems, the conceptual answer is reasonably simple: Prices of various goods and services are combined into a single level of prices; inflation rate is simply a percentage change in price levels. However, the application of the concept involves some practical difficulties. The price of a basket of goodsIt you calculate the price level, economists begin with the concept of a basket of goods and services, consisting of different items that individuals, companies or organizations usually buy. The next step is to look at how the prices of these items change over time. Thinking about how to combine individual prices into the overall price level, many people consider their first impulse to calculate the price average. However, such a calculation can easily be misleading because some products are more important than others. Changes in commodity prices for which people spend much of their income will be more important than changes in commodity prices for which people spend a smaller part of their income. For example, a 10% increase in the rental rate on housing is more important to most people than whether the price of carrots rises by 10%. To construct an overall price level measure, economists calculate the weighted average of the prices of items in the basket, where weights are based on the actual quantities of goods and services that people buy. The following Work It Out feature guides you through the steps to calculate your annual inflation rate based on several products. Work It OutCalculating Annual inflation rateKonsider simple basket of goods with only three items, represented in Table 9.2. Let's say that in any given month, a student spends money on 20 burgers, one bottle of aspirin and five. The prices of these items over four years are given in the table over each time period (Pd). Prices for some goods in the basket may rise while others fall. In this example, the price of aspirin does not change over four years, while movies increase in price and burgers bounce up and down. Each year, the cost of purchasing a given basket of goods at the prices prevailing at that time is shown. Table 9.2 Student Merchandise Basket To calculate the annual inflation rate in this example:Step 1. Find a percentage change in the cost of purchasing a total basket of goods between time periods. The general equation for percentage changes between two years, either in the context of inflation or in any other calculation, is: Step 2. From period 1 to period 2, the total cost of purchasing a basket of goods in Table 9.2 rises from $100 to $106.50. Therefore, the percentage change during this time - inflation rate -:Step 3. From period 2 to period 3, the overall change in basket purchase costs rises from $106.50 to $107. So the inflation rate during this time, recalculation by percentage change, is roughly: step 4. From period 3 to period 4, the total cost rises from $107 to $117.50. The inflation rate is therefore:This calculation of the change in the total cost of buying a basket of goods takes into account how much is spent on each good. Hamburgers are the lowest price good in this example, and aspirin is the highest price. If an individual buys a greater amount of good low price good, then it makes sense that changes in the price of that good should have a greater impact on that person's purchasing power of money. The greater impact of burgers is shown in the order of the quantity spent, where, in all 20 periods, hamburgers are the largest item within the amount spent. Index numbers Numerical calculation results based on a basket of goods can get a little messy. The simplified example in Table 9.2 has only three commodities, and prices are in even dollars, not numbers like 79 cents or $124.99. If the list of products was much longer, and more realistic prices were used, the total amount spent over the course of a year can be some sloppy number like $17,147.51 or $27,654.92.To simplify the task of interpreting price levels for more realistic and complex baskets of goods, the price level in each period is usually reported as an index number rather than a dollar amount to buy a basket of goods. Price indices have been created to calculate the overall average change in relative prices over time. In order to convert money spent on the basket into an index number, economists arbitrarily choose one year to be a base year, that is, the starting point from which we measure price changes. The base year, by definition, has an index number equal to 100. This sounds complicated, but it's really simple. Trick. In the example above, say that as a base year, the time period 3. Since the total amount of spending in that year is $107, we divide this amount by itself ($107) and multiply it by 100. Mathematically, it's the equivalent of splitting $107 by $100, or $1.07. Any one of them will give us an index in the base year of 100. Again, this is because the number of indices in the base year must always have a value of 100. Then, to understand the value of the number of indices for the second year, we divide the dollar amounts for other years by 1.07. Also have the dollar signs void so that index numbers do not have units. Calculations for other index number values based on the example shown in table 9.2 are shown in table 9.3. Since the index numbers are calculated to be in exactly the same proportion as the total dollar cost of buying a basket of goods, the inflation rate can be calculated based on the index numbers, using the percentage change formula. Thus, the inflation rate of 1 January 2014 was 1.5%. Table 9.3 Calculation of index numbers When the period is 3 basis years Is the inflation rate the same regardless of whether it is based on dollar values or index numbers, then why bother with index numbers? The advantage is that indexing allows for lighter eyeballs of inflation numbers. If you look at two index numbers like 107 and 110, you automatically know that the inflation rate between two years is around, but not quite equal, 3%. In contrast, imagine that price levels expressed in absolute dollars are large baskets of goods, so when you look at the data, the numbers were $19,493.62 and $20,009.32. It is difficult for most people to observe such numbers and say that this is a change of about 3%. However, the two numbers expressed in absolute dollars are exactly in the same ratio from 107 to 110 as the previous example. If you're wondering why simply subtracting index numbers wouldn't work, read the following Clear It Up feature. Clear It UpWhy don't just subtract index numbers? Word of warning: When the price index moves from, say, 107 to 110, the inflation rate is not exactly 3%. Recall, the inflation rate is not due to the deduction of index numbers, but by the calculation of percentage changes. The precise inflation rate as the price index ranges from 107 to 110 is calculated as (110-107) / 107 = 0.028 = 2.8%. When the base year is pretty close to 100, a quick take-away is not a terrible shortcut to calculating the inflation rate - but when precision matters up to a tenth of a percent, subtraction won't give the right answer. The two end points on indices are worth remembering. index numbers do not have dollar signs or other units attached to them. While index numbers can be used to calculate the percentage rate of inflation, the index numbers themselves have no percentage signs. Index numbers only reflect the proportions found in other data. They transform other data so that data is easier to work with. Secondly, the choice of the base year for the number of indices — that is, a year that is automatically set to 100 — is arbitrary. It was selected as the starting point from which price changes are tracked. In official inflation statistics, it is common to use one base year for several years and then update it, so a base year of 100 is relatively close to the present. However, each base year selected for index numbers will result in exactly the same inflation rate. To see this in the previous example, imagine that period 1, when total consumption was $100, was also selected as the base year and given with respect to the index number of 100. At first glance you can see that the index numbers would now exactly match the dollar's data, the inflation rate in the first period would be 6.5% and so on. Now that we see how indices are working to keep up with inflation, the next module will show us how the cost of living is measured. Link It UpWatch to this duck tales video (to see a mini lesson on inflation. 9.2 | As changes in the cost of living are measured At the end of this section you will be able to:Use the Consumer Price Index (CPI) to calculate U.S. inflation rates Identify several ways the Bureau of Labor Statistics avoids baises in the consumer price index (CPI)differentiate between the consumer price index (CPI), producer price index (PPI), International Price Index, Employment Cost Index, and GDP Deflator. The most frequently cited measure of inflation in the United States is the Consumer Price Index (CPI). CPI is calculated by government statisticians at the U.S. Bureau of Labor Statistics based on prices in a fixed basket of goods and services representing the purchase of the average family of four. In recent years, statisticians have paid considerable attention to a subtle problem: that changing the overall cost of buying a fixed basket of goods and services over time is conceptually not quite the same as changing living costs, because the cost of living represents how much it costs for a person to feel that their consumption provides the same level of satisfaction or utility. To understand the difference, imagine that in the past 10 years the cost of buying a fixed basket of goods has increased by 25%, and your salary has also increased by 25%. Is your personal standard of living constant? If you do not necessarily buy an identical fixed basket of goods each year, the calculation of inflation based on the a basket of goods can be a misleading measure of how your living costs have changed. Two problems arise here: replacement bias and bias in quality/new goods. When the price of a good rise, consumers tend to buy less than it and instead look for replacements. Conversely, as the price of a good fall, people will tend to buy more than that. This pattern implies that goods with generally rising prices should become less important over time in the overall basket of goods used to calculate inflation, while goods with falling prices should become more important. Consider, as an example, the rise in the price of peaches by $100 a pound. If consumers were completely inflexible in their demand for peaches, this would lead to a huge rise in the price of food for consumers. Alternatively, imagine that people are completely indifferent to whether they have peaches or other types of fruits. Now, if peach prices go up, people switch completely to other fruit choices and the average price of food doesn't change at all. A fixed and unchanged basket of goods assumes that consumers are locked into buying exactly the same goods, regardless of price changes - which is not a very likely assumption. Thus, the replacement bias - the rise in the price of a fixed basket of goods over time - tends to exaggerate the growth in the true cost of living for consumers, as it does not take into account that a person can replace goods whose relative prices have risen. Another big problem in using a fixed basket of goods as a basis for calculating inflation is how to deal with the arrival of improved versions of older goods or brand new goods. Consider the problem that arises if the cereal improves by adding 12 essential vitamins and minerals - and also if a box of cereals costs 5% more. Obviously it would be misleading to count the entire resulting higher price as inflation, as the new price is charged for a product of higher (or at least different) quality. Ideally, one would like to know what the higher price is due to the change in quality, and how much higher the price. The Bureau of Labor Statistics, which is responsible for calculating the consumer price index, has to deal with these adjustment difficulties for quality changes. Connect It UpVisit this website (to see a list of Ford car prices between 1909 and 1927. Consider how these prices compare with today's models. Is the product of a different quality today? A new product can be considered an extreme improvement in quality – from something that didn't exist to something that happens. However, a basket of goods that have been fixed in the past clearly does not include new goods created since then. The basket of goods and services used in the consumer price index (CPI) is revised and updated over time, thus Included. But the process takes some time. For example, room air conditioners were widely sold in the early 1950s, but were not introduced into the basket of goods behind the consumer price index until 1964. VCR and personal computer were available in the late 1970s and sold widely until the early 1980s, but did not enter the CPI basket of goods until 1987 to 1996, there were more than 40 million mobile phone subscribers in the United States - but cellphones were not yet part of the CPI basket of goods. The parade of inventions continued, with CPI inevitably several years behind. The arrival of new goods creates problems in terms of the accuracy of inflation measurements. The reason people buy new goods, it is assumed, is that new goods offer better value for money than existing goods. So if the price index lacks new goods, it overlooks one of the ways in which the cost of living improves. In addition, the price of a new good is often higher when it is first introduced and then decreases over time. If the new good is not included in the CPI for several years, while its price is not already lower, the CPI may miss out on fully counting this price drop. Taking these arguments together, the bias of quality/new goods means that the rise in the price of a fixed basket of goods over time tends to overemploy the rise in the true cost of living for consumers, as it does not take into account how improvements in the quality of existing goods or the invention of new goods improve living standards. The following clear it up feature is necessary to read about how cpi consists and calculates. Clear It UPHow do U.S. government statisticians measure the consumer price index? When the U.S. Bureau of Labor Statistics (BLS) calculates the consumer price index, the first task is to opt for a basket of goods that are representative of the purchase of the average household. This is done by using the Consumer Spending Survey, a national survey of about 7,000 households, which provides detailed information on consumption habits. Consumer expenditure was dismembered in the eight main groups shown below, which in turn were broken into more than 200 individual categories of items. BLS is currently using 1982-1984 as a basic period. For each of the 200 individual expenditure items, bls selects several hundred very specific examples of this item and considers the prices of these examples. Thus, in figuring out the breakfast cereal item in the overall category of food and beverages, the BLS selects several hundred examples of breakfast cereals. One example may be the price of 24-oz. boxes of a particular brand of cereals sold in a particular store. Selected specific products and sizes and stores are statistically selected to reflect what people buy and where they shop. The basket of goods in the consumer price index thus consists of about 80,000 products; i.e. several hundred specific products in more than 200 categories of broad items. About one quarter of these 80,000 specific products are rotated from the sample each year and replaced with another set of products. The next step is to collect price data. Data collectors visit or call about 23,000 stores in 87 urban areas across the United States each month to collect prices for those 80,000 specific products. A survey of 50,000 renters or tenants is also being conducted to collect information on rents. The consumer price index is then calculated by taking 80,000 prices of individual products and combining, using weights (as shown in Figure 9.2) of certain quantities of these products that people buy and enabling factors such as substitution between goods and quality improvements, into price indices for 200 total items. Then, price indices for 200 items are combined into the overall consumer price index. According to the Consumer Price Index website, there are eight categories used by data collectors:Eight main categories in the consumer price index1. Food and drinks (breakfast cereals, milk, coffee, chicken, wine, full-service meals and snacks)2. Housing (renter housing costs, homeowner housing costs, fuel oil, bedroom furniture)3. Clothing (men's shirts and sweaters, women's dresses, jewellery)4. Transport (new vehicles, air prices, petrol, motor insurance)5. Medical care (prescription drugs and medical supplies, medical services, glasses and eye care, hospital services)6. Recreation (TVs, cable TV, pets and pet products, sports equipment, registrations)7. Education and communication (tuition, post office, telephone services, computer software and accessories)8. Other goods and services (tobacco and smoking products, haircuts and other personal services, funeral expenses) Figure 9.2 Weighting cpi components Of the eight categories used to generate the Consumer Price Index, housing is a maximum of 41%. The next highest category, transport of 16.8%, is less than half the size of the dwelling. Other goods and services, and clothing, are the lowest at 3.4% and 3.6%, respectively. (Source: www.bls.gov/cpi) CPI and Core Inflation IndexImagine if you drive truck companies all over the country - you would probably worry about things like the prices of available food on the road and motel rooms, as well as the state of operation of the truck. However, a business manager can have different priorities. You'd care most about the performance of the truck on time, much less the food you ate and the places you stayed. In other