

**DEBUNKING ECONOMICS**  
THE NAKED EMPEROR DETHRONED?  
SUPPLEMENT

Steve Keen



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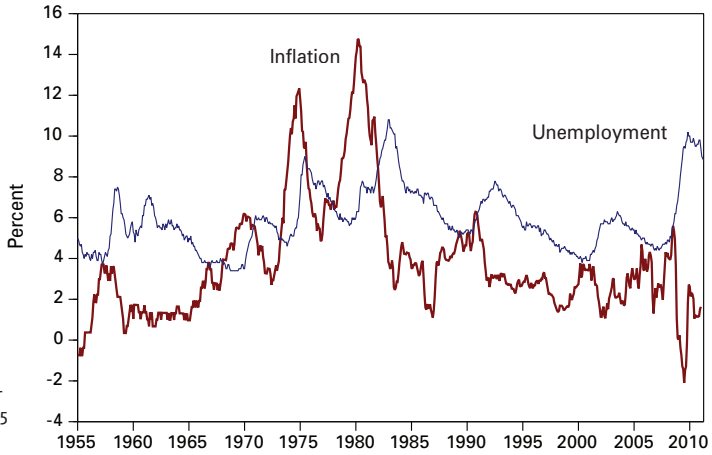
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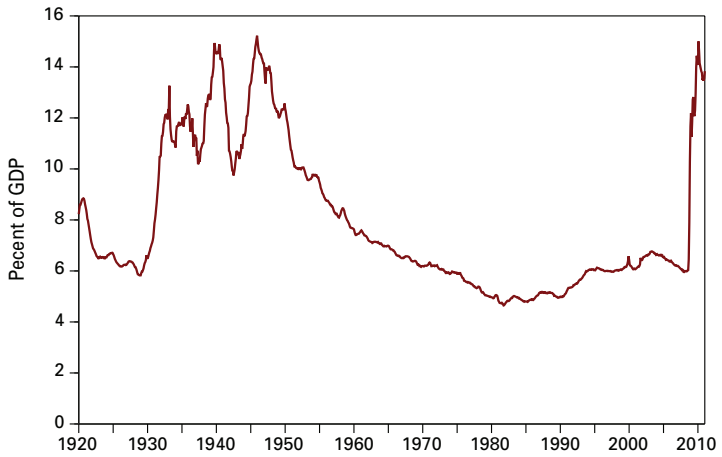
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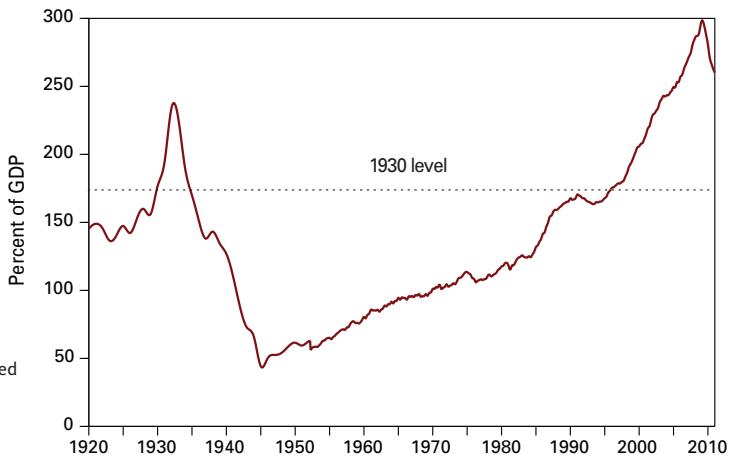
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1 US inflation and unemployment from 1955

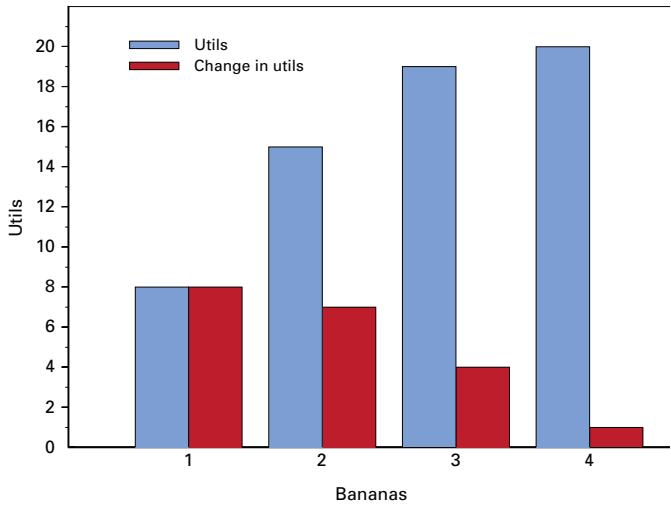


2 Bernanke doubles base money in five months

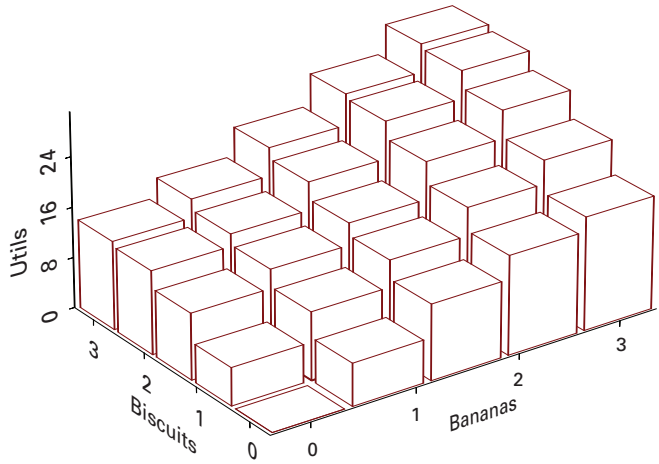


3 Private debt peaked at 1.7 times the 1930 level in 2009

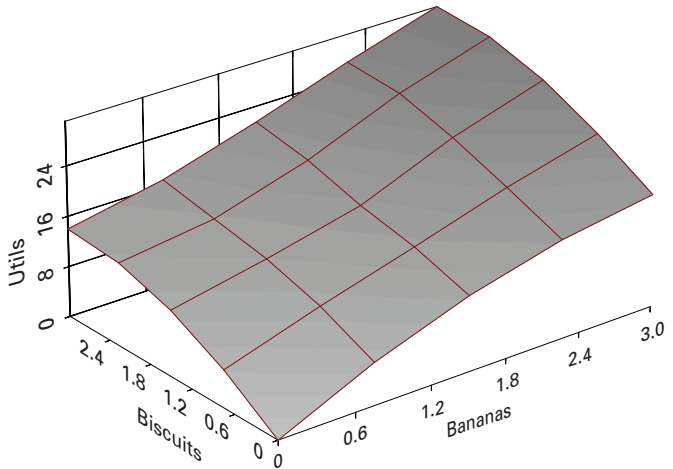
4 Rising total utils and falling marginal utils from consuming one commodity