words, the manager of the company would pay attention to the production of the company, neglecting the passing elements that affected you but did not affect bottom line. In some ways, there is a similar situation given the inflation measures. As we learn, CPI measures prices because they affect everyday household consumption. Well, the underlying inflation index is usually calculated by taking CPIs and excluding volatile economic variables. In this way, economists have a better sense of the underlying price trends that affect the cost of living. Examples of excluded variables include energy and food prices, which can jump month by month due to weather conditions. According to an article by Kent Bernhard, during Hurricane Katrina in 2005, 100,000 People's 100,000 people were killed in the 1990s. Gasoline prices rose quickly across the country, sometimes up to 40 cents per gallon in a day. This was not the cause of economic policy, but a short-lived event until the pumps were receded in the region. In that case, the CPI would see a change as a cost of living event for households that month, but the underlying inflation index would remain unchanged. As a result, the Federal Reserve's interest rate decisions would not be influenced. Similarly, droughts can cause spikes in food prices around the world that, if temporary, do not affect the nation's economic capabilities. As former Federal Reserve Chairman Ben Bernanke pointed out in 1999. Bernanke also noted that it helps communicate that the Federal Reserve does not have to respond to every inflationary shock because some price changes are transitory and not part of structural changes in the economy. In short, both the CPI and the core inflation index are important, but they serve different audiences. CPI helps households understand their overall cost of living month after month, while the core inflation index is the preferred gauge from which important changes in government policy can be made. Practical solutions for the replacement and bias of quality / new goodsDeain the early 2000s, the Bureau of Labor Statistics used alternative mathematical methods to calculate the consumer price index, more complicated than adding up the cost of a fixed basket of goods, to allow for some substitution between goods. It also updated the basket of goods behind the CPI more frequently so that new and improved goods could be included more quickly. For certain products, BLS conducted studies to try to measure quality improvement. For example, with computers, an economic study may try to adjust for changes in speed, memory, screen size and other product characteristics, and then calculate a price change once these product changes are taken into account. But these adjustments are imperfect, and exactly how to make these adjustments is often a source of controversy among professional economists. By the early 2000s, replacement bias and bias in quality/new commodities had decreased somewhat, so since then the rise in CPI is likely to exaggerate the real increase in inflation by only about 0.5% a year. Over one or several years, it's not much; over a period of a decade or two, as much as half a percent of annual compounds to a more significant amount. In addition, CPI tracks prices from physical locations rather than on websites like Amazon, where prices may be lower. When measuring inflation (as well as other economic statistics), a compromise arises between simplicity and interpretation. If the inflation rate is calculated with a basket of goods that is fixed and unchanged, the calculation of the inflation rate is simple, but problems of replacement bias and quality/new goods bias will arise. However, when a basket of goods is allowed to switch and evolve to reflect substitution at lower relative prices, quality improvements and new goods, the technical details of calculating the inflation rate become more complicated. Additional price indices: PPI, GDP Deflator and More The basket of goods behind the consumer price index represents the average hypothetical American household, which means that it doesn't exactly capture anyone's personal experience. When the task is to calculate the average level of inflation, this approach works well. What if, however, you are concerned about inflation experienced by a particular group, such as the elderly, or poor or single-parent families with children or Hispanics? In certain situations, a price index based on the purchasing power of the average consumer may not feel quite right. This problem has a simple solution. If the consumer price index does not serve the desired purpose, invent another index, based on a basket of goods suitable for a group of interests. Indeed, the Bureau of Labor Statistics publishes a number of experimental price indices: some for certain groups such as the elderly or poor, some for different geographic areas, and some for certain broad categories of goods such as food or housing. BLS also calculates several price indices that are not based on consumer goods baskets. For example, the Producer Price Index (PPI) is based on the prices that manufacturers of goods and services pay for supply and inputs. It can be taxed on price indices for different industries, commodities and processing stages (such as finished goods, intermediate products, raw materials for further processing, and so on). There is an International Price Index based on the prices of goods exported or imported. The employment cost index measures wage inflation in the labour market. GDP deflator, measured by the Economic Bureau is a price index that includes all components of GDP (that is, consumption plus investments plus government plus exports minus imports). Unlike CPI, its baskets are not fixed, but recalculate how much gdp that year would be worth using the basic annual prices. MIT's Billion Price Project is a newer alternative attempt to measure prices: data is collected online from retailers and then consists of an index compared to CPI (Source: . What is the best measure of inflation? If these are the most accurate measures of inflation, use the GDP deflator as the prices of manufactured goods and services rise. However, this is not a good measure of the cost of living because it includes the prices of many products that households do not buy (for example, aircraft, fire trucks, factory buildings, office complexes and bulldozers). If someone wants the most accurate measure of inflation because it affects households, use CPI because it only takes the prices of products bought by households. That's why CPI is sometimes referred to as the cost-of-living index. As the Bureau of Labor Statistics states on its website: The best measure of inflation for a particular application depends on the planned use of the data. 9.3 | As the US and other countries experience inflation At the end of this section you will be able to:Identify inflation patterns for the United States using data from the consumer price index Identification patterns of inflation internationally Over the last three decades inflation is relatively low in the US economy, with the consumer price index typically rising 2% to 4% a year. Looking back to the twentieth century, there have been several periods in which inflation has caused price levels to rise at double-digit rates, but nothing has come close to hyperinflation. Historical inflation in the US economyFigure 9.3 (a) shows the price level in the consumer price index stretching back to 1916. In this case, base years (when CPI is defined as 100) are set for the average price level that existed from 1982 to 2013. Figure 9.3 (b) shows annual percentage changes in CPI over time, which is the inflation rate. Figure 9.3 U.S. price and inflation levels from 1913 Chart and shows trends in U.S. price levels from the year 1916 to 2014. In 1916, the graph starts near $10, rising to about $20 in 1920, remaining around $16 or $17 until 1931, when it jumps to about $15. It gradually increases, with periodic declines, until 2014, when it is about $236. Graph b shows trends in US inflation rates since 1916. In 1916, the graph starts at 7.7%, jumping close to 18% in 1917, drastically falling near -11% in 1921, going up and down intermittently, while settling at about 1.5% in 2014. The first two waves of inflation are characterized in historical terms: they are immediately after the First and Second World Wars. However, there are also two periods of severe negative inflation - called deflation - in the early decades of the twentieth century: one after the deep recession of 1920-21, and the other during the Great Depression of the 1930s. (Since inflation is a time when the purchasing power of money in terms of goods and services is decreasing, deflation will be a time when the purchasing power of money in terms of goods and services increases.) For the period from 1900 to 1905, the The third wave of heavier inflation arrived in the 1970s and left in the early 1980s. Connect It UpVisit this website (to use the inflation calculator and find out how prices have changed over the past 100 years. Times of recession or depression often seem to be times when the inflation rate is lower, as in the 1920-1921 recession, the Great Depression, the 1980/82 recession, and the Great Recession of 2008/2009. There were several months in 2009 that were deflationary, but not at the annual rate. Recessions are usually accompanied by higher levels of unemployment, and overall demand for commodities falls, dragging price levels down. Conversely, the inflation rate often, but not always, seems to start to rise when the economy grows very strongly, as immediately after the war or during the 1960s. Macroeconomic analysis frameworks, developed in other chapters, will explain why the recession often accompanies higher unemployment and lower inflation, while rapid economic growth often brings lower unemployment but higher inflation. Inflation around the worldThis rest of the world, the pattern of inflation was very mixed, as can be seen in the number 9.4 showing inflation rates in recent decades. Many industrialized countries, not just the United States, had relatively high inflation rates in the 1970s. In 1975, for example, japan's inflation rate was over 8% and the inflation rate for the UK was almost 25%. In the 1980s, inflation rates fell in the United States and Europe and mostly remained lower. Figure 9.4 countries with relatively low inflation rates, 1960-2014 This chart shows an annual percentage change in consumer prices compared to consumer prices from the previous year in the United States, The United Kingdom, Japan and Germany.Countries with controlled economies in the 1970s, such as the Soviet Union and China, have historically had very low rates of measured inflation - because prices were prohibited from rising by law, except for cases where the government considered price increases to be due to improved quality. However, these it has also had persistent shortages of goods, as the price ban acts as a price cap and creates a situation where the amount requested often exceeds the quantity supplied. As Russia and China have moved on to more market-oriented economies, they have also experienced outpourings of inflation, although statistics for these economies should be seen as slightly weaker. Inflation in China averaged about 10% a year for most of the 1980s and early 1990s, though it has since fallen. Russia experienced hyperinflation in the early 1990s - an outpouring of high inflation - of 2,500% a year, although by 2006 it had become the world's most experienced. The closest thing to U.S. hyperinflation was during the Civil War, 1860/1865, in Confederate states. Figure 9.5 Countries with relatively high inflation rates, 1980-2013 These charts show a percentage change in consumer prices compared to consumer prices the previous year in Brazil, China and Russia. (a) Of this, Brazil and Russia experienced hyperinflation at some point between the mid-1980s and mid-1990s. (b) Although not as high, China and Nigeria also had high inflation rates in the mid-1990s. Although their inflation rates have decreased over the past two decades, several of these countries continue to see significant inflation rates. (Sources: CHNCPIALLMINMEI; Many Latin American countries experienced rampant hyperinflation during the 1980s and early 1990s, with inflation rates often well above 100% a year. In 1990, for example, The New York Times Certain countries in Africa experienced extremely high inflation rates, sometimes bordering on hyperinflation, in the 1990s. Nigeria, Africa's most polyunic country, had an inflation rate of 75% in the 1995.In in the early 2000s, the problem of inflation appears to have eased for most countries, at least compared to the worst times in decades. As we noted in this earlier bring it home feature, in recent years the world's worst example of hyperinflation was in Zimbabwe, where at one point the government issued bills with a nominal value of $100 trillion (in Zimbabwean dollars)– that is, the accounts had $100,000,000,000,000 written on the front, but they were almost worthless. In many countries, the memory of double digits, triple digits and even four-figure inflation is not far off in the past,9.4 | Confusion over inflationAs the end of this section, you will be able to:Explain how inflation can cause purchasing power redistributionIdentification of how inflation can blur the perception of supply and demandExplain Economic benefits and inflation challengesEconomists tend to oppose high inflation, but oppose it in a softer way than many non-economicists. Robert Shiller, one of the winners of the 2013 Nobel Prize in Economics, conducted several surveys during the 1990s on attitudes toward inflation. One of his questions is asked: Do you agree that preventing high inflation is an important national priority, as important as preventing drug abuse or preventing the deterioration of the quality of our schools? The answers were on a scale of 1–5, where 1 meant I totally agree, and 5 means I totally disagree. For the American population as a whole, 52% responded I totally agree that preventing high inflation is a very important national priority, and only 4% said I completely disagree. Among professional economists, however, only 18 percent responded I fully agree, while the same percentage of 18 percent responded I completely disagree. A country of ridiculous moneyThis economic problems are caused by inflation and why do economists often find them less concerned than the general public? Think of a very short story: The Land of Funny Money. One morning, everyone in Funny Money Country woke up to find that everything denominated in money had gone up by 20%. The change was completely unexpected. Each price in each store was 20% higher. Wages were 20% higher. Interest rates were 20% higher. The amount of money, everywhere from wallets to savings accounts, was 20% higher. This overnight price inflation made headlines everywhere in the Land of Funny Money. But the headlines quickly disappeared, as people realized that in terms of what they could actually buy with their income, that inflation had no economic impact. Everyone's salary can still buy exactly the same set of goods as before. Everyone's savings were still enough to buy exactly the same car, vacation or pension they could buy before. The same levels of inflation in all wages and prices ultimately did not matter at all. When people in Robert Shiller's research explained their concerns about inflation, one typical reason was that they feared that as prices rose, they would not be able to afford as much buying. In other words, people were worried about not living in a place like Funny Money Earth, where all prices and wages were growing simultaneously. Instead, people live here on planet Earth, where prices could rise until wages rise at all, or where wages rise more slowly than prices. Economists warn that in most periods the level of inflation in prices is roughly similar to that of wage inflation, and therefore they justify that over time, people's economic status does not change greatly through inflation. If all prices, salaries and interest rates are adjusted automatically and immediately with inflation, as in the country Money, then no one would change by purchasing power, profits or real loan repayments. However, if other economic variables do not move exactly in line with inflation or if they adjust for inflation only after a time lag, inflation can cause three types of problems: unintended redistribution of purchasing power, blurred price signals and difficulties in long-term planning. Unintended redistribution of purchasing powerInflation can cause redistribution of purchasing power that hurts some and helps others. People who are hurt by inflation include those who keep a lot of money, whether it's in a safe or in a cardboard box under the bed. When inflation happens, the purchasing power of cash is reduced. However, cash is just an example of a more general problem: anyone with invested financial assets in a way that nominal returns do not keep pace with inflation, will usually suffer from inflation. For example, if a person has money in a bank account that pays interest of 4%, but inflation rises to 5%, then the real rate of refund invested in that bank account is negative 1%. The problem of a good nominal interest rate turning into an actual ugly-looking interest rate can be exacerbated by taxes. U.S. income tax is levied on nominal interest received in dollars, without adjusting inflation. Thus, a person who invests $10,000 and receives a nominal interest rate of 5% is taxed on the $500 received – regardless of whether the inflation rate is 0%, 5% or 10%. If inflation is 0%, then the real interest rate is 5%, and all $500 is a gain in purchasing power. But if inflation is 5%, then the real interest rate is zero and the person had no real profit – but he owes income tax on nominal gain anyway. If inflation is 10%, then the real interest rate is negative 5% and the person is actually lagging behind in buying power, but would still owe tax on $500 in nominal gains. Inflation can also cause undesirable redistributions for wage earners as well. Wages tend to creep with inflation over time at the end. The last row of Table 9.1 at the beginning of this chapter showed that average hourly earnings in the U.S. economy rose from $3.23 in 1970 to $19.55 in 2014, up by a factor of nearly six. During this period, the consumer price index increased by almost identical amount. However, wage increases can lag behind inflation for a year or two, as wage adjustments are often somewhat sticky and only happen once or twice a year. Furthermore, the extent to which wages keep pace with inflation creates uncertainty for workers and can involve painful, protracted conflicts between employers and employees. If the inflation-adjusted minimum wage is only rare, minimum wage workers lose purchasing power from their nominal wages, as shown in the 9.6 number. Figure 9.6 U.S. minimum wage Inflation After adjusting for inflation, the federal minimum wage fell more than 30% from 1967 to 2010, although the nominal figure climbed from $1.40 to $7.25 an hour. By raising the minimum wage between 2008 and 2013, The Hague-based 2009-2012 minimum wage increased by 1. (Sources: chart.htm; One sizable group of people often received a large portion of their income in a form that does not increase over time: pensioners receiving a private company pension. Most pensions are traditionally set at a fixed nominal amount of dollars per year in retirement. This is why pensions are referred to as defined benefit plans. Even if inflation is low, the combination of inflation and fixed income can create a significant problem over time. A person retiring on a fixed income at the age of 65 will find that losing only 1% to 2% of purchasing power per year due to inflation compounds to a significant loss of purchasing power after a decade or two. Fortunately, pensions and other defined benefit retirement plans are increasingly scaries, instead replaced by defined contribution plans, such as 401(k)s and 403(b)s. In these plans, the employer regularly deposits a fixed amount into a worker's retirement account (usually any salary check). The employee often also contributes. The worker invests these funds in a wide range of investment vehicles. These plans have been deferred for tax and are transferable so that if an individual takes up a job with another employer, their 401 (k) comes with them. To the extent that investments generate real rates of return, pensioners do not suffer from the inflation costs of traditional pensioners. However, ordinary people can sometimes benefit from an unintended redistribution of inflation. Think of someone who borrows $10,000 to buy a car at a fixed interest rate of 9%. If inflation is 3% at the time the loan is made, then the loan must be resused at a real interest rate of 6%. But if inflation rises to 9%, then the real interest rate on the loan is zero. In this case, the borrower's benefit from inflation is the loss of the lender. A borrower who pays a fixed interest rate, which benefits from inflation, is only the other side of the investor receiving a fixed interest rate, suffering from inflation. The point is that when interest rates are fixed, rising inflation rates tend to penalize financial capital suppliers, which end up being repaid in dollars worth less due to inflation, while financial capital requirements end up better off, as they can repay their loans in dollars that are worth less than originally expected. Unintended redistributions of purchasing power caused by inflation can have a wider impact on society. broad acceptance of market forces is based on the perception that people's actions have a reasonable link to market outcomes. However, when inflation causes a pensioner who has built up a pension or invested at a fixed interest rate to suffer, while someone borrowing at a fixed interest rate benefits from inflation, it is hard to believe that such an outcome is deserved in any way. Similarly, when homeowners benefit from inflation as the price of their homes rises, while renters suffer because they pay higher rents, it is difficult to see any beneficial incentive effects. One of the reasons inflation dislikes the general public so much is the sense that economic rewards and penalties make it more arbitrary - and therefore likely to be considered unfair - even dangerous, as the following Clear It Up feature shows. Clear It UpIs there is a link between German hyperinflation and Hitler's rise to power? Germany suffered intense hyperinflation of its currency, Mark, in the years after World War I, when the Weimar Republic in Germany resorted to printing money to pay its bills and the onset of the Great Depression created social turmoil that Adolf Hitler could exploit in his rise to power. Shiller described the link this way at the National Bureau of Economic Research's 1996 Working Paper: A fact that is probably little known to young people today, Even in Germany, is that the final collapse of Mark in 1923, the time when Mark's inflation reached astronomical levels (inflation of 35,974.9% in November 1923 alone, for the annual rate of that month of 4.69 × 10. Most people in Germany today probably don't remember these events clearly; this lack of attention to him may be because his memory is clouded by the more dramatic events that succeeded him (the Nazi seizure of power and World War II). However, to someone who lives through these historical events in a row... [putsch] may have been remembered as vivid evidence of the potential effects of inflation. Blurred Price SignalsPrices are messengers in the market economy, transmitting information about demand and supply conditions. Inflation is smug about these price messages. Inflation means that price signals are perceived more vaguely, such as a radio program received with a lot of static. If static gets serious, it's hard to tell what's going on. In Israel, when inflation accelerated to an annual rate of 500% in 1985, the economy was at an all-time high. Instead, the customer just took the items off the shelf and went to the checkout to find out the price for the day. Obviously, this situation makes comparing prices and shopping for the best deal quite difficult. When levels and price changes become companies and individuals are finding it harder to respond to economic signals. In a world where inflation is at a high rate but bounces up and down to some extent, does the higher price mean that inflation has risen, or that the supply of that good has decreased, or that demand for that good has risen? Should the buyer of goods take higher prices as an economic hint to start replacing other products – or for substitute prices to rise by the same amount? Should the seller of goods take a higher price as a reason for the increase in production – or is the higher price just a sign of general inflation in which the prices of all inputs into production are also rising? The true story will eventually become clear, but in a given moment, who can tell? High and variable inflation means that incentives in the economy to adapt in response to price swings are weaker. Markets will adjust to their equilibrium prices and volumes more unpredictably and at a slower pace, and many individual markets will experience a higher chance of surpluses and shortages. Problems of long-term planningInflation can make long-term planning more difficult. In the debate about unintended redistributions, we looked at the case that someone was trying to plan a pension with a pension set nominally and at a high rate of inflation. Similar problems arise for all people trying to save for retirement, as they need to consider what their money will really buy several decades in the future when the rate of future inflation cannot be known for sure. Inflation, especially at moderate or high levels, will pose significant planning problems for businesses as well. A company can make money from inflation – for example, by paying bills and salaries as late as possible so that it can pay inflated dollars, while collecting revenue as soon as possible. The company can also suffer losses from inflation, as in the case of a retail business stuck holding too much cash, only to reduce the value of that money with inflation. But when a company spends its time focusing on how to profit from inflation, or at least how to avoid suffering from it, inevitable compromise strikes: less time is spent improving products and services or figuring out how to make existing products and services cheaper. An economy with high inflation rewards companies that have found smart ways to profit from inflation, which are not necessarily companies that excel at productivity, innovation or quality of service. In the short term, low or moderate levels of inflation may not pose major difficulties for business planning, as operating and sales revenue costs can rise at similar rates. However, if inflation varies significantly in the short or medium term, it may make sense for companies to stick to short-term strategies. Evidence whether relatively low inflation rates have reduced productivity is controversial among economists. There is some evidence that inflation, if it can be sustained at moderate levels below 3% a year, does not have to prevent the nation's real economy from growing at a healthy pace. For some countries that have experienced hyperinflation of several thousand percent a year, the annual inflation rate of 20-30% can feel basically the same as zero. However, several economists pointed to the suggestive fact that when US inflation heated up in the early 1970s - to 10% - US productivity growth slowed, and when inflation slowed in the 1980s, productivity rose again shortly afterwards, as shown in 9.7. Figure 9.7 U.S. inflation rate and U.S. labor productivity, 1961-2014 Over the last few decades in the United States, there have been times when rising inflation rates have been closely followed by lower productivity rates and lower inflation rates matched increases in productivity rates. However, as the chart shows, this correlation does not always exist. Does it benefit from inflation? While the economic effects of inflation are primarily negative, two compensation points are worth noting. First, the impact of inflation will vary considerably depending on whether it is slowly creeping to 0% to 2% a year, galloping to 10% to 20% a year, or racing to the point of hyperinflation at, say, 40% per month. Hyperinflation can tear the economy and society apart. However, the annual inflation rate of 2%, 3% or 4%, is far from a national crisis. Low inflation is also better than the deflation that happens with severe recessions. Second, it is sometimes argued that moderate inflation can help the economy by making wages in labour markets more flexible. The unemployment debate highlighted that wages tend to be sticky in moving downwards and that unemployment can result. A little inflation could nibble on real wages and thus help real wage declines if necessary. In this way, even if a moderate or high inflation rate can act as sand in the gears of the economy, perhaps the low inflation rate serves as oil for labour market gears. This argument is controversial. The full analysis should take into account all the effects of inflation. However, it offers another reason to believe that, all things considered, very low inflation rates may not be particularly harmful,9.5 | Indexing and its limitationsExpest this section, you will be able to:Explain the relationship between indexing and inflation Identify three ways in which the government can control inflation through macroeconomic policy Where price, wages or interest rates automatically adapt to inflation, it is said to be indexed. Indexed payout increases by the number of indexes it measures A wide range of index arrangements are observed in private markets and government programmes. Since the negative effects of inflation depend largely on inflation unexpectedly affecting one part of the economy, but not on another – say, the price hikes that people pay, but not the wages that workers receive – indexing will take some of the sting out of inflation. Indexing in private markets In the 1970s and 1980s, unions typically negotiated pay contracts that had cost-of-living adjustments (COLA) that guaranteed their wages would keep pace with inflation. These contracts are sometimes written as, for example, COLA plus 3%. So if inflation were 5%, wage increases would automatically be 8%, but if inflation rose to 9%, wage increases would automatically be 12%. COAs are a form of indexing that applies to wages. Loans often have built-in inflation adjustments, so if the inflation rate rises by two percentage points, then the interest rate charged on credit also rises by two percentage points. An adjustable rate mortgage (ARM) is a kind of loan used to buy a house where the interest rate varies depending on the inflation rate. Often, a borrower will be able to get a lower interest rate if they are indebted to ARM, compared to a fixed rate loan. This is because with ARM, the lender is protected from the risk that higher inflation will reduce real loan payments, and so some of the interest rate risk premium may be lower accordingly. A number of current or long-term business contracts also have provisions that prices will automatically adjust towards inflation. Sellers love such contracts because they are not locked into a low nominal selling price if inflation proves higher than expected; customers like such contracts because they are not locked into a high purchase price if inflation turns out to be lower than expected. The contract with automatic inflation adjustments in force agrees the actual price to be paid, not the nominal price. Indexing in government programsMeal government programs are indices on inflation. The U.S. Income Tax Act is designed to increase the tax rate on earned marginal income as a person's income rises above certain levels; this is what is meant by the phrase switch to a higher tax bracket. For example, according to the Internal Revenue Service's basic tax plates, in 2014 one person owed 10% of all taxable income of $0 to $9,075; 15% of all revenues from $9,076 to $36,900; 25% of all taxable income from $36,901 to $89,350; 28% of all taxable income from $89,351 to $186,350; 33% of all taxable income from $186,351 to $405,100; 35% of all taxable income from $405,101 to $406,750; and 39.6% of all revenues of $406,751 and up. Due to the many complex provisions in the rest of the tax code, taxes owed by any it cannot be accurately determined based on these numbers, but the numbers illustrate the basic theme that tax rates rise as the marginal dollar of income rises. By the late 1970s, if nominal wages increased along with inflation, people were moved to higher tax brackets and owed much of their income in taxes, even though their real income did not rise. This bracket creep, as it's called, was eliminated by law in 1981. Now, income levels where higher tax rates are activated automatically rise with inflation. The Social Security Program offers two examples of indexing. Since the adoption of the Social Security Indexation Act of 1972, the level of social benefits has been increasing every year along with the consumer price index. Also, Social Security is financed by payroll taxes, which are imposed on income earned up to a certain amount – $117,000 in 2014. This level of income is adjusted upwards at the inflation rate each year, so that indexable increases in the level of benefits are accompanied by an index increase in the social security tax base. As another example of the government's indexing-hit agenda, in 1996, The New York Times Bonds are funds by which the US government (like many private sector companies) borrow money; that is, investors buy bonds, and then the government returns the money with interest. Traditionally, government bonds have paid a fixed interest rate. She gave the policy to a government that borrowed to stimulate inflation, because it could then repay its past borrowing in inflated dollars at a lower real interest rate. However, indexed bonds promise to pay a certain real interest rate above any inflation rate. In the case of a pensioner trying to plan in the long term and worried about the risk of inflation, for example, indexed bonds that guarantee a rate of return higher than inflation - regardless of the level of inflation - can be a very comforting investment. Can indexing reduce concerns about inflation? Indexing may seem like an obviously useful step. After all, when individuals, companies and government programs are indices against inflation, then people may worry less about arbitrary redistributions and other effects of inflation. But some of the fiercest opponents of inflation express serious concerns about indexing. They point out that indexing is always partial. Not every employer will provide COAs for workers. Not all companies can assume that costs and revenues will rise in lockstep with general inflation rates. Not all interest rates for borrowers and savers will change to accurately match inflation. However, as partial inflation indexing expands, political opposition to inflation may ease. After all, older people whose social security benefits are protected from inflation or banks their money with adjustable loans, they no longer have so much to worry about whether inflation will heat up. In a world where some people are indexed against inflation and some are not, financially sav smart businesses and investors may be looking for ways to be protected from inflation, while financially unsophisticated and small businesses may suffer the most from it. Overview of political discussions on inflationThis chapter focused on how inflation is measured, historical experience with inflation, how to adjust nominal variables to real ones, how inflation affects the economy and how indexing works. The causes of inflation have barely been hinted at, and the government's policy to address inflation has not been addressed at all. These questions will be taken