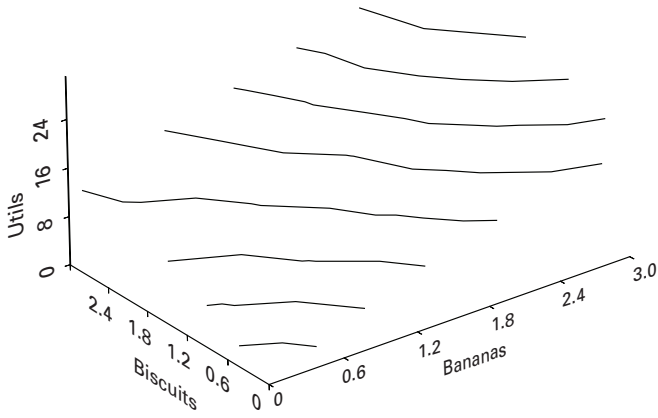


5 Total utils from the consumption of two commodities

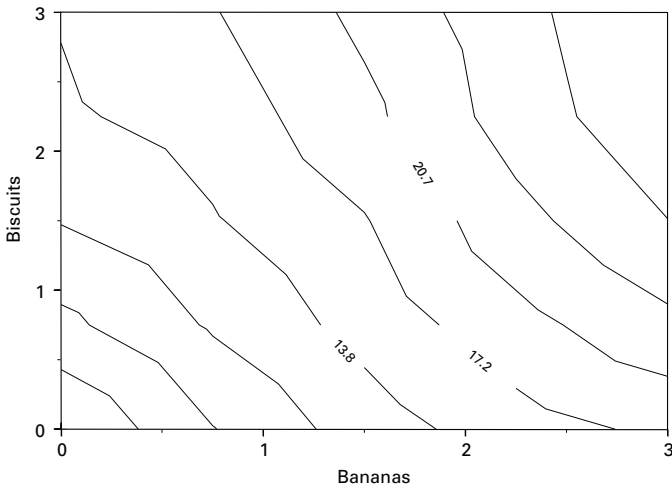


6 Total 'utils' represented as a 'utility hill'

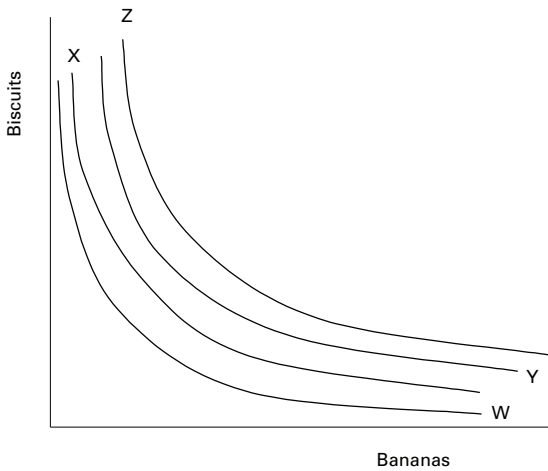




7 The contours of the 'utility hill'

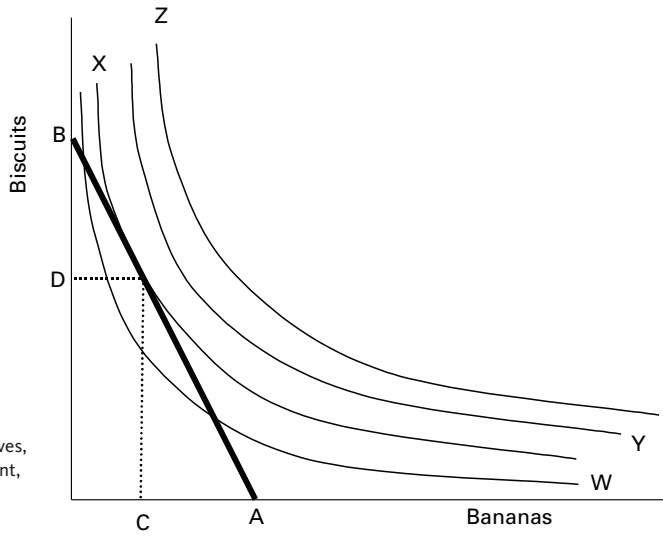


8 Indifference curves: the contours of the 'utility hill' shown in two dimensions

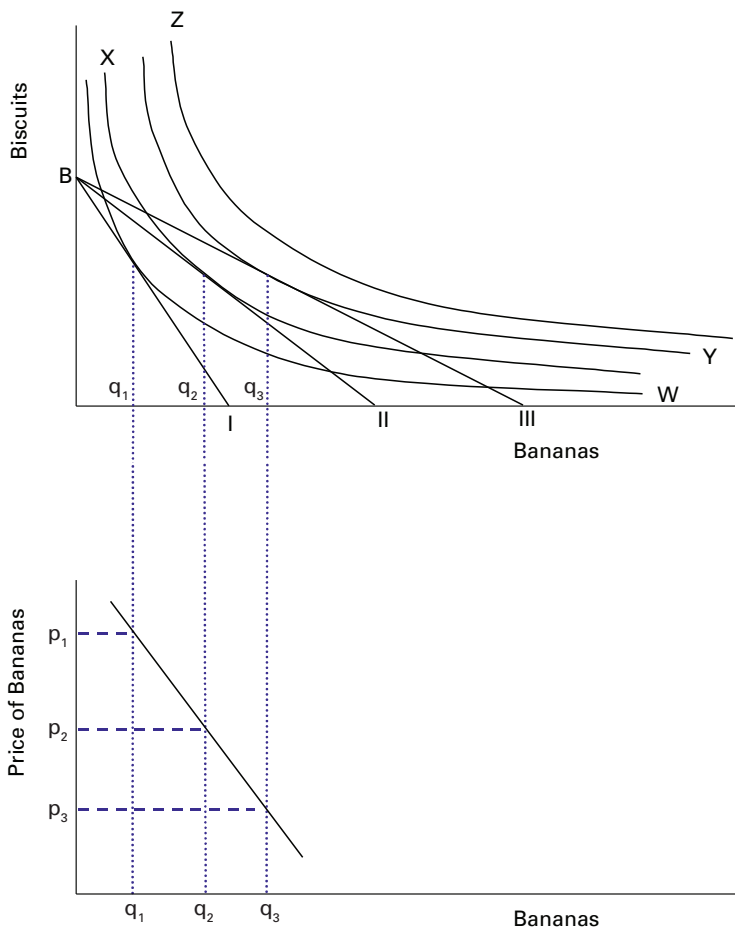


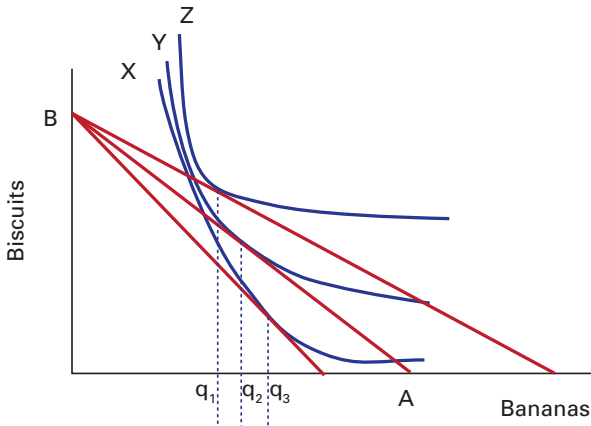
9 A rational consumer's indifference map

10 Indifference curves, the budget constraint, and consumption

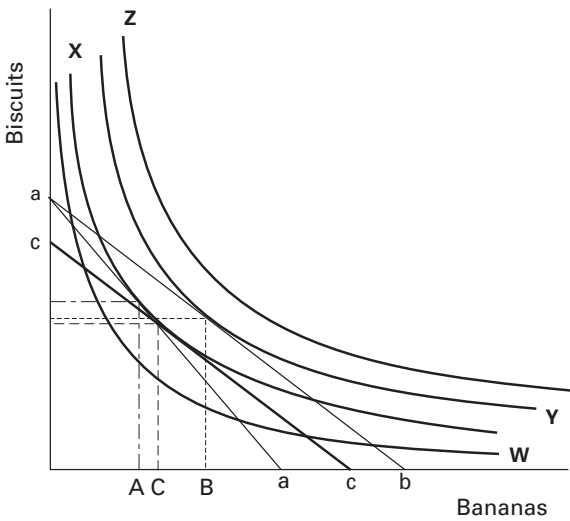
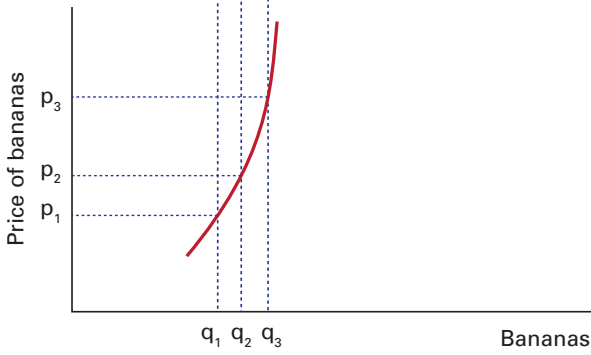


11 Deriving the demand curve

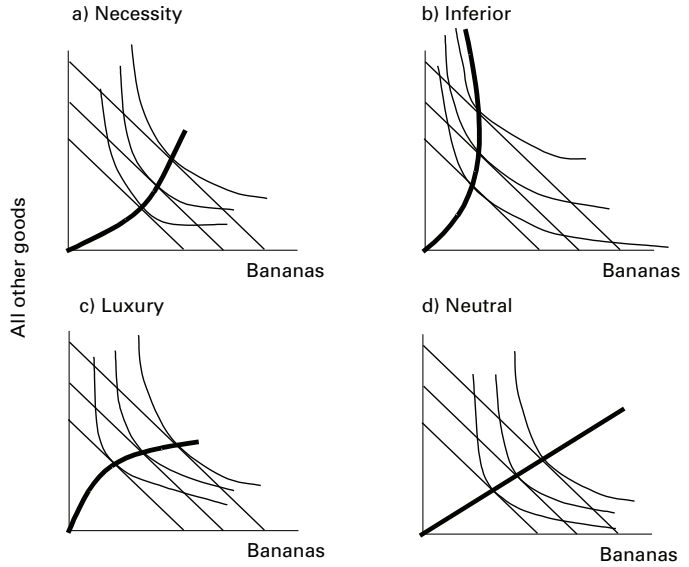




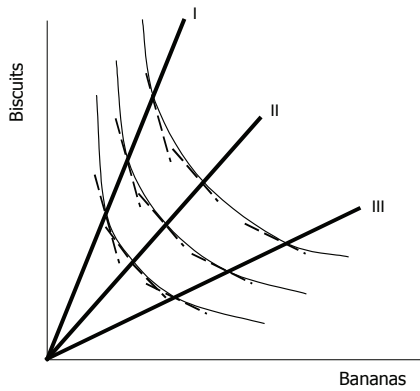
12 Upward-sloping demand curve



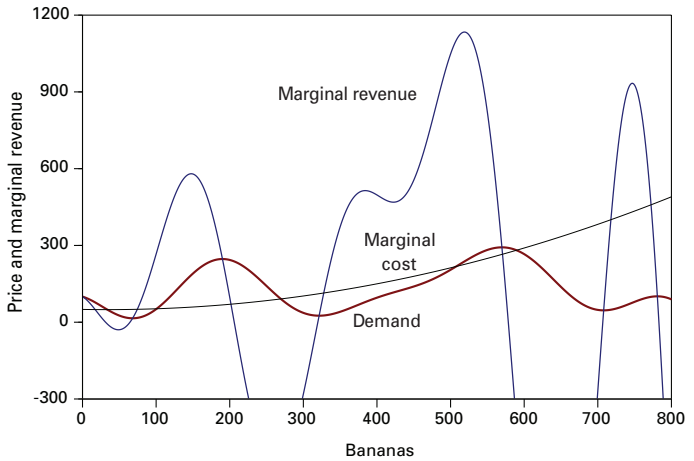
13 Separating out the substitution effect from the income effect



14 Engel curves show how spending patterns change with increases in income



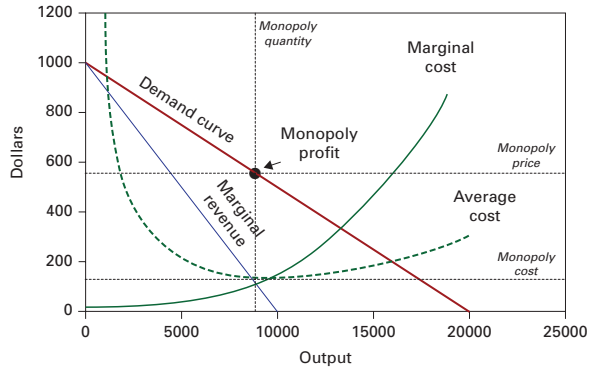
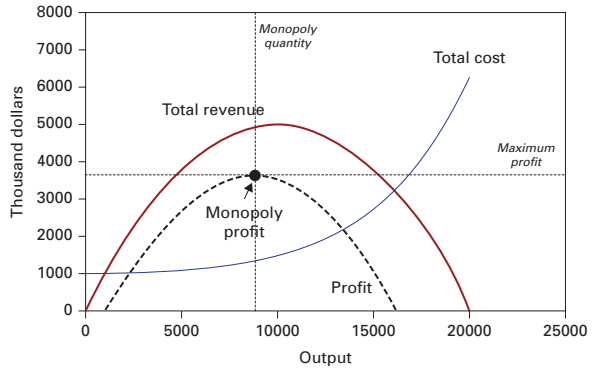
15 Straight-line Engel 'curves'



16 Economic theory cannot rule out the possibility that a market demand curve may have a shape like this, rather than a smooth, downward-sloping curve



**17** Profit maximization for a monopolist: marginal cost equals marginal revenue, while price exceeds marginal cost

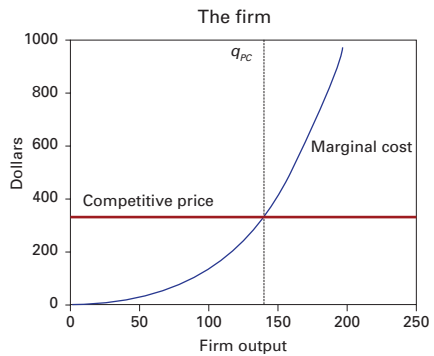
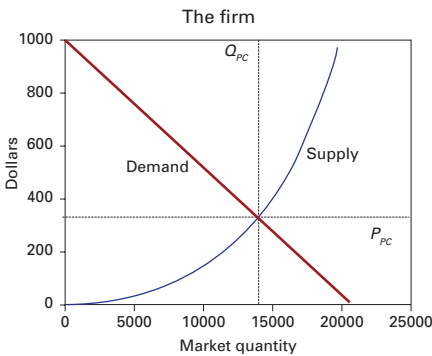
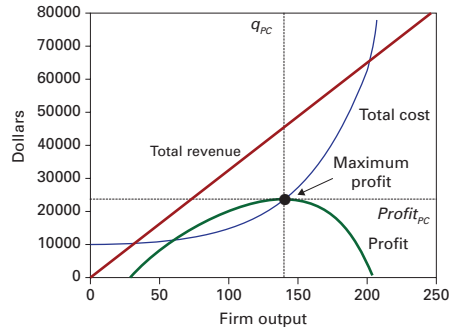


**18** Profit maximization for a perfectly competitive firm: marginal cost equals marginal revenue, which also equals price