in detail in other chapters. However, it is useful to offer an overview here. The cause of inflation can be summarized into one sentence: Too many dollars hunt too few goods. The big rises in inflation at the beginning of the twentieth century came after the wars, which are a time when government spending is very high, but consumers have little to buy, as manufacturing goes to war efforts. Governments also typically impose price controls during the war. After the war, price controls end and pent-up purchases of electricity ahead, fuelling inflation. On the other hand, if too few dollars hunt too much commodities, then inflation will decline or even turn into deflation. Therefore, slowdowns in economic activity, as well as in the Great Recessions and the Great Depression, are usually associated with a decrease in inflation or even direct deflation. The implications of the policy are clear. If inflation is to be avoided, the amount of purchasing power in the economy must grow at about the same rate as commodity production. Macroeconomic policies that the government can use to influence the amount of purchasing power - through taxes, spending and regulation of interest rates and loans - can thus cause inflation to rise or inflation to lower levels. Bring home $550 million in bread? As we will learn in money and banking, the existence of money provides enormous benefits to the economy. In the truest sense, money is a lubrication that improves the operation of the market. Money facilitates transactions. This allows people to find work by producing one product and then using the money they earned to buy other products they need to live. However, too much money in circulation can lead to inflation. Extreme cases of governments recklessly printing money lead to hyperinflation. Inflation reduces the value of money. Hyperinflation, because money loses value so quickly, ultimately results in people no longer using money. The economy is returning to bartering, or adopting a more stable currency from another country, like U.S. dollars. Meanwhile, the economy is literally crumbling as people leave their jobs and care for because it is not worth the time to work for money that in a few days will be worthless. Only national governments have the power to cause hyperinflation. Hyperinflation usually occurs when the government faces extraordinary spending requirements, which it cannot finance with taxes or borrowing. The only option is to print money – more and more of it. With more money in circulation chasing the same amount (or even fewer) of goods and services, the only result is higher and higher prices until the economy and/or government collapses. This is why economists are generally cautious when they allow inflation to get out of hand. KEY TERMSAdjustable-rate mortgage (ARM) loan used to buy a house where the interest rate varies with market interest ratesbase years of arbitrary year whose value as an index number is defined as 100; inflation from the base year to other years can easily be seen by comparing the number of indices in the second year with the number of indices in the basic year – for example, 100; therefore, if the number of indices for one year is 105, then there was inflation of exactly 5% between that year and the basic yearbasket of goods and services is a hypothetical group of different items, with certain quantities of each that should represent a typical set of consumer purchases, which is used as a basis for calculating how the price level changes during the Weather Price IndexConsumer (CPI) of the inflation measure calculated by the US. state statisticians based on the level of prices from a fixed basket of goods and services representing the purchase of the average consumer product inflation index, an inflation measure typically calculated by taking CPI and excluding volatile economic variables such as food and energy prices in order to better measure the underlying and persistent trend of long-term adjustments to the prices of living(COLA) contractual provision that wage increases will keep pace with inflation inflation of negative inflation; most prices in the economy fall The unemployment cost index measures inflation based on wages paid out on the labour marketGDP deflator measures inflation based on the prices of all components of GDPHyperinflation outage of high inflation which is often seen (although not exclusively) when economies are shifted from a controlled economy to a market-oriented economyindex number without a share resulting from the price level over a number of years, which facilitates the inflation rates of computing, since the number of indices has values of about 100indexed prices, wages or interest rate is automatically adjusted for inflationinflation general and continuous growth in the level of prices in the economyInternational price index measures inflation based on prices of goods exported or importedProducer Price Index (PPI) measures of inflation based on prices paid for supply and inputs of commodity producers security/new inflation of commodity bias calculated using a fixed basket of goods over time tends to exaggerate the true increase in the cost of living, because it does not take into account improvements in the quality of existing goods or the invention of new goods bias, the inflation rate calculated using a fixed basket of goods over time tends to exaggerate the actual increase in the cost of living, as it does not take into account that a person can replace goods whose prices are rising for lotkey CONCEPTS and SUMMARY The price level is measured by using a basket of goods and services and calculating how the total cost of buying that basket of goods will increase over time. The price level is often expressed in terms of index numbers, which convert the cost of buying a basket of goods and services into a series of numbers in the same proportion to each other, but with an arbitrary base year of 100. The inflation rate is measured as a percentage change between price levels or index numbers over time.9.2 As changes in the cost of living are measuredMeasurable price levels with a fixed basket of goods will always have two problems: the bias of replacing them, by which a fixed basket of goods does not allow the purchase of more of what is relatively cheaper and less than what is relatively more expensive; and bias in quality/new goods, by which a fixed basket cannot take into account improvements in quality and the emergence of new goods. These problems can be reduced to a degree – for example, allowing a basket of goods to develop over time – but cannot be completely eliminated. The most commonly cited measure of inflation is the Consumer Price Index (CPI), which is based on a basket of goods representing what the typical consumer buys. The core inflation index further breaks down CPI by excluding volatile economic variables. Several price indices are not based on consumer goods baskets. The GDP deflator is based on all components of GDP. The producer price index is based on supply prices and inputs purchased by manufacturers of goods and services. The employment cost index measures wage inflation in the labour market. The international price index is based on the prices of goods exported or imported.9.3 As the US and other countries experience inflation In the US economy, the annual inflation rate over the past two decades has typically been around 2% to 4%. Periods of peak U.S. inflation in the twentieth century occurred during the years after World War I and World War II, and in the 1970s. The period of lowest inflation - in fact, with deflation - was the Great Depression of the 1930s. By contrast, can help those who owe money that can be paid in less valuable, inflated dollars. Low inflation rates have a relatively small economic impact in the short term. In the medium to long term, even low inflation rates can complicate future planning. High inflation rates can cloud price signals in the short term and prevent market forces from operating effectively, and can greatly complicate long-term savings and investment decisions.9.5 Indexing and its payment of restrictions It is said to be indexed if automatically adjusted for inflation. Examples of indexing in the private sector include pay deals with cost-of-living adjustments (COLA) and loan agreements such as adjustable rate mortgages. Examples of indexing in the public sector include tax brackets and Social Security payments. SELF-CHECK QUESTIONS Questioning 9.1Table 9.4 shows the prices of fruit purchased by a typical student from 2001 to 2004. What is the amount spent each year on a basket of fruit with quantities shown in column 2? Click here to see AnswerQuestion 9.2Construct the price index for a basket of fruits in each year using 2003 as the base year. Click here to see AnswerQuestion 9.3Calculate the inflation rate for fruit prices from 2001 to 2004.Click here to see AnswerQuestion 9.4Edna lives in a retirement home where she takes care of most of her needs but has some discretionary spending. Based on the basket of goods in Table 9.5, what percentage of Edna's living costs increase between time 1 and time 2? Click here to see AnswerQuestion 9.5How changes in the cost of living are measured, a number of different price indices have been introduced. Which price index would be best used to adjust wages for inflation? Click here to see AnswerQuestion 9.6 The consumer price index is subject to replacement bias and quality/new goods bias. Are the producer price index and the GDP deflator also subject to these biases? Why or why not? Click here to see AnswerQuestion 9.7Go on this website (for purchasing power calculator in MeasuringWorth.com. How much money would it take today to buy what one dollar would buy in the year you were born? Click here to see AnswerQuestion 9.8 If inflation unexpectedly rises by 5%, would a state government that recently borrowed money to pay a new motorway fee or lose? Click here to see AnswerQuestion 9.9How should an increase in inflation affect the interest rate on a adjustable rate mortgage? Click here to see answerquestion 9.10A fixed rate mortgage has the same interest rate over the life of the loan, whether the mortgage is at 15 or 30 years. On the other hand, a mortgage with interest rate changes with market interest rates over the life of the mortgage. If inflation unexpectedly falls by 3%, 3%, probably would happen to a homeowner with an adjustable mortgage? Click here to see AnswerREVIEW QUESTIONSQuestion 9.11How is the basket of goods and services used to measure the price level? Click here to see AnswerQuestion 9.12For why are the index numbers used to measure the price level, not the value of commodities in dollars? Click here to see AnswerQuestion 9.13As is the difference between the price level and the inflation rate? Click here to see AnswerQuestion 9.14For why does the replacement bias arise if the inflation rate is calculated on the basis of a fixed basket of goods? Click here to see AnswerQuestion 9.15For why does quality/new goods bias arise if the inflation rate is calculated on the basis of a fixed basket of goods? Click here to see AnswerQuestion 9.16This is the typical inflation range in the US economy over the past decade or so? Click here to see AnswerQuestion 9.17U last century, during which periods was the US inflation rate the highest and lowest? Click here to see AnswerQuestion 9.18Click here to see AnswerQuestion 9.19Identify several parties that are likely to be helped and hurt by inflation. Click here to see AnswerQuestion 9.20Click here to see AnswerQuestion 9.21Name several forms of indexing in the private and public sectors. Click here to see AnswerCRITICAL THINKING QUESTIONSQuestion 9.22 Inflation rates, like most statistics, are imperfect measures. Can you identify some ways in which the rate of fruit inflation does not record a perfectly rising fruit price? Click here to see AnswerQuestion 9.23Given's federal budget deficit over the past few years, some economists have argued that by adjusting Social Security payments for inflation using CPI, Social Security overpays recipients. What is the argument and do you agree or disagree with it? Click here to see AnswerQuestion 9.24 Why is the GDP deflator not an accurate measure of inflation because it affects the household? Click here to see AnswerQuestion 9.25Imagine that government statisticians who calculate the inflation rate have updated the basic basket of goods once every 10 years, but now decide to update it every five years. How will this change affect the amount of replacement bias and bias in quality/new goods? Click here to see AnswerQuestion 9.26 Write down the situation, whether the government policy situation, the economic problem or the situation in the private sector, where using CPI to convert from nominal to really would be more appropriate than using a GDP deflator. Click here to see AnswerQuestion 9.27 Write down the situation, whether a government policy situation, an economic problem or a situation in the private sector, where using a GDP deflator for from nominal to actually more appropriate than using CPI. Click here to see AnswerQuestion 9.28For why do you think the US experience with in the last 50 years has been much milder than in many other countries? Click here to see AnswerQuestion 9.29 If, over time, wages and wages are rising on average at least as fast as inflation, why do people worry about how inflation affects incomes? Click here to see AnswerQuestion 9.30Who is the big winner from inflation in the economy? Click here to see AnswerQuestion 9.31 If the government gets from unexpected inflation when it goes into over-order, why would it decide to offer indexite bonds? Click here to see AnswerQuestion 9.32Do which you think is possible perfect indexing? Why or why not? Click here to see AnswerPROBLEMSQuestion 9.33Request of the index representing price level changes from 110 to 115 in one year, and then from 115 to 120 the following year. Since the number of indices increases by five each year, is there five inflation rates every year? Is the inflation rate the same every year? Explain your answer. Click here to see AnswerQuestion 9.34 The purchase price of a basket of goods in the UK over four years is: year 1 = £940, year 2 = £970, year 3 = £1000 and year 4 = £1070. Calculate two price indices, one using year 1 as a base year (set equal to 100) and the other using year 4 as a base year (set equal to 100). Then calculate the inflation rate based on the first price index. If you had used a different price index, would you have gotten a different inflation rate? If you're not sure, do a calculation and find out. Click here to see AnswerQuestion 9.35S 1 or 2 percentage points, what has the U.S. inflation rate been over the past 20 years? Draw a chart to show data. Click here to see AnswerQuestion 9.36 If inflation unexpectedly rises by 5%, indicate for each of the following whether the economic actor is helped, injured or undectibuted: a. Union member with COLA pay agreement b. Someone with a large sleuth of money in the safe c. The bank borrows money at a fixed interest rate d. A person who doesn't need to get a pay raise for another 11 monthsClick here to see AnswerQuestion 9.37Rosalie retiree knows that when she retires at 16, her company will give her one payment of $20,000. However, if the inflation rate is 6% a year, how much purchasing power will it have $20,000 when measured in today's dollars? Tip: Start by calculating price rises over 16 years. Click here to see AnswerAnswersAnsWer on question 9.1It would calculate the amount spent on each fruit in each year, multiply the amount of each fruit by price.10 apples × at 50 cents = $5.00 spent on apples in 2001.12 bananas × at 20 cents = 2.12 bananas $40 spent on bananas in 2001.2 grape bunches at 65 cents each = $1.30 spent on grapes in 2001.1 pints of raspberries at $2 = $2.00 spent on raspberries in 2001.Adding up the amount gives you the total cost of a fruit basket. Total Cost Cost Cart in 2001 was $5.00 + $2.40 + $1.30 + $2.00 = $10.70. The total costs for all years are shown in the following table. Click here to return to Question 9.1Answer on question 9.2As it is 2003 base year, and then the index number has a value of 100 in 2003. To transform the cost of a fruit basket each year, we divide the value each year by $15.35, the value of the base year, and then multiply the score by 100. The price index is shown in the following table. Note at the beginning that the base year has a value of 100; years before the base year, values of less than 100; and years after have values of more than 100.Click here to return to question 9.2Answer on the question 9.3 The inflation rate is calculated as a percentage change in the price index from year to year. For example, the inflation rate between 2001 and 2002 is (84.61-69.71) / 69.71 = 0.2137 = 21.37%. Inflation rates for all years are shown in the last row of the following table, which includes two previous replies. Click here to return to Question 9.3Answer on question 9.4Begin by calculating the total cost of buying a shopping cart in each time period, as shown in the following table Click here to return to Question 9.4Sswer when asked 9.5Since CPI measures the prices of goods and services purchased by a typical urban consumer, measures the prices of things people buy with their salary. For this reason, CPI would be the best price index to use for this purpose. Click here to return to question 9.5Answer on question 9.6 PPI is subject to these biases for basically the same reasons as CPI. The GDP deflator picks up the prices of what was actually bought that year, so there's no bias. This is the advantage of using a GDP deflator over a CPI. Click here to return to question 9.6Answer on question 9.7 Calculator requires you to print three numbers:First year, in this case the year of your birth The amount of money you would like to translate in terms of its purchasing powerThe most recent year – now or last year the calculator will acceptMy year of birth is 1955. The amount is $1. The year 2012 is currently the last year the calculator will accept. A simple purchasing power calculator shows that $1 off purchases in 1955 will cost $8.57 in 2012. The website also explains how the right answer is more complicated than one that shows a simple purchasing power calculator. Click here to return to question 9.7Answer when asked 9.8 The State Government would benefit by repaying a loan in less valuable dollars than it borrowed. In addition, state government tax revenues would increase due to inflation. Click here to return to question 9.8Answer to Question 9.9Higher inflation reduces real interest rates on fixed rate mortgages. As ARM's can be adjusted, higher inflation leads to higher interest rates on ARMs.Click here when asked 9.9Answer when asked 9.10Beaus mortgage has an adjustable rate, the rate should fall by 3%, the same as inflation, so that the real interest rate is the same. Click here to return to question 9.10Answer on question 9.11 By choosing a basket of specific goods to track prices, we may get a more accurate view of the costs faced by different groups of consumers or manufacturers. Click here to return to question 9.11Answer on question 9.12Index numbers are more easily compared to each other, as the value of the dollar will change over timeClick here to return to question 9.12Answer on the question 9.13Sa inflation rate is a change in price level from one period to another, while the price level itself is a measure of total prices across the economy at a certain point in time. Click here to return to question 9.13Answer when asked 9.14 The inflation rate may be overestimated because a basket of goods assumes that people will not replace cheaper alternatives when commodity prices rise. Click here to return to question 9.14Answer on the question 9.15 The inflation rate can be overestimated if the price increase is due to changes in quality, not a decrease in the value of the currency. Click here to return to question 9.15Answer on question 9.16 Inflation over the last decade, as measured by CPI, has typically been between 1% and 3%. Click here to return to question 9.16Answer when asked 9.17 Our U.S. inflation rate was highest during the 1970s and lowest during the 1930s, when deflation actually occurred. Click here to return to question 9.17Answer to Question 9.18Deflation is generally price lowering, or increasing the value of the currencyClick here to return to question 9.18Answer on question 9.19Borrowers and employers who heal wages determined by long-term contracts help inflation, but lenders and consumers are hurt. Click here to return to question 9.19Answer when asked 9.20Indexing is when some payment rate is set to automatically increase at the same pace as inflation. Click here to return to question 9.20Answer on the issue of 9.21Ve state benefits, such as Social Security, are indexed to CPI, and there has been much debate lately about doing the same thing for minimum wages. Click here to return to question 9.21Answer on question 9.22For one thing, it does not correspond to the propensity of consumers to be substituted for the replacement good when the price of one type of fruit rises. The inflation rate may also not take into account changes in fruit quality over time. Click here to return to question 9.22Answer when asked 9.23Doj is that CPI is growing faster than the actual cost of living of older people due to replacement bias and quality/new goods bias. Click here to return to question 9.23Answer issue 9.24 The GDP deflator is a generator of the entire economy, economy, it is not representative of what households spend their money on. Click here to return to question 9.24Answer to Question 9.25This change should reduce these biases by monitoring consumer behaviour more closely over time. Click here to return to question 9.25Answer on question 9.26One example may be the decision on indices on minimum wage inflation. The minimum wage worker probably faces the costs more represented by cpi than the GDP deflatorClick here to return to question 9.26Answer to Question 9.27 The GDP deflator is better suited to use when comparing overall economic growth over time, as it represents the overall economy, not just consumers. Click here to return to question 9.27Answer on question 9.28 The US has been more cautious in using monetary policy to inflate its currency than many other countries have been. That's probably partly because the Federal Reserve is protected from the political process, unlike most other countries. Sometimes countries had to print money to pay off debt, which luckily we haven't had to do yet. Click here to return to question 9.28Answer on question 9.29Wages tend to be sticky, and in the time it takes them to catch up with inflation, households can see large portions of their savings devalued. Click here to return to question 9.29Answer on question 9.30 The government is the largest borrower of the money, so it would probably benefit the most from inflation. Click here to return to question 9.30Answer to Question 9.31Indexed bonds are a way of stimulating investment, since they offer a level of protection against inflation. Since they are safer for investors, the government does not have to offer such a high interest rate on bonds as it might otherwiseClick here to return to question 9.31Answer on question 9.32You are not the perfect measure for inflation, so perfect indexing is not possible. No metric can fully capture the complex nature of the pricing system, and at the same time you can't index to multiple metrics. Click here to return to question 9.32Answer on the question 9.33 The inflation rate is a percentage change over time, so the rates are not the same. The first change is (115 - 110)/110 x 100 = 4.5%The second is (120 - 115)/115 x 100 = 4.3%Click here to return to Question 9.33Answer to Question 9.34The first index would look like this.2: 970/940 x 100 = 103.2 Percent change = (103.2-100)/100 = 3.2%3: 1000/940 x 100 = 106.4 Percent change = (106.4-103.2)/103.2 =3.1%4: 1070/940 x 100= 113.8 Percent change = (113.8-106.4)/106.4 =7.0%The second index would look like this.2: 970/1070 x 100 = 90.7 Percent change = (90.7-87.9)/87.9 = 3.2%3: 1000/1070 x 100 = 93.5 Percent change = (93.5-90.7)/90.7 = 3.1%4: 100 Percent change = (100-93.5)/93.5 = 7.0%Though the two price have different numbers, if you compute the percent change of eachyou will see that the inflation rates rates the same applies to both indices. Click here to return to question 9.34Answer on question 9.35 The past few years have generally seen the inflation rate between 1% and 3%. Click here to return to question 9.35Answer on question 9.36a. Largely unchanged, as COLA allows wages to rise with inflation.b. Hurt, because his money would be worth less.c. Hurt, as higher inflation lowers real interest rates.d. Hurt, because his salary will be worth less. Click here to return to question 9.36Answer when asked 9.37 If the starting price level is 100, the price level after 16 years will be 100 x 1.06^16 = 254. So prices will be 2.54 times higher and purchasing power will be $20,000 only $20,000/2.54 = $7874.Click here to return to question 9.37 Download for free at 11.12.Page 6 Figure 14.1 Cowrie Shell or Money? Is this a picture of a cow's shell or money? The answer is: Both. For centuries, the extremely hardy cow shell has been used as a medium of exchange in various parts of the world. (Credit: Modification of work by prilfish/Flickr Creative Commons) Chapter Outline14.1 Defining money by its functions14.2 Measuring money: Currency, M1 and M214.4 How do banks make moneyBring it HomeThe best money masks: From cows to BitcoinsHere's trivia question: In the history of the world, what item has been used for money in the widest geographic area and for the longest period of time? The answer is not gold, silver or any precious metal. It's cowrie, a mollusk shell found mainly off the Maldives Islands in the Indian Ocean. Cowries served as money for 700 B.C. in China. By the 1500s, they were widely used throughout India and Africa. For several centuries afterwards, cows were used in markets including southern Europe, West Africa, India and China for a wide range of purchases: everything from buying lunch or ferry rides to paying for a boat full of silk or rice. Cows were still acceptable as a way of paying taxes in certain African nations at the beginning of the twentieth century. What made cows work as well as money? First, they are extremely durable – they last a century or more. As the late economic historian Karl Polyani said, they can be poured, discharged, shoveled, pileed into piles while remaining clean, moist, stainless, polished and milky white. Second, parties could use cows by counting shells of a certain size or for large purchases by measuring the weight or volume of total scales to be replaced. Third, it was impossible to forge a cow's shell, but gold or silver coins could be forged by making copies with cheaper metals. Finally, in the heyday of cow money, from the 1500s to the 1800s, the cow collection was tightly controlled, first by the Portuguese and later by As a result, the supply of cows could grow quickly enough to serve the needs of trade, but not so quickly that they were no longer scarce. Money over the centuries has taken many different forms and continues to develop even today. What do you think the money is? Introduction to money and banking In this chapter, you will learn about:Defining money by its functionsMeasuring Money: Currency, M1 and M2 Role BanksHow banks Create Money Discussion on money and banking is a central component in the study of macroeconomics. At this point, you should keep firmly in mind the main macroeconomics targets from Welcome to Economics!: economic growth, low unemployment and low inflation. We have yet to discuss money and its role in achieving our macroeconomic goals. You should also understand keynesian and neoclassical frameworks for macroeconomic analysis and how these frameworks can be embodied in the overall demand/aggregate supply (AD/AS) model. Bearing in mind the objectives and frameworks for macroeconomic analysis, the last step is to discuss two main categories of macroeconomic policy: monetary policy, which focuses on money, banking and interest rates; fiscal policy, which focuses on government spending, taxes and borrowing. This chapter talks about what economists mean by money and how money is closely linked to the banking system. Monetary policy and bank regulation continues this debate.14.1 | Defining money by its functionsIs the end of this section, you will be able to:Explain the different functions of moneyContrast of commodity money and fiat moneyMoney for money is not an end in itself. You can't eat banknotes or carry your bank account. Ultimately, the usefulness of money rests on the exchange of goods or services. As the American writer and humorist Ambrose Bierce (1842–1914) wrote in 1911, money is a blessing that gives us no advantage except when we part with it. Money is what people regularly use when buying or selling goods and services, so money must be widely accepted by both buyers and sellers. This concept of money is deliberately flexible, because money has taken a wide range of forms in different cultures. Barter and Double Coincidence WantsIt understand the usefulness of money, we must take into account what the world will be like without money. How would people exchange goods and services? Money-free economies tend to engage in a bartering system. Bartering – literally trading one good or service for another – is very inefficient to try to coordinate trades in a modern advanced economy. In a money-free economy, an exchange between two people would involve a double match of desire, a situation where two people each want some good or a service that the other person can provide. For example, if an accountant wants a pair of shoes, The accountant must find someone who has a pair of shoes in the correct size and who is ready to swap shoes for a few hours of accounting services. Such a store is likely to be difficult to organise. Think about the complexity of such trades in the modern economy, with its extensive division of labor involving thousands and thousands of different jobs and goods. Another problem with the bartering system is that it does not allow us to easily enter into future contracts for the purchase of many goods and services. For example, if the goods are toned, in the future they will be difficult to exchange for other goods. Imagine a farmer who wants to buy a tractor in six months using a fresh crop of strawberries. In addition, while the bartering system could work adequately in small economies, it will prevent these economies from growing. The time individuals would otherwise spend producing goods and services and enjoying their free time is spent bartering. MoneyMoney functions solve problems created by the barter system. (We will soon come to its definition.) First, money serves as a medium of exchange, which means that the money acts as an intermediary between the buyer and the seller. Instead of exchanging accounting services for shoes, the accountant now exchanges accounting services for money. This money is then used to buy shoes. To serve as a medium of exchange, money must be very widely accepted as a payment method in the markets of goods, labour and financial capital. Second, money must serve as a store of value. In the bartering system, we saw an example of a shoemaker trading shoes for accounting services. But she risks her shoes going out of style, especially if she keeps them in storage for future use – their value will decrease with each season. Shoes aren't good at repository of value. Holding money is a much easier way to store value. You know you don't have to spend it right away because it will still have its value the next day or next year. This function of money does not require that money is perfect for a store of value. In an inflation economy, money loses some purchasing power every year, but money remains. Third, money serves as a unit of accounts, which means it is a ruler that measures other values. For example, an accountant can charge $100 to file a tax return. That $100 can buy two pairs of shoes at $50 a pair. Money acts as a common denominator, an accounting method that simplifies thinking about compromises. Finally, another function of money is that money must serve as a standard of deferred payment. This means that if money is usable to buy today, it must also be acceptable today to buy a purchase that will be paid for in the future. Loans and future agreements are listed in monetary terms, and the standard of deferral of payments is what allows us to buy goods and services and pay in the future. Thus, money serves all these functions - it is a medium of exchange, storage of value, units of accounts and standards of deferred payment. Goods compared to Fiat MoneyMoney took a wide range of forms in different cultures. Gold, silver, cow clams, cigarettes and even cocoa beans were used as money. Although these items are used as commodity money, they also have value from use as something other than money. Gold, for example, has been used as money over the centuries, although today it is not used as money, but is valued for its other attributes. Gold is a good conductor of electricity and is used in electronics and aerospace industry. Gold is also used in the production of energy-efficient reflective glass for skyscrapers, and is also used in the medical industry. Of course, gold also has value because of its beauty and forged in the creation of jewelry. As commodity money, gold has historically served a purpose as a medium of exchange, a repository of value and as a unit of accounts. Commodity-backed currencies are dollar accounts or other currencies with values backed by gold or other goods held in the bank. For most of its history, U.S. cash stockpiles have been underpinned by gold and silver. Interestingly, antique dollars dated back to 1957 have the Silver Certificate printed over a portrait of George Washington, as shown in the number 14.2. This meant that the owner could take the account to the appropriate bank and exchange it for a dollar worth of silver. Figure 14.2 Silver Certificate and Modern American Account Until 1958. Today, U.S. accounts are backed by the Federal Reserve, but as fiat money. (Credit: The.Comedian/Flickr Creative Commons) As economies grew and became more global in nature, the use of commodity money became increasingly cumbersood. Countries are headed for the use of fiat money. Fiat money has no substantive value, but the government declares it a legal tender for the country. United States paper money, for example, carries a statement: THIS NOTE IS LEGAL TENDER FOR ALL DEBTS, PUBLIC AND PRIVATE. In other words, by state decree, if you owe a debt, then legally speaking, you can pay that debt with U.S. currency, even though it is not backed by goods. The only support for our money is universal faith and trust that the currency has value, and nothing more. Link It Watch this video (to Money History. 