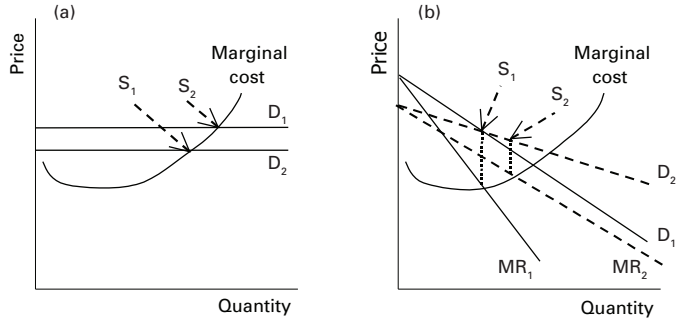
The procedure:

- 1 Market sets equilibrium price
- 2 Price taking firm sets marginal revenue equal to marginal cost
- 3 Profit maximized

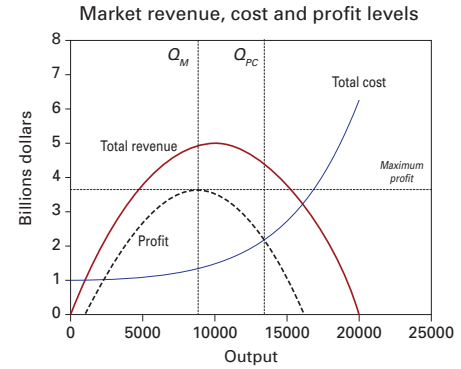
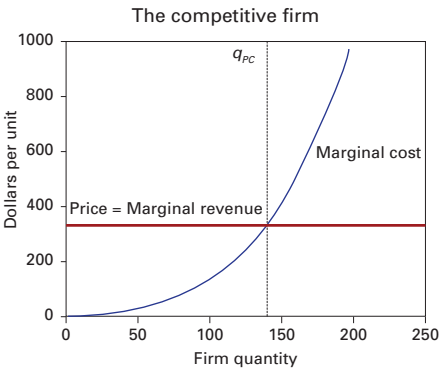
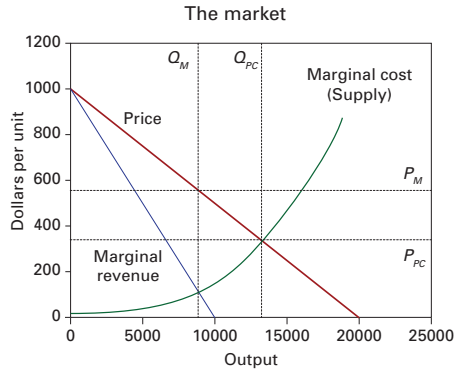
Firm revenue, cost and profit



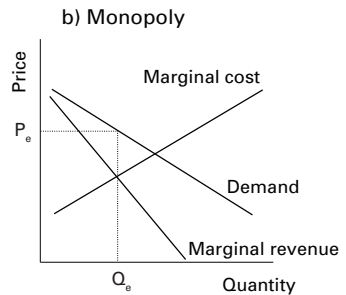
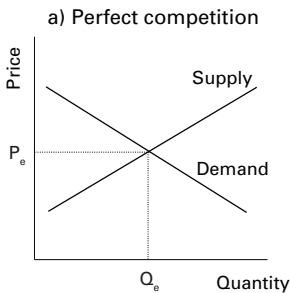
19 A supply curve can be derived for a competitive firm, but not for a monopoly



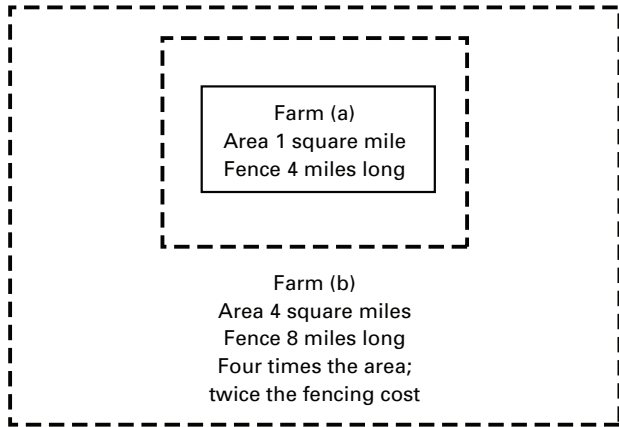
20 A competitive industry produces a higher output at a lower cost than a monopoly



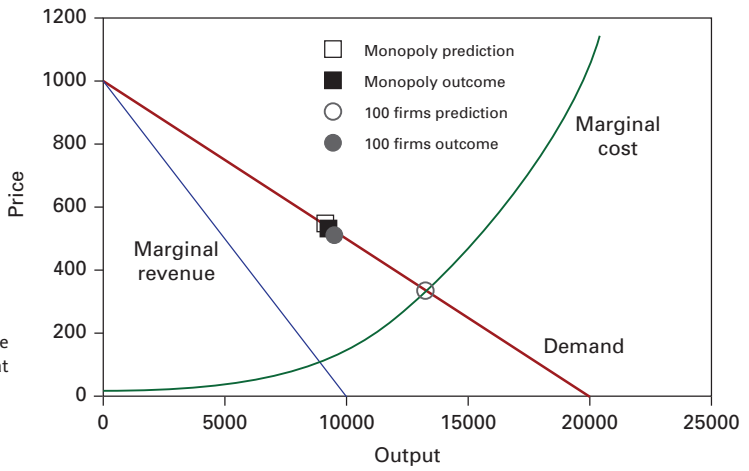
21 The standard 'supply and demand' explanation for price determination is valid only in perfect competition



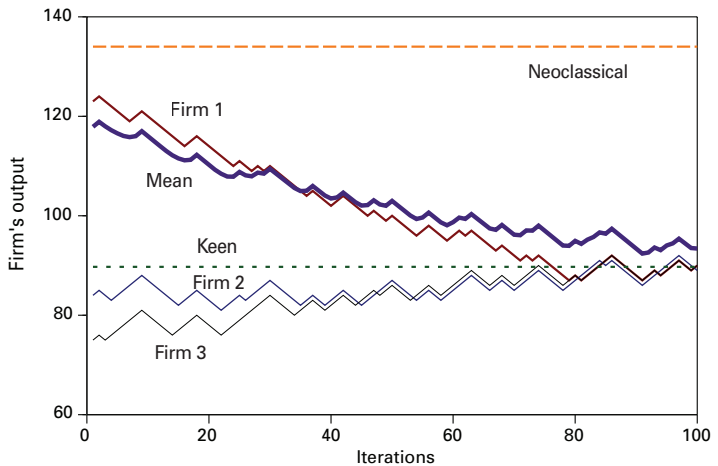
22 Double the size, double the costs, but four times the output



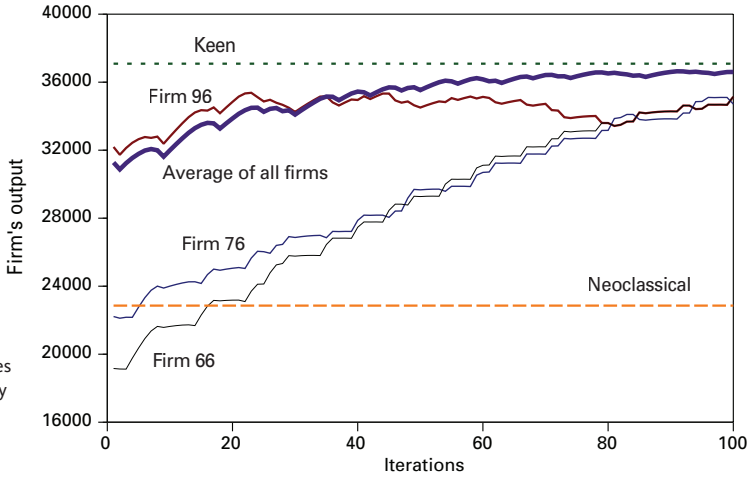
23 Predictions of the models and results at the market level



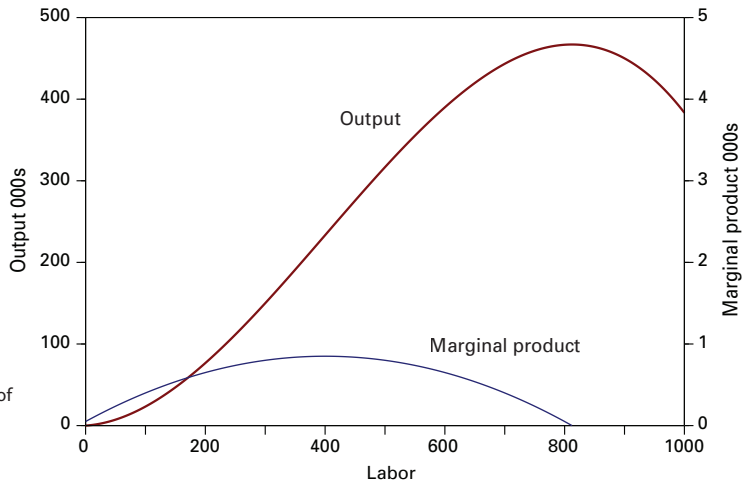
24 Output behavior of three randomly selected firms



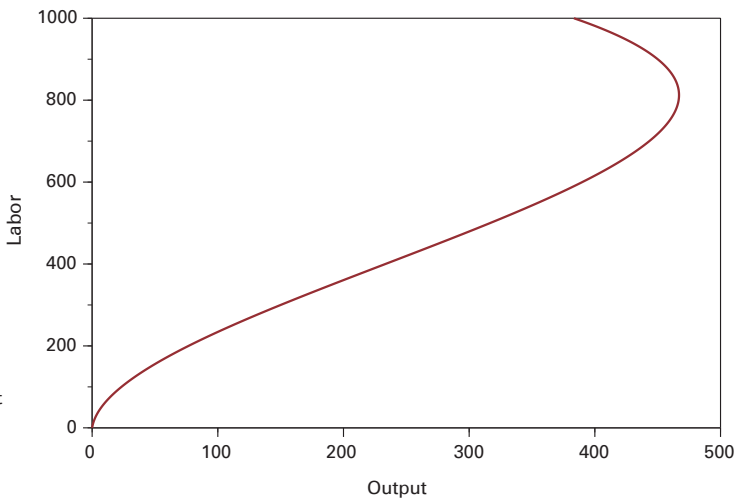
25 Profit outcomes for three randomly selected firms