14.2 | Measuring money: Currency, M1 and M2 End of this section, you will be able to:Contrast M1 cash offer and M2 cash offerClassify money as M1 cash stock or M2 cash supplyCash in your pocket certainly serves as a But what about checks or credit cards? Are they money, too? Instead of trying to find any way to measure money, economists offer broader definitions of liquidity-based money. Liquidity refers to the speed at which financial assets can be used to buy a good or service. For example, cash is very liquid. Your $10 bill can be easily used to buy burgers at lunchtime. However, the $10 you have in your savings account is not as easy to use. You have to go to a bank or ATM and withdraw that money to buy lunch. So the $10 in your savings account is less liquid. The Federal Reserve Bank, which is the US central bank, is a bank regulator and is responsible for monetary policy and defines money according to its liquidity. There are two definitions of money: M1 and M2 cash stock. The M1 cash offer includes those money that is highly liquid such as cash, cheque (requested) deposits, and M2 cash offer traveler's cheques are less liquid in nature and include M1 plus savings and time deposits, certificates of deposits and MMFs. The M1 cash offer includes coins and banknotes in circulation – coins and banknotes circulating in an economy not held by the US Treasury, the Federal Reserve Bank or bank vaults. Closely linked to the currency are verifiable deposits, also known as demand deposits. These are the amounts held in the account check. They are called demand deposits or deposits, as the banking institution must give the deposit holder its money on demand when printing a cheque or using a debit card. Together, these items - currency and account verification in banks - form the definition of money known as M1, which is measured daily by the Federal Reserve system. Passenger checks are also included in the M1, but have decreased in use over the recent past. A broader definition of money, the M2 includes everything in the M1, but also adds other types of deposits. For example, the M2 includes savings deposits in banks, which are bank accounts where you can't write a check directly, but from which you can easily withdraw money at an automatic cashier or bank. Many banks and other financial institutions also offer the opportunity to invest in MMFs, where deposits of many individual investors are merged and invested safely, such as short-term government bonds. The other ingredient of M2 are relatively small (that is, less than about $100,000) of deposit certificates (CDs) or term deposits, which are accounts that the saver has committed to leave in the bank for a period of time, ranging from a few months to several years, in exchange for a higher interest rate. In short, all these types of M2 are money that you can withdraw and spend, but which require greater effort to do so than items on M1 Figure 14.3 should help visualize relationship between M1 and M2. Finally, the M1 is included in the M2 calculation. Figure 14.3 The relationship between M1 and M2 Money M1 and M2 money has several definitions, ranging from narrow to wide. M1 = coins and currency in circulation + verifiable (requested) deposit + traveler's cheques. M2 = M1 + savings deposits + MMFs + certificates of deposit + other time deposits. The Federal Reserve system is responsible for monitoring M1 and M2 amounts and prepares weekly disclosure of money supply information. To provide an idea of how these figures sound, according to the Federal Reserve Bank's measure on US money stocks, at the end of February 2015 the M1 in the US was $3 trillion, while the M2 was $11.8 trillion. The breakdown of some of each type of money consisting of M1 and M2 in February 2015, as provided by the Federal Reserve Bank, is provided for in Table 14.1. Table 14.1 M1 and M2 Federal Reserve Statistical Release, Monetary Inventory Measures (Source: Federal Reserve Statistical Release, The lines separating the M1 and M2 may become a little murky. Sometimes elements of the M1 are not treated equally; for example, some companies will not accept personal checks for large sums, but will accept traveler's checks or cash. Changes in banking practices and technology have made savings accounts in the M2 more similar to checking accounts in the M1. For example, some savings accounts will allow savers to write checks, use automatic ATMs and pay bills online, which has made it easier to access savings accounts. As with many other economic terms and statistics, the important thing is to know the benefits and limitations of different definitions of money, not to believe that such definitions are as clear for economists as, say, the definition of nitrogen to chemists. Where does plastic money like debit cards, credit cards and smart money fit into this picture? A debit card, such as a check, is instructing the customer's bank to transfer the money directly and immediately from your bank account to the seller. It is important to note that our definition of money is about unverified deposits that are money, not a paper check or debit card. Although you can make a purchase with a credit card, it is not considered money but a short-term loan from a credit card company to you. When you buy with a credit card, the credit card company immediately transfers money from your current account to the seller, and at the end of the month, the credit card company sends you an invoice for what you charged that month. Until you pay your credit card bill, you have effectively borrowed money from a credit card company. With a smart card, you can store a certain value of money on the card and use the card to make a purchase. Some smart cards used for specific purposes, such as long distance phone calls or shopping at campus bookstores and cafeterias, are actually not as smart, as they can only be used for certain purchases or in certain places. In short, credit cards, debit cards and smart cards are different ways to move money when making a purchase. But having multiple credit cards or debit cards doesn't change the amount of money in the economy, anything more than printing more checks increases the amount of money in your current account. One of the key messages on which this debate on the M1 and M2 is to be weaved is that money in the modern economy is not just paper bills and coins; instead, the money is closely linked to bank accounts. Indeed, macroeconomic policies relating to money are largely implemented through the banking system. The following section explains how banks operate and how the nation's banking system has the power to generate money. Link it to a short article (on current monetary challenges in Sweden. 14.3 | The role of BanksBy near this section, you will be able to:Explain how banks act as intermediaries between savers and borrowersIte the relationship between banks, savings and loans, and credit unionAnalyze causes of bankruptcy and recession The late bank robber named Willie Sutton was once asked why he robbed banks. He said, That's where the money is. While this may have been true at one point, from the perspective of modern economists, Sutton is both right and wrong. He is wrong because the vast majority of money in the economy is not in the form of currency sitting in vaults or drawers in banks, waiting for a robber to appear. Most of the money is in the form of bank accounts, which exist only as electronic records on computers. From a broader perspective, however, the bank robber was right more than he might have known. Banking is closely linked to money, and therefore to the wider economy. Banks make it easier for a complex economy to carry out an extraordinary range of transactions that occur in commodity, labour and financial capital markets. Imagine for a moment what the economy would be like if all payments had to be made in cash. When buying a big purchase or going on holiday you may have to carry hundreds of dollars in your pocket or purse. Even small businesses would need cash supplies to pay workers and buy supplies. A bank allows people and businesses to store that money in a checking account or savings account, for example, and then withdraw that money if necessary by using direct withdrawals, writing a check, or using a debit card. Banks are a key intermediary in the so-called payment system, which helps the economy exchange goods and services for money or other financial Also, those with extra money they would like to save can store their money in a bank rather than looking for an individual who is willing to borrow it from them and then return them later. Those who want to borrow money can go directly to the bank instead of trying to find someone to lend them cash Transaction costs are costs associated with finding a lender or borrower for that money. This is how banks lower transaction costs and act as financial intermediaries – bringing together savers and borrowers. In addition to making transactions much safer and easier, banks also play a key role in making money. Banks as financial intermediaries is the intermediary that stands between the two other parties. Banks are a financial intermediary – that is, an institution that operates between a depositor depositing money in a bank and a borrower receiving a loan from that bank. Financial intermediaries also include other financial market institutions such as insurance companies and pension funds, but they will not be involved in this discussion because they are not considered depositary institutions, namely institutions that accept cash deposits and then use them to provide loans. All paid funds are mixed in one large pool, which is then borrowed. Figure 14.4 illustrates the position of banks as financial intermediaries, with deposits flowing to the bank and loans flowing. Of course, when banks lend to businesses, banks will try to channel financial capital to healthy businesses that have a good chance of repaying loans rather than loss-making companies and may not be able to repay. Figure 14.4 Banks act as financial intermediary banks as financial intermediaries as they stand between savers and borrowers. Savers place deposits with banks and then take interest and withdraw money. Borrowers receive loans from banks and repay loans with interest. On the other hand, banks return money to savers in the form of withdrawals, which include paying interest from banks to savers. Clear It UpHow are banks, savings and loans and credit unions connected? Banks have several close relatives: savings institutions and credit unions. Banks, as explained, take deposits from individuals and companies and loans with money. Savings institutions are sometimes referred to as both savings and loans or frugality. They also take out loans and a dump. From the 1930s to the 1980s, however, federal law limited how much interest-saving institutions were allowed to pay savers. They were also required to rent most of their loans in the form of housing loans, either to domestic buyers or property developers. A credit union is a nonprofit financial institution that its members own and run. Members of each credit union decide who has the right to be a member. potential members would be all in a particular community or group of employees or members of a particular organisation. The Credit Union accepts members' deposits and is focused on providing loans to its members. While there are more credit unions than banks and more banks than savings and loans, total credit union assets are growing. In 2008, there were 7085 banks. Due to bank failures in 2007-2009 and bank mergers, there were 5,571 banks in the United States at the end of the fourth quarter of 2014. According to the National Credit Union Association, as of December 2014 there were 6535 credit unions with assets totaling $1.1 billion. Transfer Your Money Day was held in 2009. People were encouraged to pass on their deposits to credit unions. This has grown into an ongoing Move Your Money project. Accordingly, some now hold deposits as large as $50 million. However, since 2013, the 12 largest banks (0.2%) controlled 69 percent of all banking assets, according to the Bank of Dallas balance sheet.A is an accounting tool that lists assets and liabilities. Property is something valuable that is owned and can be used to produce something. For example, cash you own can be used to pay tuition fees. If you own a home, it is also considered an asset. Responsibility is debt or something you owe. Many people borrow money to buy houses. In this case, a home is an asset, but a mortgage is an obligation. The net value is the value of the asset minus the amount of the debt (liability). The bank's balance sheet operates in the same way. The bank's net worth is also called bank capital. The bank has assets such as cash held in treasuries, money held by the bank in a Federal Reserve bank (called reserves), loans given to clients and bonds. Figure 14.5 illustrates the hypothetical and simplified balance sheet for Safe and Secure Bank. Due to the two-column balance sheet format, with a T-shape formed vertical line down the middle and a horizontal line under Assets and Liabilities, it is sometimes referred to as a T-account. Figure 14.5 The balance sheet for secure and secure bank T in the T-account separates the company's assets, on the left, from its liabilities, on the right. All companies use T-accounts, although most are much more complicated. For a bank, an asset is financial instruments held by a bank (its reserves) or those instruments in which other parties owe money to a bank - such as loans provided by a bank and U.S. government securities, such as U.S. government bonds purchased by the bank. Liabilities are what a bank owes others. In particular, the bank owes all deposits in the bank to those who made them. The net worth of the bank is the total minus total liabilities. Net worth is included on the liability side to make the T account balance zero. For a healthy business, the net worth will be positive. For a bankrupt company, net worth will be negative. In any case, in the bank's T-account, assets will always be equal liabilities plus net worth. When bank customers deposit money in a current account, savings account, or payment receipt, the bank considers these deposits liabilities. After all, the bank owes these deposits to its customers, when customers want to withdraw their money. In the example shown on number 14.5, Safe and Secure Bank has a $10 million deposit. Loans are the first category of bank assets shown in the number 14.5. Let's say the family takes out a 30-year mortgage loan to buy a home, which means the borrower will repay the loan within the next 30 years. This loan is clearly an asset from the bank's perspective, as the borrower has a legal obligation to pay the bank over time. But in practical terms, how can the value of a mortgage loan paid for over 30 years be measured in the present? One way to measure the value of something — whether credit or whatever — is to estimate what the other side on the market is willing to pay for it. Many banks issue home loans and charge different handling and processing fees for this, but then sell loans to other banks or financial institutions that collect loan installments. The market in which loans are given to borrowers is called the primary credit market, while the market in which these loans are bought and sold by financial institutions is a secondary credit market. One of the key factors influencing which financial institutions are willing to pay the loan, when they buy it in the secondary loan market, is the perceived risk of credit: that is, given the characteristics of the borrower, such as the level of income and whether the local economy has a strong track record, what proportion of loans of this kind will be repaid? The greater the risk that the loan will not be repaid, the lower the risk that any financial institution will pay to acquire the loan. Another key factor is the comparison of the interest rate charged on the original loan with the current interest rate in the economy. If the original loan made at some point in the past requires the borrower to pay a low interest rate, but the current interest rates are relatively high, then the financial institution will pay less to acquire the loan. By contrast, if the original loan requires the borrower to pay a high interest rate, while current interest rates are relatively low, then the financial institution will pay more to acquire the loan. For Safe and Secure Bank in this example, the total value of its loans if sold to other financial institutions on the secondary market is $5 million. The second category of bank assets are bonds, are a common borrowing mechanism, used by federal and local governments, as well as private companies and nonprofits. The bank takes some of the money it has received in deposits and uses the money to buy bonds – usually bonds issued by the US government. Government bonds are low-risk because it is almost certain that the government will repay the bond, albeit at a low interest rate. These bonds are assets for banks in the same way that loans are assets: the bank will receive a payment flow in the future. In our example, Safe and Secure Bank holds bonds with a total value of $4 million. The final entry under the asset is reserves, which is money that the bank keeps handy, which is not borrowed or invested in bonds – and therefore does not lead to interest payments. The Federal Reserve requires banks to keep a certain percentage of savers' money on reserve, meaning either in their Treasuries or at the Federal Reserve Bank. It's called a reserve request. (Monetary policy and bank regulation will explain how the level of these necessary reserves is one of the policy tools governments must influence banks' behaviour.) In addition, banks may also want to keep a certain amount of reserves at hand above what is needed. A secure and secure bank holds $2 million in reserves. A bank's net worth is defined as its total assets minus its total liabilities. For a Secure and Secure Bank shown at 14.5, the net worth is $1 million; that is, $11 million in assets minus $10 million in liabilities. For a financially sound bank, the net worth will be positive. If a bank had a negative net worth and savers tried to withdraw their money, the bank would not be able to give all savers their money. Connect itFor some concrete examples of what banks do, watch this video (from Paul Solman's Financial News Sense. As banks go bankrupt the bankrupt Bank will have a negative net worth, meaning its assets will be worth less than its liabilities. How can that happen? Again, looking at the balance sheet helps explain. A well-run bank will assume that a small percentage of borrowers will not repay their loans on time or at all, and factor these missing payments into their planning. Recall, the calculations of banks' costs each year include a factor for loans that are not repaid, and the value of the bank's loans on its balance sheet assumes a certain level of risk, as some loans will not be repaid. Even if the bank expects a certain number of defaults, it will suffer if the number of loan defaults is much higher than expected, as can happen during a recession. For example, if Secure and Secure Bank at 14.5 experienced a wave of unexpected defaults, so its loans reduced in value from $5 to $3 million, then Safe and Secure Bank assets would decline so that the bank had a negative net worth. Clear It UpWhat led to the 2008-2009 financial crisis? Many banks earn mortgage loans so people can buy a home, but then they don't keep loans on their books as property. Instead, the bank sells the loan. These loans are securitized, which means that together they are bundled with financial security sold to investors. Investors in these mortgage-backed securities receive a rate of return based on the level of payment people pay on all the mortgages behind security. Securitization offers certain advantages. If a bank makes most of its loans in the local area, the bank can be financially vulnerable if the local economy declines, so many people are unable to pay. But if a bank sells its local loans and then buys mortgage-backed insurance based on home loans in many parts of the country, it can avoid exposure to local financial risks. (In a simple example in the text, banks simply own bonds. In reality, banks can own a number of financial instruments, as long as these financial investments are secure enough to satisfy the regulators of state banks.) From the point of view of a local home builder, securitisation offers the benefit that a local bank does not have to have a lot of additional funds for a loan, as the bank plans to keep this loan for only a short time, before selling the loan so that it can be pooled into financial security. But securitization also offers one potentially major drawback. If a bank is going to have a mortgage loan as an asset, the bank has an incentive to carefully supervise the borrower to ensure the loan is likely to be repaid. However, the bank that will sell the loan may be less cautious in drafting the loan in the first place. The bank will be more prepared for so-called subprime loans, such as loans that have characteristics such as a low or zero advance, little oversight of whether the borrower has a reliable income, and sometimes low payouts for the first year or two followed by much higher payments. Some subprime loans made in the mid-2000s were later called NINJA loans: loans made even though the borrower showed no income, no job or assets. These subprime loans are usually sold and converted into financial securities – but with a turnaround. The idea was that if there were losses on these mortgage-backed securities, certain investors would agree to take the first, say, 5 percent of such losses. Other investors would agree to take on, say, the next 5 per cent of losses. This approach should still not take any losses if these mortgage-backed financial securities do not lose 25% or 30% or more of their total value. These complex securities, together with other large expansion of subprime loans in the mid-2000s. The economic phase is now set for a banking crisis. Banks thought they were only buying ultra-secure securities, because while the securities were ultimately backed by risky mortgages, banks only invested in a portion of those securities where they were protected from small or moderate levels of losses. However, as house prices fell after 2007, the number of people living in the uk fell by 1.5 per cent. Between 2008 and 2011, 318 banks collapsed in the United States. The risk of an unexpectedly high level of default on loans can be particularly difficult for banks, as the bank's liabilities, i.e. deposits of its customers, can be withdrawn quickly, but many of the bank's assets such as loans and bonds will only be repaid over years or even decades. This non-compliance of easiness time on assets - bank liabilities can be withdrawn in the short term while its assets are resale in the long term - can cause serious problems for the bank. For example, imagine a bank that borrowed a substantial sum of money at a certain interest rate, but then sees interest rates rise significantly. The bank may find itself in an uncertain situation. If it does not raise the interest rate it pays to savers, deposits will arrive to other institutions offering higher interest rates that are now prevalent. However, if a bank raises the interest rates it pays out to savers, it may end up paying savers a higher interest rate than it does from those past loans made at lower interest rates. Clearly, a bank cannot survive in the long term if it pays more interest to savers than it receives from borrowers. How can banks protect themselves from an unexpectedly high default rate on loans and from the risk of asset liability time mismatches? One strategy is for the bank to diversify its loans, which means lending to various customers. For example, suppose a bank specializes in nis market lending – say, giving a high proportion of its loans to construction companies that build offices in one city center. If this one area suffers an unexpected economic downturn, the bank will suffer heavy losses. However, if the bank also lends to consumers who buy homes and cars, as well as a wide range of businesses in many industries and geographies, the bank is less at risk. When a bank diversifies its loans, those categories of borrowers who have an unexpectedly high number of defaults will usually be balanced, according to a random case, by other borrowers who have low number of defaults. Therefore, diversifying loans can help banks maintain a positive net worth. However, if there is a widespread recession that tosses many industries and geographical areas, diversification will not help. In addition to diversifying their loans, banks have several other strategies to reduce the risk of an unexpectedly high number of loan defaults. For example, banks can sell some of the loans they produce in the secondary loan market, as described above, and instead have a larger share of assets in the form of government bonds or reserves. Nevertheless, in a protracted recession, most banks will see their net worth fall as a higher proportion of loans will not be repaid in difficult economic times,14.4 | As banks create money The end of this section, you'll be able to:Use a multiplier money formula to determine how banks generate moneyAnalyze and create balance sheets of T-accountsAssy the risks and benefits of money and bankBanks and the money intertwines. It's not just that most of the money is in the form of bank accounts. The banking system can literally generate money through the lending process. Let's see how. Making money by a BankStart with a hypothetical bank called Singleton Bank. The bank has a $10 million deposit. Singleton Bank's T-account balance sheet, when it holds all deposits in its vaults, is shown at 14.6. At this stage, Singleton Bank simply stores money for savers and uses these deposits to provide loans. In this simplified example, Singleton Bank cannot earn any interest income from these loans, and it cannot pay its savers an interest rate either. Figure 14.6 Singleton Bank Balance Sheet: Receives a $10 million depositSingleton Bank is required by the Federal Reserve to keep $1 million on reserve (10% of total deposits). He'll borrow the remaining $9 million. By borrowing $9 million and accruing interest, they will be able to pay interest to savers and generate interest income for Singleton Bank (for now we will keep this simple and will not put interest income on the balance sheet). Instead of becoming just a deposit warehouse, Singleton Bank can become a financial intermediary between savers and borrowers. This change in the business plan changes Singleton Bank's balance sheet, as shown at 14.7. Singleton's assets have changed; Now he's got $1 million in reserves and a $9 million Hank's Auto Supply loan. The bank still has a $10 million deposit. Figure 14.7 Singleton Bank balance sheet: 10% reserve, one round of loansSingleton Bank lends $9 million to Hank's Auto Supply. The Bank records this loan by entering it on the balance sheet to indicate that the loan has been made. This loan is an asset, because it will generate interest income for the bank. Of course, the credit officer won't let Hank leave. bank with $9 million in cash. Bank issues Hank's Auto Supply check for $9 million Hank's taking out a loan on his regular first national check account. Deposits at First National are growing by $9 million and its reserves are also growing by $9 million, as Figure 14.8 shows. First National must hold 10% of additional deposits as mandatory reserves, but is free to lend the rest of Figure 14.8 First national balance loans that are deposited into a demand deposit account increase M1 money supply. Remember the definition of M1 includes verifiable (requested) deposits, which can easily be used as a medium of exchange to buy goods and services. Notice that the cash stock is now $19 million: a $10 million deposit at Singleton Bank and a $9 million deposit at First National. Obviously those deposits will be withdrawn while Hank's Auto Supply writes checks to pay his bills. However, the bigger picture is that the bank must keep enough money in reserves to meet its obligations; the rest of the bank loans. In this example so far, bank lending has expanded its money offering by $9 million. Now, First National must hold only 10% as required reserves ($900,000), but can borrow the other 90% ($8.1 million) in loan to Jack's Chevy Dealership as shown in Figure 14.9. Figure 14.9 First National BalanceIf Jack's deposits loan in its current account at Second National, the cash offer has just increased by an additional $8.1 million, as Figure 14.10 shows. Figure 14.10 Balance sheet of the Second National BankHow is this money-making possible? It is possible because there are more banks in the financial system, they are only obliged to hold part of their deposits, and loans end up deposited in other banks, which increases deposits and, in fact, cash stock. Link It UpWatch to this video (to learn more about how banks make money. The Money Multiplier and Multi-Bank SystemIn multi-bank system, the initial amount of excess reserve that Singleton Bank decided to lend Hank's auto supply to is deposited at Frist National Bank, which is free to lend $8.1 million. If all banks borrow excess reserves, the money offer will expand. In a multi-bank system, the amount of money a system can generate is found using a money multiplier. The money multiplier tells us by how many times the loan will multiply as it is spent in the economy and then dump it back into other banks. Fortunately, there is a formula for calculating the total number of these many lending rounds in the banking system. The money multiplier formula is: The money multiplier then multiplies with a change in excess reserves to determine the total amount of M1 cash offer created in the banking system. See Work it Out to walk through a multiplier OutUsing money multiplier FormulaUsing money multiplier for example in this text: Step 1. In the case of Singleton Bank, for which the reserve requirement is 10% (or 0.10), the money multiplier is 1 divided by .10, which is equal to step 10.Step 2. We found that the excess reserve is $9 million, so that using the formula we can determine the overall change in M1 cash supply: Step 3. So we can say that, in this example, the total amount of money generated in this economy after the completion of all rounds of lending will be $90 million. Money multiplier warnings The money multiplier will depend on the share of reserves banks must have from the Federal Reserve Bank. In addition, the bank may also choose to hold additional reserves. Banks may decide to change the amount they hold in reserve for two reasons: macroeconomic conditions and government rules. When the economy is in recession, banks are likely to have a higher share of reserves because they fear loans are less likely to be resused when the economy is sluggish. The Federal Reserve may also increase or decrease the necessary reserves held by banks as a policy move that will affect the amount of money in the economy, as monetary policy and bank regulation will discuss. The process of how banks generate money shows that the amount of money in the economy is closely linked to the amount of lending or loans in the economy. Indeed, all the money in the economy, apart from the original reserves, is the result of bank loans being re-deposited and borrowed, over and over again. Finally, the money multiplier depends on people re-depositing the money they receive into the banking system. If people instead store their money in safes or in shoeboxes hidden in closets, banks can't recirculate money in the form of loans. Indeed, central banks have an incentive to ensure that bank deposits are safe because if people worry that they might lose bank deposits, they can start holding more money in cash rather than dumping it in banks, and the amount of credit in the economy will decrease. Low-income countries have what economists sometimes call mattress savings or money that people hide in their homes because they don't trust banks. When mattress savings in the economy are substantial, banks cannot borrow these funds, and the money multiplier cannot act as effectively. The total amount of money and loans in such an economy will decrease. Link it to Jem Bendello' UpWatch video (discussing Money Myth. Money and Banks – Benefits and DangersMoney and banks are marvellous social inventions that help the modern economy to function. Compared to the trade alternative, money makes it much easier to exchange in the goods, labour and financial markets. Banking still makes money effective in facilitating the exchange of goods and the labour market. Moreover, the process of lending to banks in financial capital markets is closely linked to money creation. But the extraordinary economic profits that are possible through money and banking also suggest some possible appropriate dangers. If banks are not doing well, this triggers a decline in the convenience and security of transactions across the economy. If banks are under financial stress, due to widespread declines in the value of their assets, loans can become far less available, which can strike a severe blow to sectors of the economy that depend on borrowed money such as business investment, house construction and car manufacturing. Great Recession 2008/09 Bring it home A lot of money masks: From cows to essential coinsAn the global economy has come a long way since it started using cowshells as currency. We have moved away from money from paper secured with goods and goods into fiat currency. As technology and global integration increase, the need for paper currency is also decreasing. Every day we witness increased use of debit and credit cards. The latest creation and perhaps one of the purest forms of fiat money is Bitcoin. Bitcoins are a digital currency that allows users to buy goods and services online. Products and services such as videos and books can be purchased using Bitcoin. It is not supported by any goods nor has any government designated it as legal tender, but it is used as a medium of exchange and its value (at least online) can be stored. It is also unregulated by any central bank, but is created online through people who solve very complicated math problems and get paid afterwards. Bitcoin.org source of information if you're curious. Bitcoins are a relatively new kind of money. Currently, because it is not sanctioned as a legal currency by any country or regulated by any central bank, it is borrowed for use in illicit trading activities as well as legal ones. As technology increases and the need to reduce transaction costs associated with using traditional forms of money increases, Bitcoins or some kind of digital currency can replace our dollar account, just as the cow shell has been replaced. KEY TERMSasset value item owned by the company or individualasset – the liability time of the bank's non-compliance may be withdrawn at short notice, while its assets are resusable in the long-term long-term balance sheet an accounting tool that lists the assets and liabilities of the bank capital of a net worthbarter bank literally, trading in one good or service for another, without using money and currency in the circulation of coins and accounts circulating in an economy not held by the US Treasury, in the Federal Reserve Bank, or in bank treasury money, an item used as a which also has a value from its use as something other than cash-backed currencies are dollar accounts or other currencies with values backed up by gold or another commodity card immediately transferring money from the current account of the credit card company to the seller, and at the end of the month the user owes money to the card company; a credit card is a short-term credit card such as a check, it is instructing the customer's bank to transfer money directly and immediately from your bank account to a bank-checkable deposit, which is available by withdrawing cash or writing to a checkdepository institution that accepts cash deposits and then uses them to pay off loans or investments with different companies. , in order to reduce the risk of adverse impact of events on one or several firmdouble coincidences wants a situation where two people each want some good or service so that the other person can providefiat money has no intrinric value, but the government declares it a legal tender for a countryfinancial intermediary of an institution operating between a saver with financial assets to invest and an entity that will borrow these assets and pay a rate of return on any amount or debt owed by the company or individualM1 money delivers a narrow definition of cash currency and checking accounts at banks, and to a lesser extent travel checks. M2 money delivers a definition of a cash stock that includes everyone in the M1, but also adds savings deposits, MMFs and exchange depositary receipts whatever is widely accepted as a way of disbursing whatever