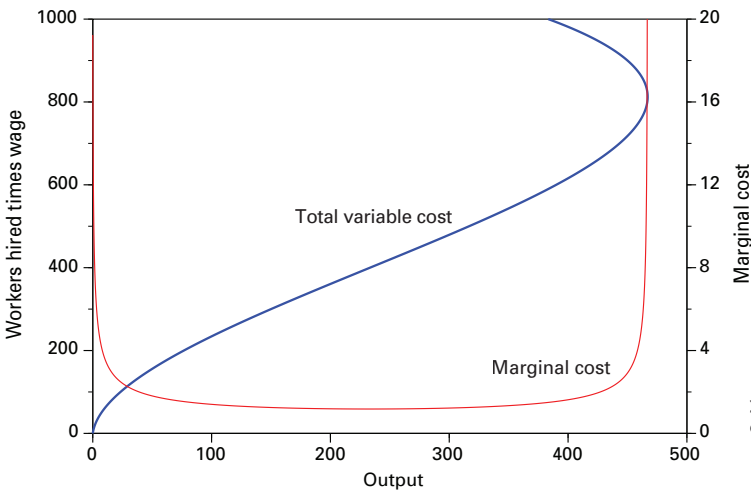
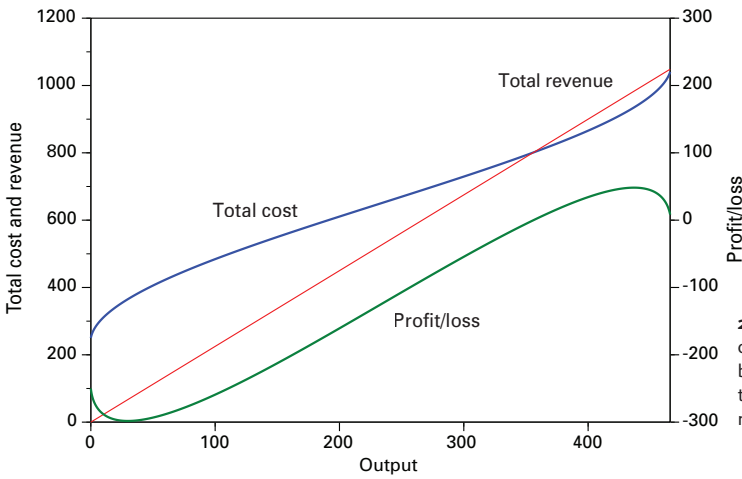
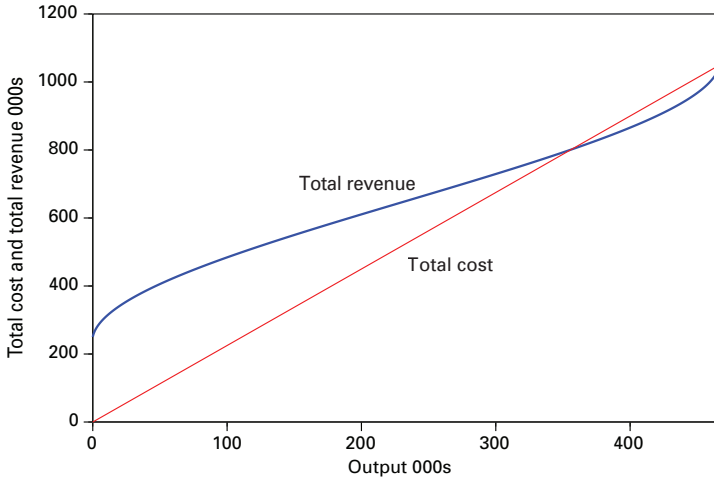


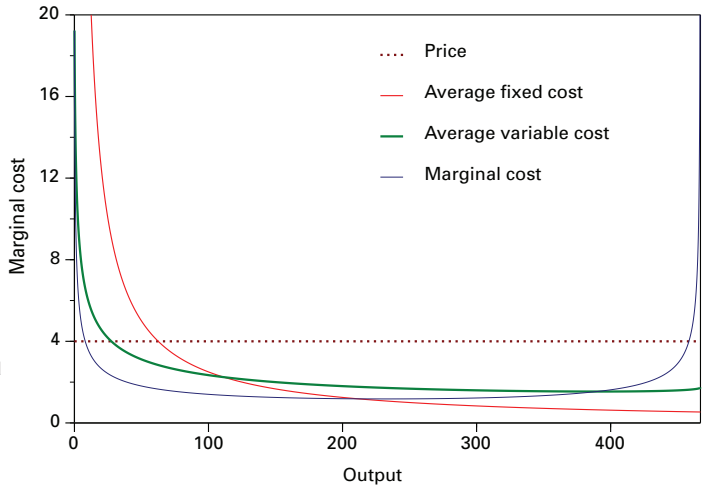
26 Product per additional worker falls as the number of workers hired rises



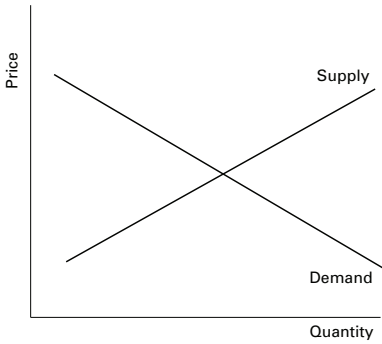
27 Swap the axes to graph labor input against quantity



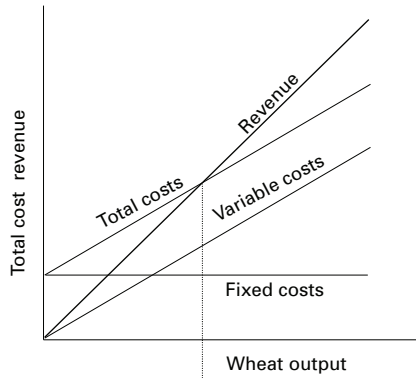




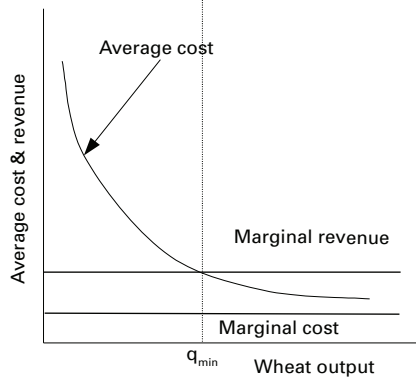
31 The whole caboodle: average and marginal costs, and marginal revenue



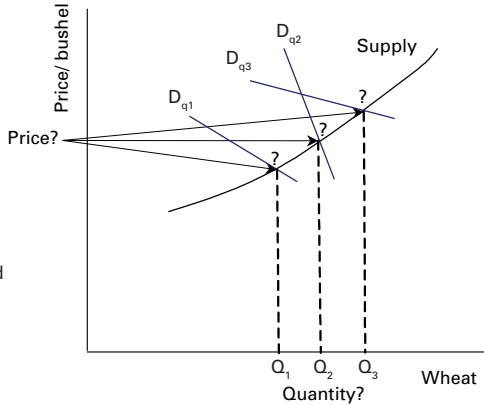
32 The upward-sloping supply curve is derived by aggregating the marginal cost curves of numerous competitive firms



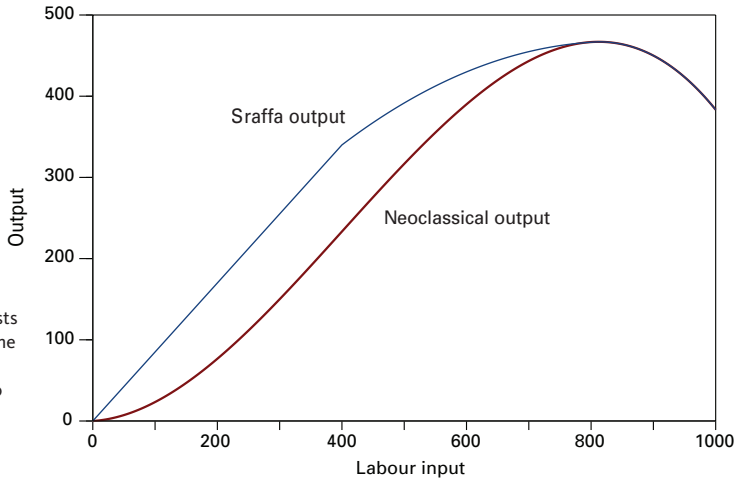
33 Economic theory doesn't work if Sraffa is right



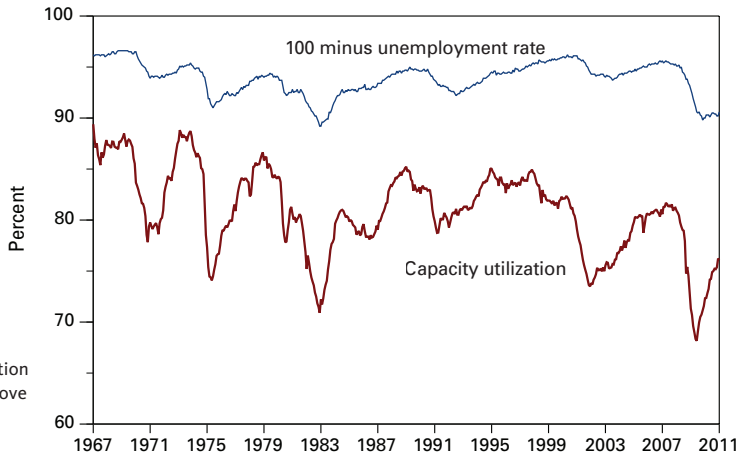
**34** Multiple demand curves with a broad definition of an industry



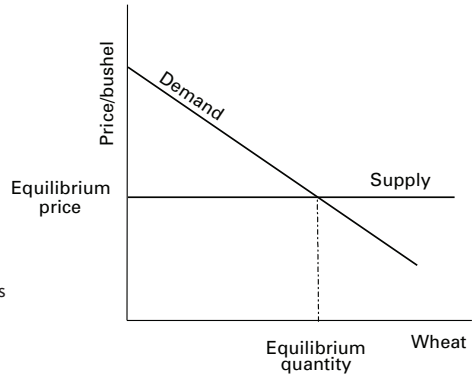
**35** A farmer who behaved as economists advise would forgo the output shown in the gap between the two curves



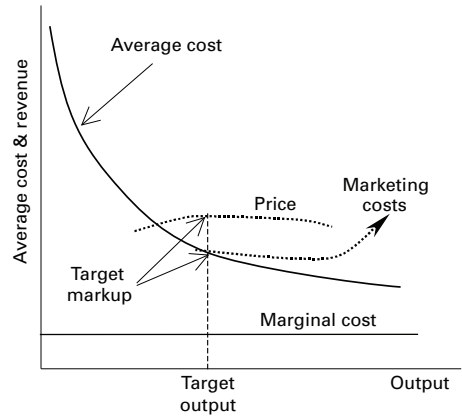
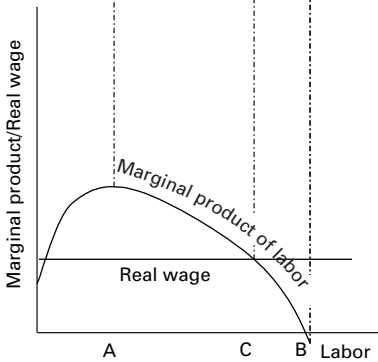
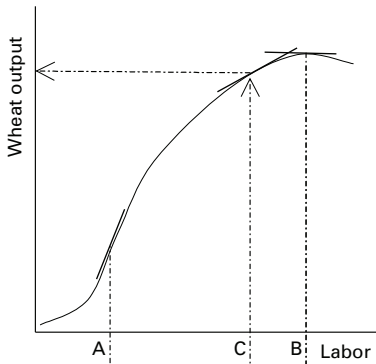
**36** Capacity utilization and employment move together