serves the company in four functions: as an exchange medium, a repository of value, an account unit and a deferred payment standard. The cash market fund deposits of many investors are pooled and invested in a safe manner like a short-term one. government bonds multiplying the formula total money in the economy divided by the original amount of money, or changing the total money in the economy divided by changing the original amount of money network worth excess asset value above the amount of liability; Total assets minus the total liability payment system help the economy exchange goods and services for money or other financial resources held at hand by the bank that are not borrowed or invested in a bond deposit bank account where you cannot withdraw money by writing a check, but you can withdraw money at the bank - or you can easily transfer it to checking the accountsmad cards stores a certain value of the money on the card , and then the card can be used to buystandard deferred money for payment must also be eligible for purchase today will be paid in term value of something that serves as a way of preserving the economic value that can be spent or consumed in the futureT-account of balance sheets with a format of two columns, with a T-shape formed vertical line down the middle and a horizontal line below the column heading for assets and term deposit account obligations that the saver has committed to leave in the bank for a period of time. , in exchange for a higher interest rate; it is also called a confirmation of the deposit costs of costs associated with finding a lender or borrower for moneyunit accounts the usual way market values are measured in concepts and SUMMARY 14.1 Defining money with their functionsMoney is what people in society regularly use when buying or selling goods and services. If money were not available, people should trade with each other, which means that each person should identify others with whom they have a double match of desires – that is, each side has a certain good or service that the other wants. Money serves several functions: exchange medium, account unit, value store, and deferred payment standard. There are two types of money: commodity money, which is an item used as money, but which also has value from its use as something other than money; and fiat money, which has no intrinric value but is declared by the government to be a legal tender for a country.14.2 Measuring money: Currency, M1 and M2Money are measured by several definitions: M1 includes currency and money in account verification (demand deposits). Passenger checks are also an integral part of the M1, but are declining in use. The M2 includes the entire M1, plus savings deposits, time deposits such as deposit certificates and MMFs. Banks make it easier to use money for transactions in the economy because people and businesses can use bank accounts when selling or buying goods and services, when paying workers or paying, and when saving money or receiving credit. In the financial capital market, banks are financial intermediaries; that is, they operate between savers who supply financial capital and borrowers seeking loans. A balance sheet (sometimes referred to as a T-account) is an accounting tool that lists assets in one column and liabilities in another column. The bank's liabilities are its deposits. The bank's assets include its loans, bond ownership and reserves (which have not been borrowed). The bank's net worth is calculated by subtracting the bank's liabilities from its assets. Banks risk negative net worth if the value of their assets declines. The value of assets can be reduced due to an unexpectedly high number of defaults on loans or if interest rates rise and the bank suffers asset liability time where the bank receives a low interest rate on its long-term loans, but must pay the currently higher market interest rate to attract savers. Banks can protect themselves from these risks by choosing to diversify their loans or by holding a larger share of their assets in bonds and reserves. If banks hold only a fraction of their deposits as reserves, then the process of lending money to banks, those loans being re-deposited in banks and banks making additional loans will generate money in the economy.14.4 As banks create a money-multiplier money is defined as the amount of money the banking system can generate from every $1 of bank reserves. The formula for calculating multipliers is the ratio of 1/reserve, where the reserve ratio is part of the deposits that the bank wants to hold as reserves. The amount of money in the economy and the amount of credit for loans have been indecisively intertwined. Much of the money in the economy is generated by a network of banks that make loans, people who dump and banks that make more loans. Given the macroeconomic dangers of a faulty banking system, monetary policy and bank regulation will discuss government policies to control the supply of money and to protect the banking system. SELF-REVIEW QUESTIONS Questioning 14.1On many casinos, a person buys gambling chips. Inside the casino walls, these chips can often be used to buy food and drinks or even hotel rooms. Do casino chips serve all three functions of money? Click here to see AnswerQuestion 14.2 Can you specify an item that is a value store but does not serve other money functions? Click here to see AnswerQuestion 14.3As you buy clothes and books, what is the easiest and most convenient for you to spend: M1 or M2? Explain your answer. Click here to see AnswerQuestion 14.4For the following list of items, indicate whether they are in M1, M2, or none: a. Your $5,000 credit line on your Bank of America b card. $50 worth of traveler's checks you haven't used c. $1 in quarters in pocket d. $1200 in your current account e. $2000 you have in your money market accountClick here to see AnswerQuestion 14.5Explain why the money listed under the assets on your bank balance may not actually be in the bank? Click here to see AnswerQuestion 14.6Imagine that you are in a position to purchase loans on the secondary market (that is, buying payment entitlements to loans made by banks) for a bank or other financial services company. Explain why you would be willing to pay more or less for a specific loan if: a. The borrower is late for a series of loan repayments b. Interest rates in the economy as a whole have risen since the loan was made c. The borrower is a company that has just declared a high level of profit d. Rates in the economy as a whole have fallen since the loan was madeClick here to see AnswerREVIEW questions Questions 14.7This four functions served money? Click here to see AnswerQuestion 14.8How does the existence of money simplify the buying and selling process? Click here to see AnswerQuestion 14.9This double coincidence wants? Click here to see answerquestion 14.10This money components count as part of the M1? Click here to see answerquestion 14.11This money components count in M2? Click here to see AnswerQuestion 14.12For why is a bank called a financial intermediary? Click here to see AnswerQuestion 14.13 What is the balance sheet showing? Click here to see AnswerQuestion 14.14As the bank's assets? What are his obligations? Click here to see AnswerQuestion 14.15How do you calculate the bank's net worth? Click here to see AnswerQuestion 14.16How can a bank end up with a negative net worth? Click here to see AnswerQuestion 14.17This is the non-compliance of asset time and liability faced by all banks? Click here to see AnswerQuestion 14.18This is the risk if the bank does not diversify its loans? Click here to see AnswerQuestion 14.19How do banks make money? Click here to see AnswerQuestion 14.20As a formula for a money multiplier? Click here to see AnswerCritical THINKING QUESTIONSQuestion 14.21 Bring it Home Feature talks about using cowrie shells as money. Although cowshells are no longer used as money, do you think other forms of commodity money are possible? What role could technology play in our definition of money? Click here to see AnswerQuestion 14.22Imagine that you are a barber in a world without money. Explain why it would be difficult to get groceries, clothes and a place to live. Click here to see AnswerQuestion 14.23Explain why you think the Federal Reserve Bank is monitoring the M1 and M2. Click here to see AnswerQuestion 14.24 The total amount of U.S. currency in circulation divided by the U.S. population is about $3,500 per person. That's more than most of us wear. Where's all the money? Click here to see AnswerQuestion 14.25Exend the difference between how you would characterize bank deposits and loans as assets and liabilities on your own personal balance sheet and how a bank would characterize deposits and loans as assets and liabilities on its balance sheet. Click here to see AnswerQuestion 14.26Should banks have to hold 100% of their deposits? Why or why not? Click here to see AnswerQuestion 14.27Explain what will happen to the money multiplier process if there is an increase in reserve requirements? Click here to see AnswerQuestion 14.28You think the Federal Reserve Bank has done reserve during the Great Recession 2008-2009? Click here to see AnswerPROBLEMSQuestion AnswerPROBLEMSQuestion You take $100 out of your piggy bank and deposit them in your current account, how has the M1 changed? Has the M2 changed? Click here to see AnswerQuestion 14.30A bank has deposits of $400. He's got $50 reserves. He bought $70 worth of government bonds. He made $500 loans. Establish a T-account balance for the bank, with assets and liabilities, and calculate the bank's net worth. Click here to see AnswerQuestion 14.31Humongous Bank is the only bank in the economy. The people in this economy have $20 million in money, and he's put all his money into Humongous Bank. a. Humongous Bank decides on a policy of holding 100% of reserves. Draw a T-account for the bank. b. Humongous Bank is required to hold 5% of its existing $20 million as reserves and borrow the rest. Draw a T-account for the bank after the first round of credit. c. Suppose Humongous Bank is part of a multibank system. How much will the cash stock increase with that original $19 million loan? Click here to see AnswerAnswersAnsWer to question 14.1As while staying within the casino walls, the chips fit the definition of money; that is, they serve as a medium of exchange, a unit of accounts, and a repository of values. Chips don't work as well as money after you leave the casino, but many types of money don't work well in other areas. For example, it is difficult to spend money from Turkey or Brazil in a local supermarket or in a cinema. Click here to return to question 14.1Answer to question 14.2Mnogi physical items that a person buys at once, but can sell at another time, can serve as an answer to this question. Examples include house, country, art, rare coins or stamps, and so on. Click here to return to question 14.2Answer on question 14.3 The currency and cheques in the M1 are easiest to spend. It is more difficult to spend the M2 directly, although if there is an automatic device for sale in the shopping center, you can quickly convert the M2 from your savings account into M1 currency. If your answer is about credit cards, then you're really talking about spending the M1 - even though it's the M1 from your credit card company account, which you'll return later when your credit card bill comes due. Click here to return to question 14.3Answer on question 14.4b. This is part of the M1, and since the M2 includes the M1, it is also part of the M2c. The currency in public hands is part of the M1 and M2d. Control deposits are in M1 and M2e. Money market accounts are in M2Click here to return to question 14.4Answer when asked 14.5A the bank's assets include cash held in their vaults, but the assets also include money held by the bank at the Federal Reserve Bank (called Reserves), loans given to clients and bonds. Click here to return to question 14.5Answer on question 14.6a. A borrower who has been late for a number of loan instalments looks like probably repay the loan, or repay it on time, and so you would like to pay less for that loan.b. If interest rates have generally risen, then this loan made at a time of relatively lower interest rates looks less attractive, and you would pay less for it.c. If the borrower is a company with a record of high profits, then they will probably be able to repay the loan, and you would be willing to pay more for the loan.d. If interest rates in the economy have fallen, then the loan is worth more. Click here to return to question 14.6Answer on question 14.7A account unit, exchange medium, repository of value and standard of deferred paymentClick here to return to question 14.7Answer when asked 14.8Money facilitates the exchange by eliminating the need to find bartering arrangements to which both sides are comfortable, what economists call chances of desire. Click here to return to question 14.8Answer on question 14.9 This is when the two sides discover that each has something the other wants, and the course can be arranged. Click here to return to question 14.9Answer on question 14.10 M1 measures currency, passenger checks and bill checks. Click here to return to question 14.10Answer on the question of 14.11M2 savings measures and money market accounts along the M1. Click here to return to question 14.11Answer to Question 14.12Banks to help lenders find borrowers and vice versa, serving as an intermediary to facilitate financial transactions. Click here to return to question 14.12Answer on question 14.13A balance shows all assets and liabilities of the bank. Click here to return to question 14.13Answer on question 14.14 The bank's assets are loans it has issued and its reserves, the liabilities are the accounts it holds, since ultimately that money owes to lenders. Click here to return to question 14.14Answer on question 14.15 The bank's net worth is the bank's assets minus liabilities. Click here to return to question 14.15Answer on question 14.16 If borrowers default on loans, the bank may end up with more liabilities than theClick asset here to return to question 14.16Answer when asked 14.17 The fact that liabilities must be resusable on demand, while assets take time to accrue. Click here to return to question 14.17Answer when asked 14.18A the bank should diversify its loans so that if one particular market goes badly, it does not lose all its loans in one fella. Click here to return to question 14.18Answer to Question 14.19Banks to create money by lending deposits to borrowers, creating a multiplier effect on cash sleuthing. Click here to return to question 14.19Answer when asked 14.20Meal money multiplyer is a reciprocal reserve requirement on banks. Click here to return to question 14.20Answer on question 14.21Comodity money can any number of shapes, with gold and silver the highest but this does not exclude other types. Technology has made the digital currency possible, a new idea with interesting potential. Click here to return to question 14.21Answer on question 14.22Suppose foods is bald! To get the necessary goods, the barber should find people who want a haircut, but also produce the items he most wants. Click here to return to question 14.22Answer on question 14.23 The Federal Reserve is responsible for conducting national monetary policy. To do this, it is necessary to monitor how much money is in circulation. The two primary money procurement measures are M1 and M2. The supply of money correlates with total expenditure in the economy, which affects the level of economic activity and the inflation rate. Since monetary policy is intended to affect economic activity and inflation, the Federal Reserve monitors the M1 and M2. Click here to return to question 14.23Answer on question 14.24The largest is in banks or stored in households. Click here to return to question 14.24Answer on question 14.25I an individual would consider a bank deposit an asset, since he can rely on it at any time and the loan as an obligation, as he must repay it. The bank has the opposite position, since it has to repay deposits, but can charge for loans. Click here to return to question 14.25Answer on question 14.26But. Without the ability to borrow money, banks would not be able to make a profit or increase economic growth through a multiplier system. Click here to return to question 14.26Answer on question 14.27Since a smaller portion of each deposit is borrowed, the multiplier will decrease. This means fewer loans borrowed and less economic growth. Click here to return to question 14.27Answer on question 14.28 The Federal Reserve could have reduced reserve requirements to try to stimulate demand, but in fact decided instead to use other monetary policy tools, since excess bank lending was one of the causes of the recession. Click here to return to question 14.28Answer on question 14.29 None of these measures change unless there is a loan. However, with loans, the M1 and M2 can be increased through multiple loans created with a $100 deposit. An increase in M1 and M2 would be equal ($100-($100*reserve requirement))* to a money multiplier. In other words, if the reserve requirement was 20%, then the money multiplier would be 1/0.2= 5. So the increase in money supply would be ($100- ($100* 20%))*5 = $400 so that M1 and M2 can grow by a total of $400 as a result of putting $100 into the banking system. Click here to return to question 14.29Answer on question 14.30 Since the bank's assets total $420 and the bank's liabilities total $400, the bank's net worth is $20. Click here to return to question 14.30Answer on question 14.31a. Assets: $20 million in reserves. $20 million deposit. B. Assets: $1 million in reserves. $19 million in loans. Liabilities: $20 million deposit. c. A money multiplier is an inversion of the reserve claim, which in this case stands at 20, so a $19 million deposit will increase the cash sleuth by $380 million. Click here to return to Question 14.31 Download for free at 11.12.Page 7 7

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