37 Costs determine price and demand determines quantity



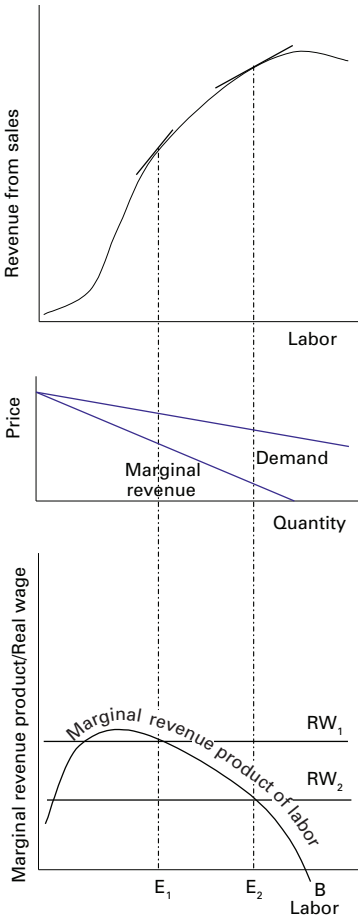
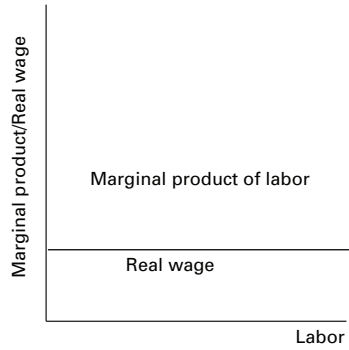
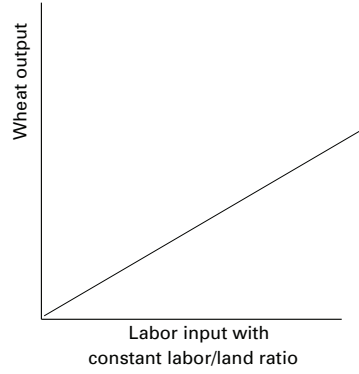
38 A graphical representation of Sraffa's (1926) preferred model of the normal firm



39 The economic theory of income distribution argues that the wage equals the marginal product of labor

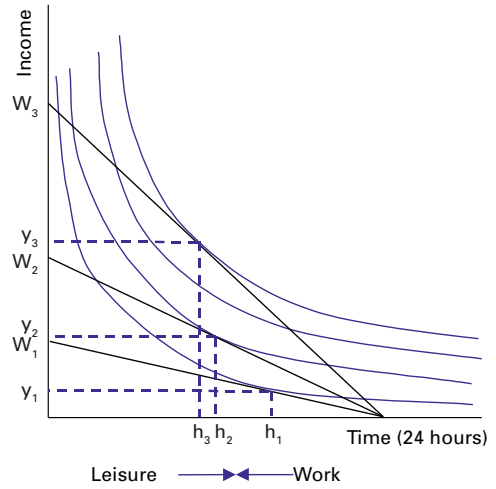


40 Economics has no explanation of wage determination or anything else with constant returns

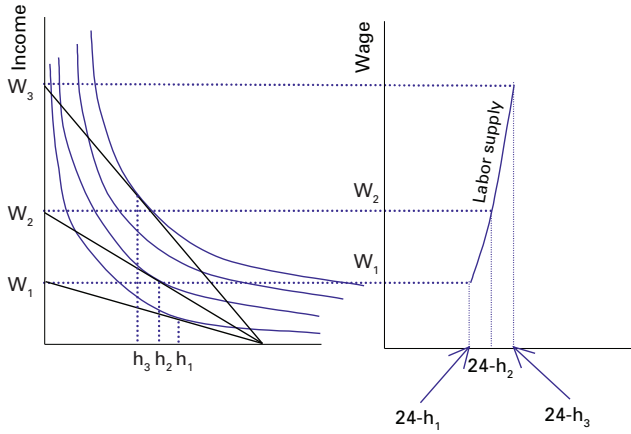


41 The demand for labor curve is the marginal revenue product of labor

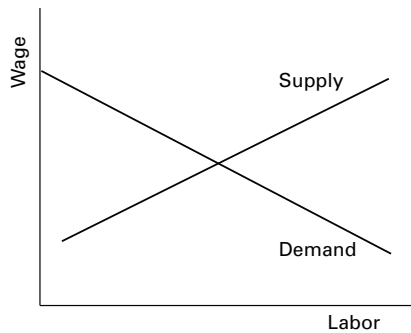
42 The individual's income-leisure trade-off determines how many hours of labor he supplies

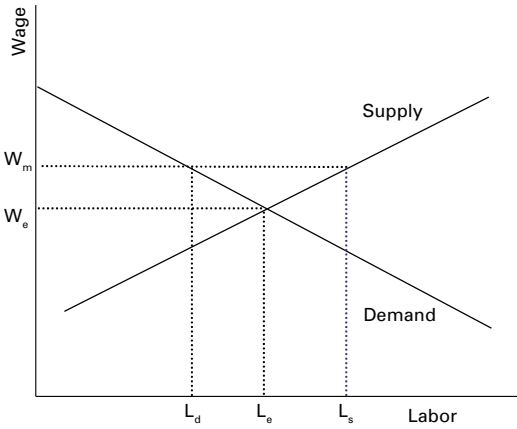


43 An upward-sloping individual labor supply curve

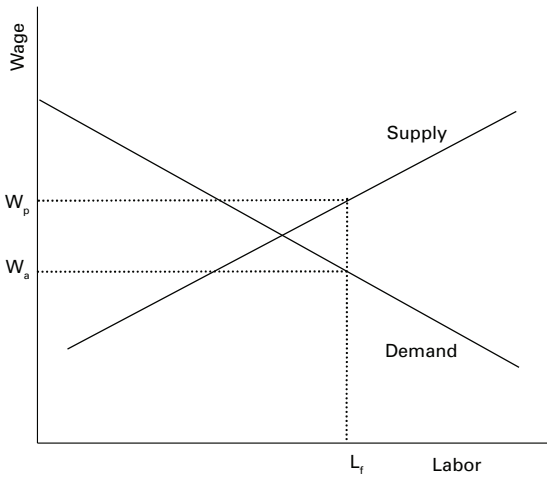


44 Supply and demand determine the equilibrium wage in the labor market

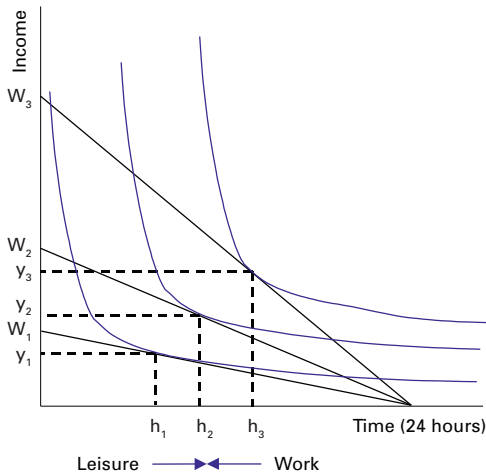




45 Minimum wage laws cause unemployment

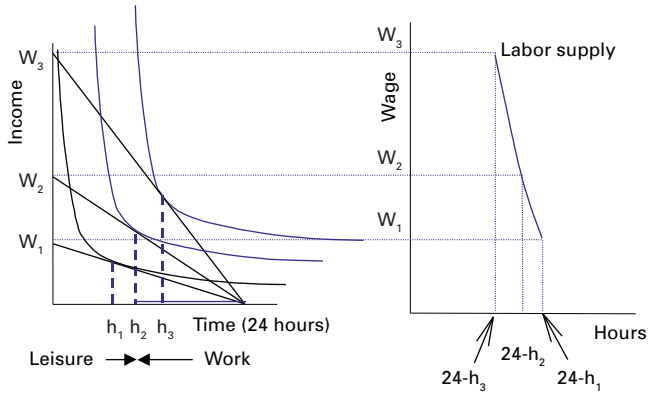


46 Demand management policies can't shift the supply of or demand for labor

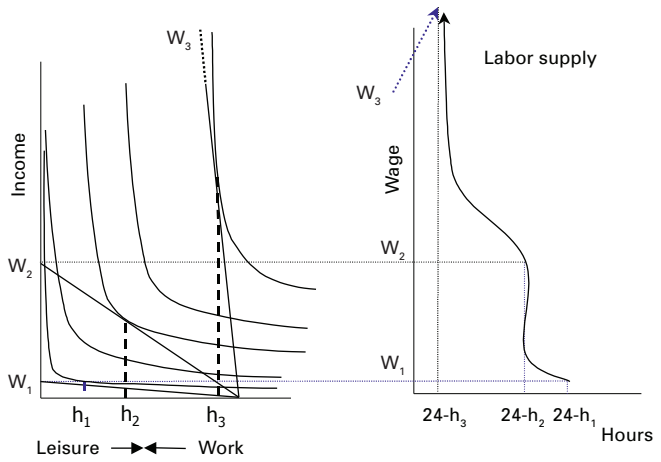


47 Indifference curves that result in less work as the wage rises

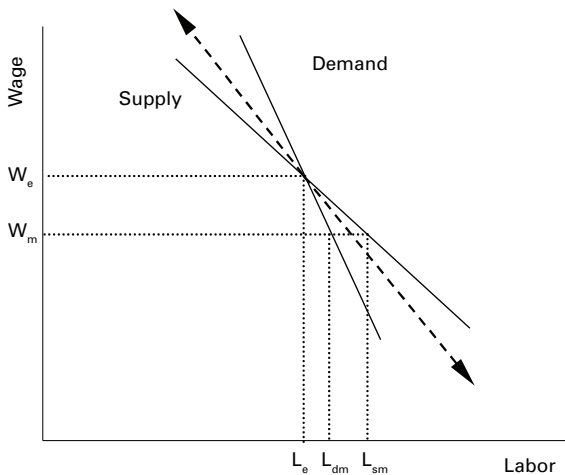
48 Labor supply falls as the wage rises

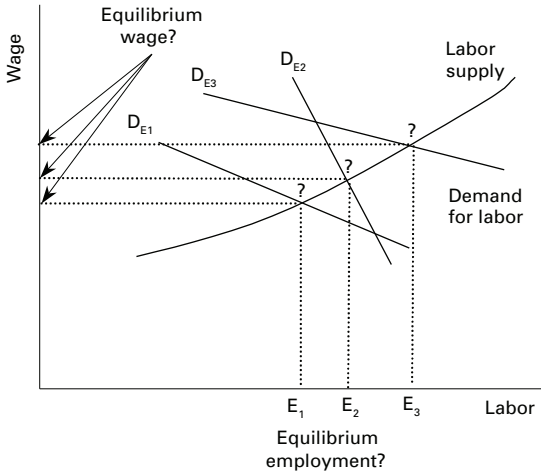


49 An individual labor supply curve derived from extreme and midrange wage levels

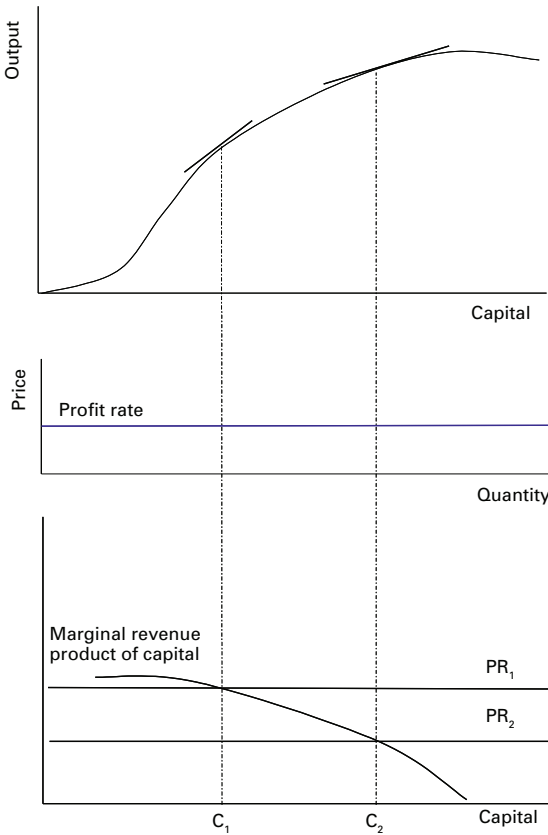


50 An unstable labor market stabilized by minimum wage legislation



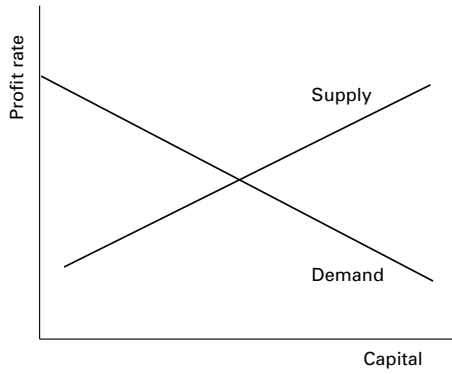


51 Interdependence of labor supply and demand via the income distributional effects of wage changes

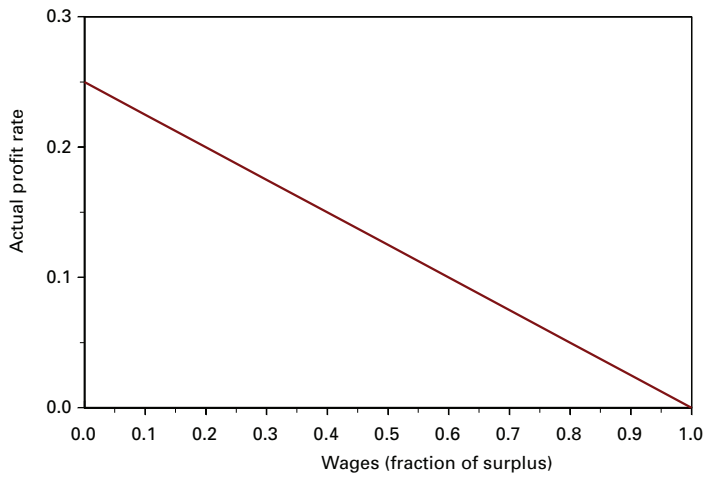


52 The rate of profit equals the marginal product of capital

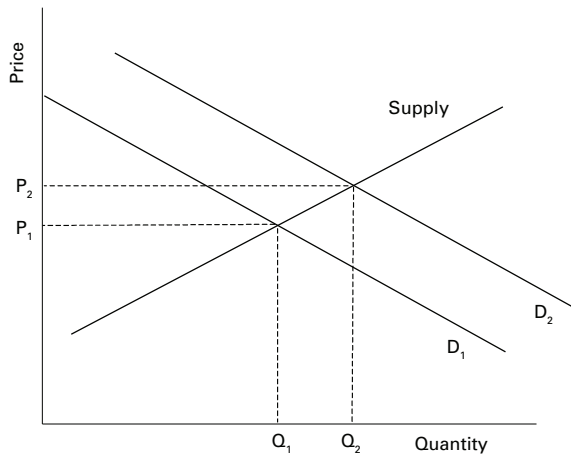
53 Supply and demand determine the rate of profit



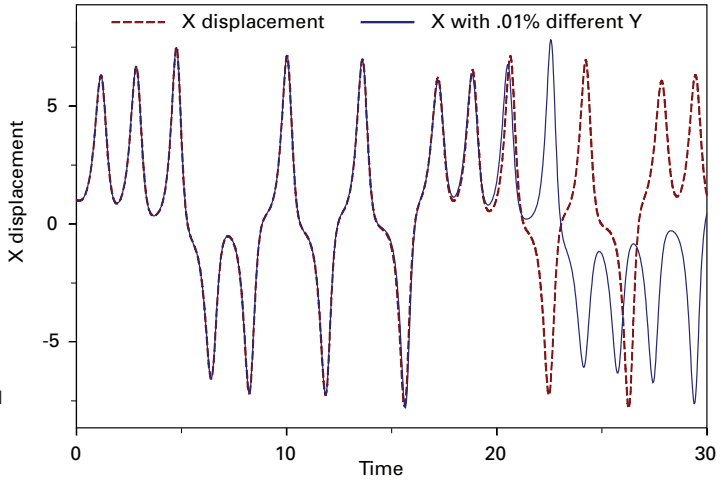
54 The wage/profit frontier measured using the standard commodity



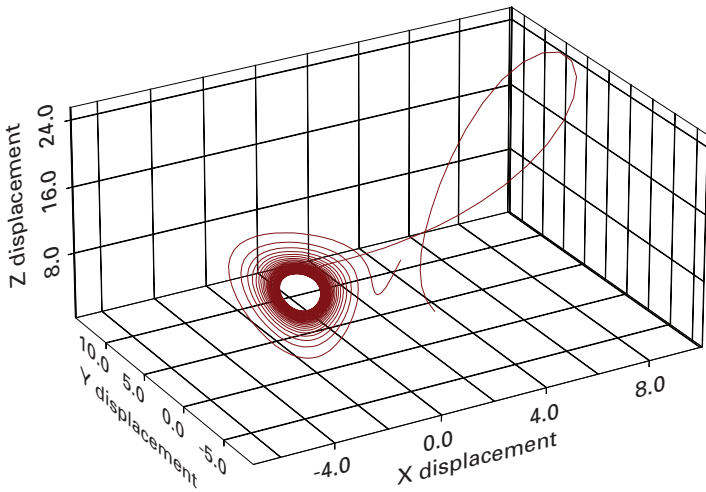
55 Standard neo-classical comparative statics



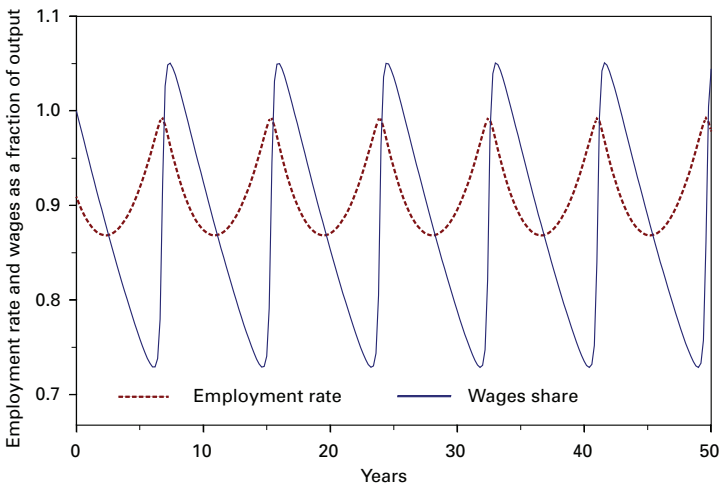
56 Sensitive dependence on initial conditions

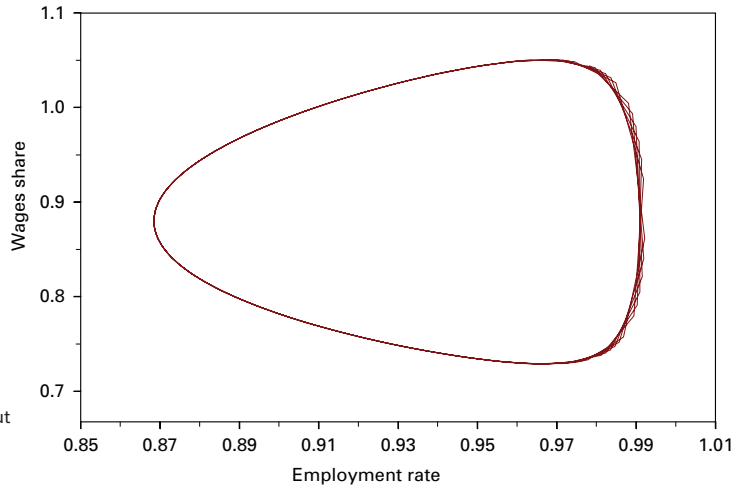


57 Unstable equilibria

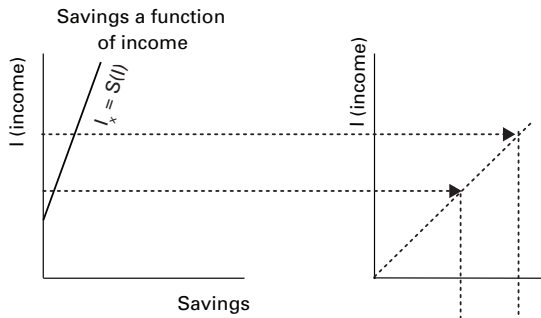


58 Cycles in employment and income shares

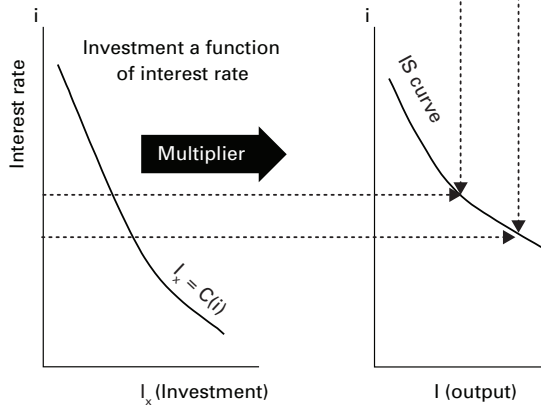




59 A closed loop in employment and wages share of output

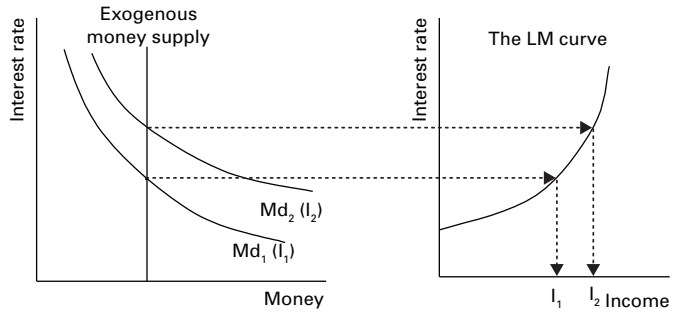


60 Derivation of the downward-sloping IS curve

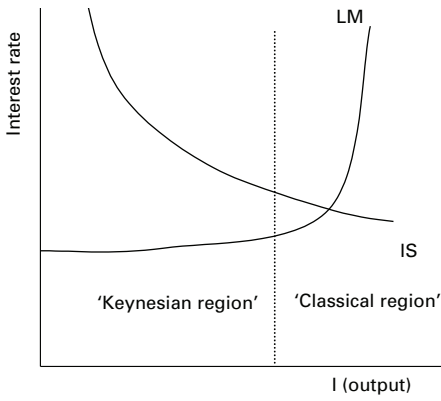




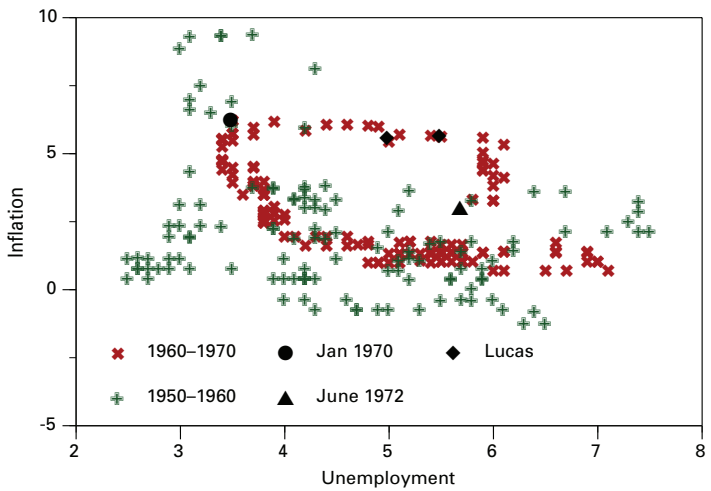
61 Derivation of the upward-sloping LM curve



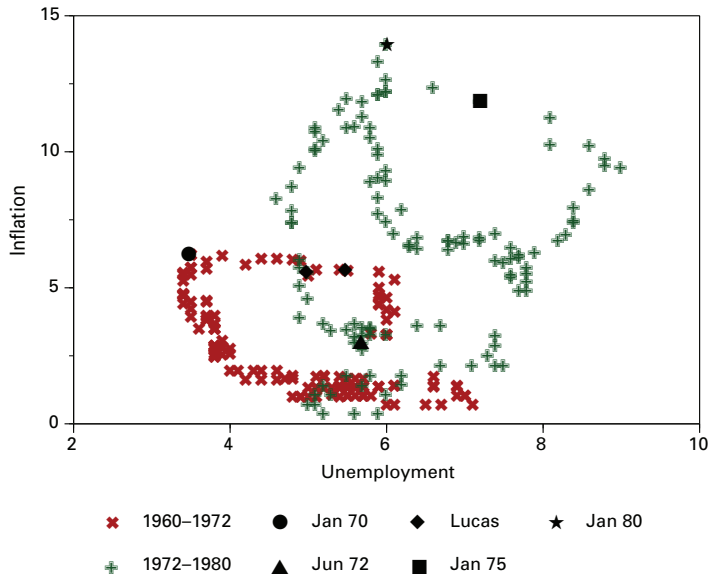
62 'Reconciling' Keynes with 'the Classics'



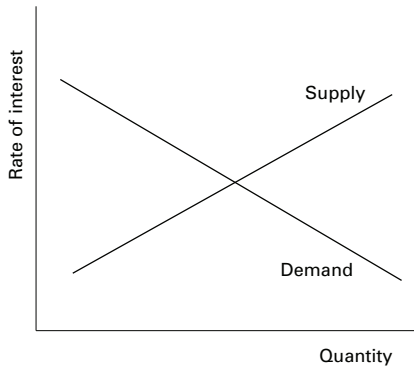
63 Unemployment-inflation data in the USA, 1950-72



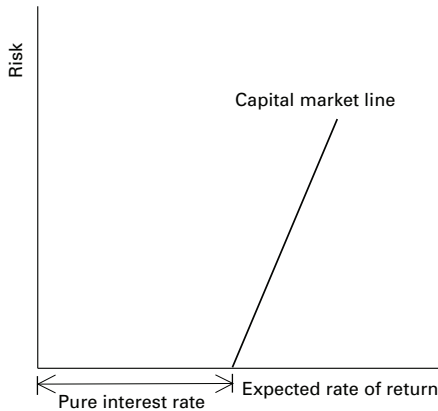
64 Unemployment-inflation data in the USA, 1960-80

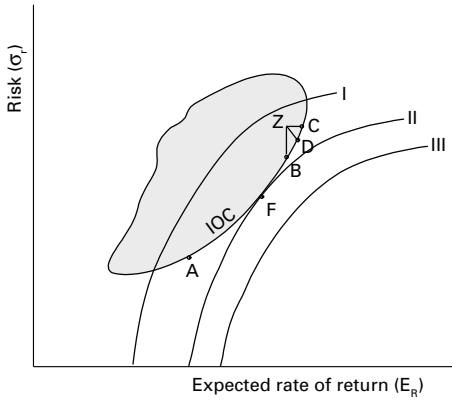


65 Supply and demand in the market for money

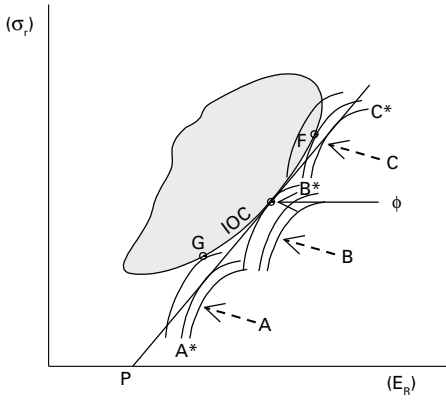


66 The capital market line

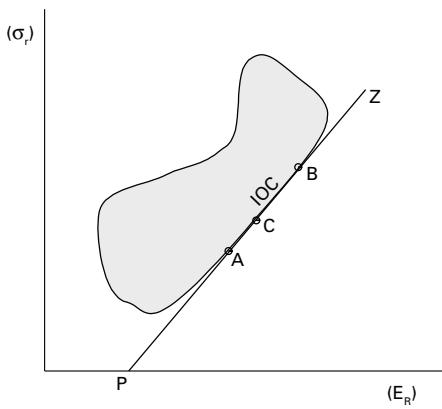




67 Investor preferences and the investment opportunity cloud

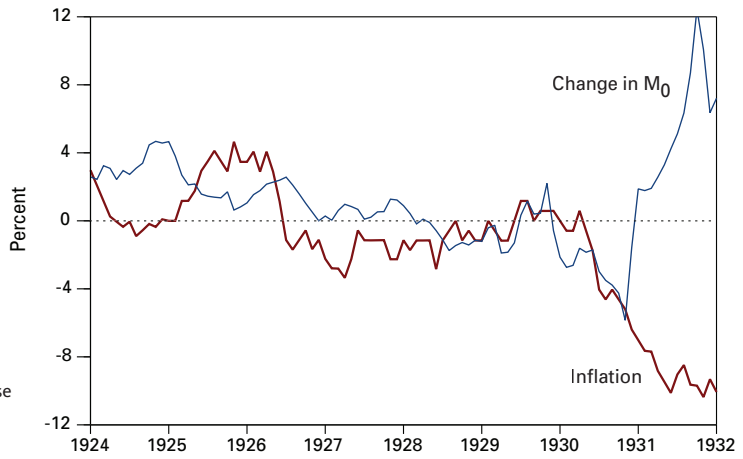


68 Multiple investors (with identical expectations)

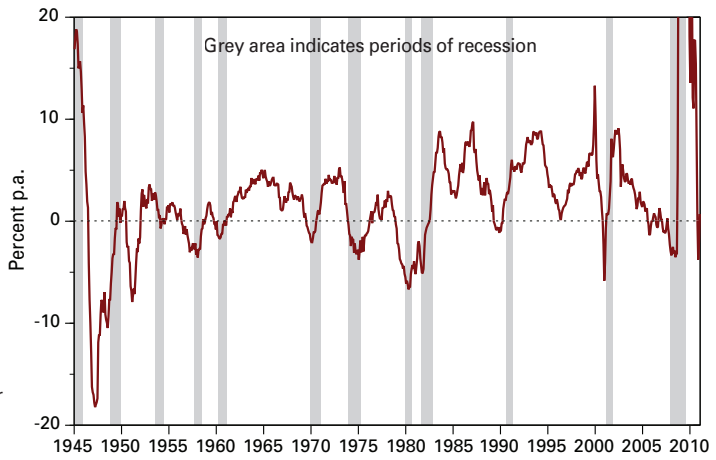


69 Flattening the IOC

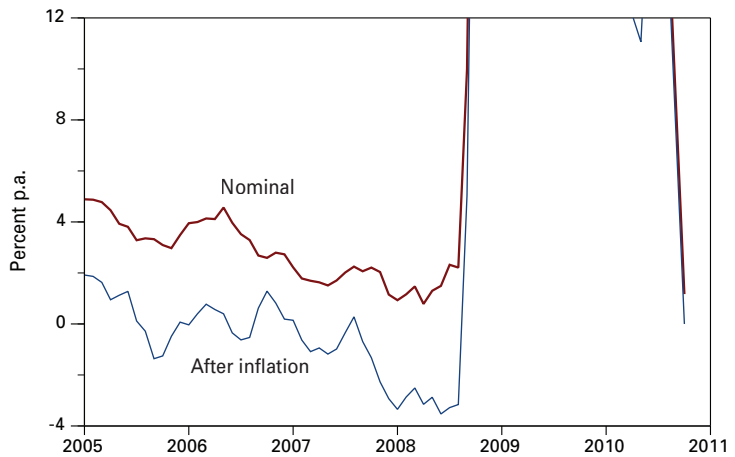
70 Inflation and base money in the 1920s



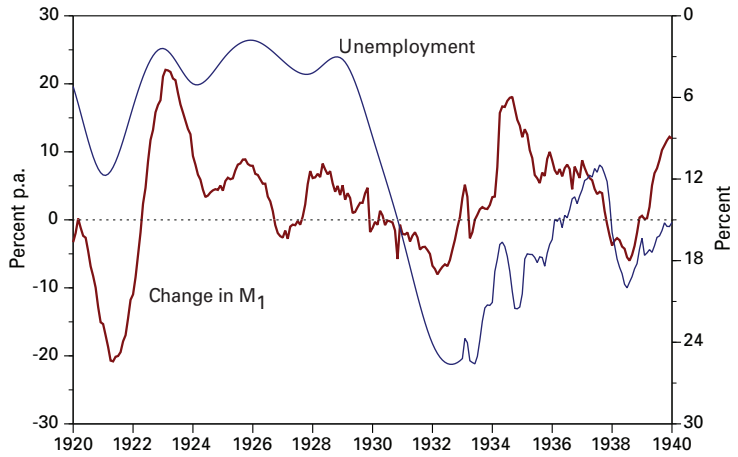
71 Inflation and base money in the post-war period



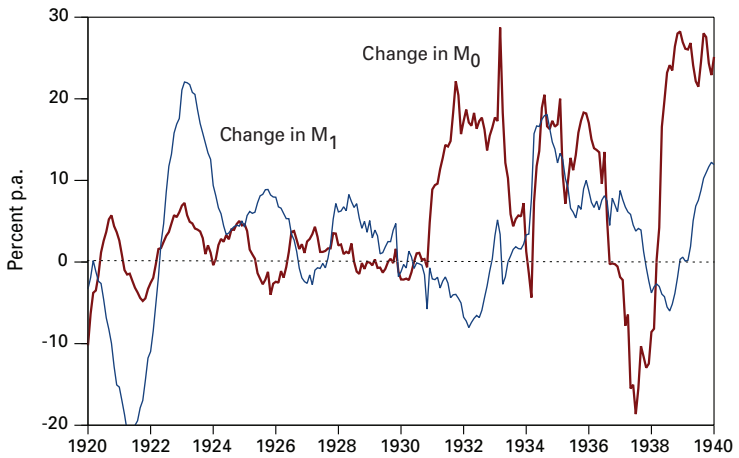
72 Bernanke's massive injection of base money in QE1



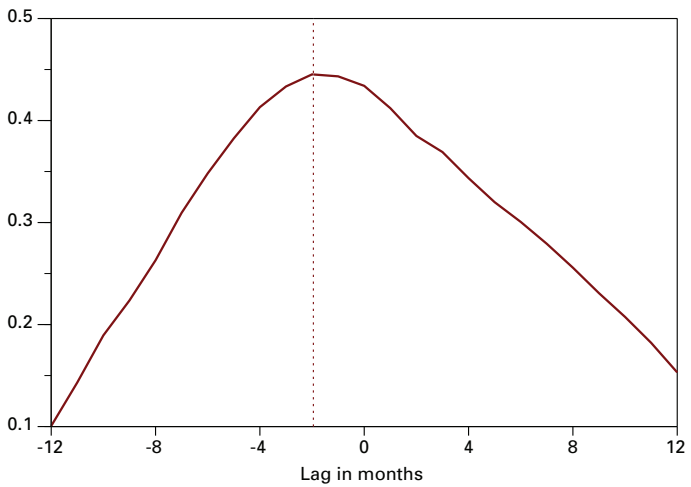
**73** Change in  $M_1$  and unemployment, 1920-40



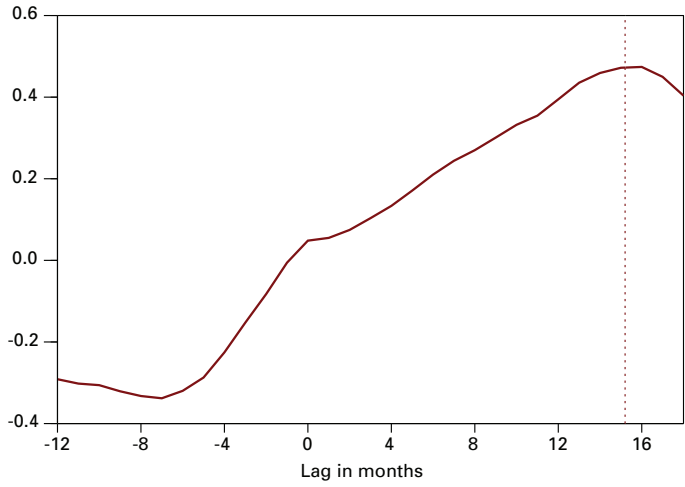
**74** Change in  $M_0$  and  $M_1$ , 1920-40



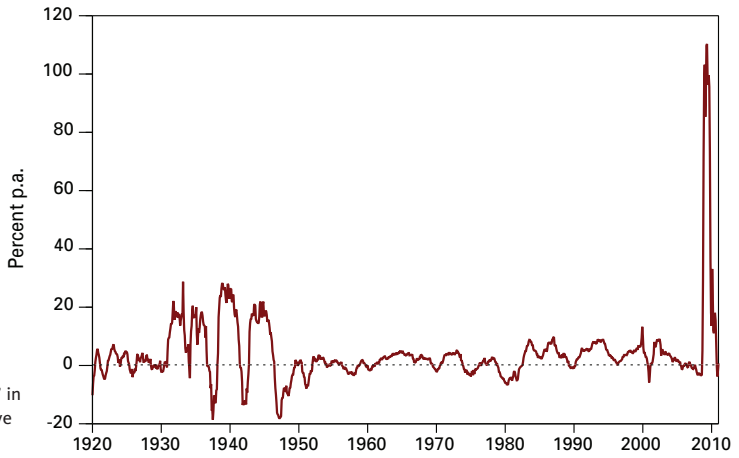
**75**  $M_0$ - $M_1$  correlation during the Roaring Twenties



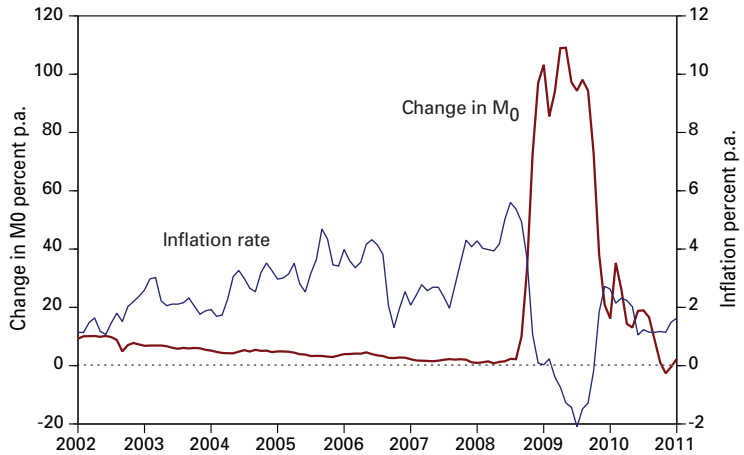
76 Mo-M1 correlation during the Great Depression

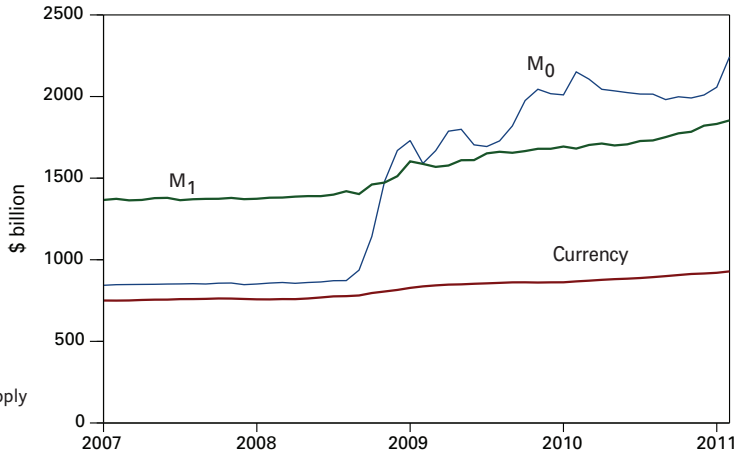


77 Bernanke's 'quantitative easing' in historical perspective

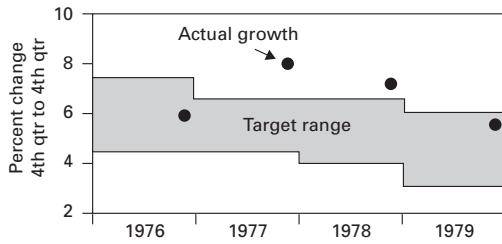


78 Change in M1 and inflation before and during the Great Recession

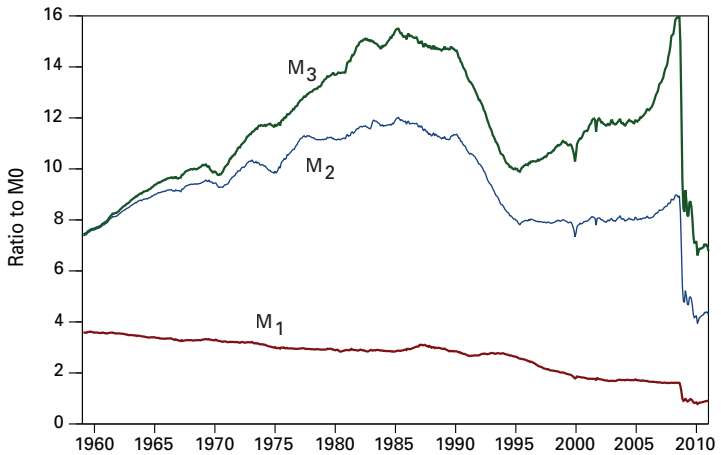




79 The money supply goes haywire

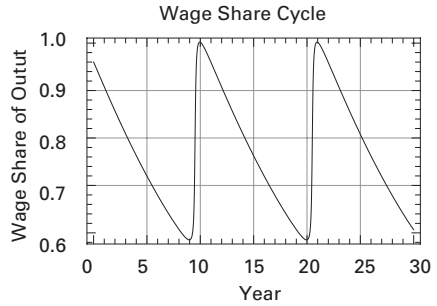
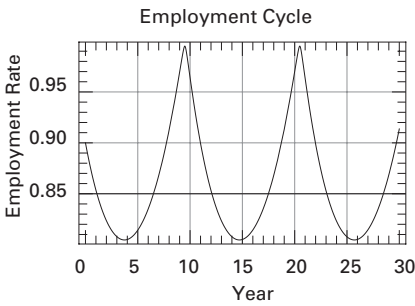
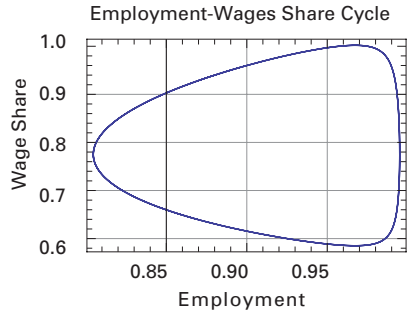
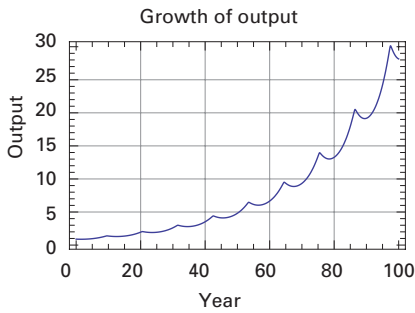
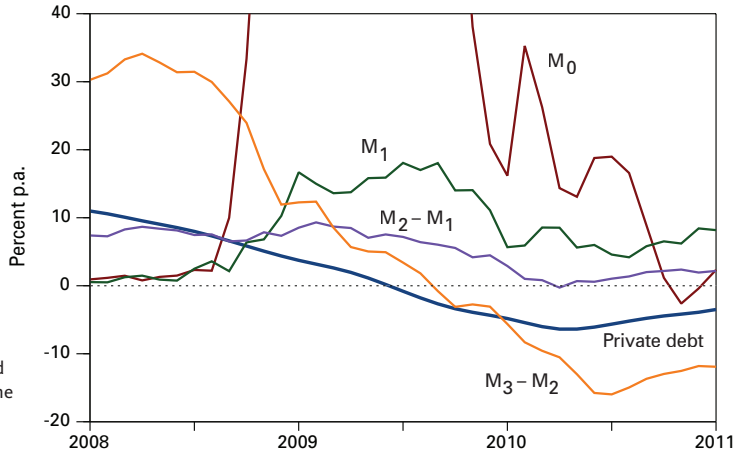


80 Lindsey, Orphanides, Rasche 2005, p. 213



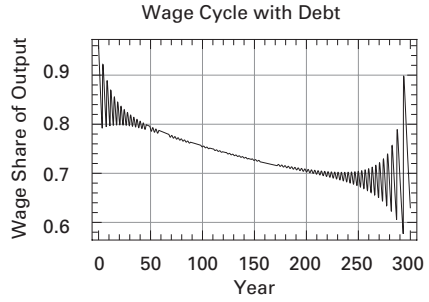
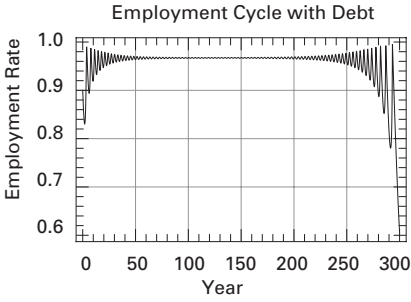
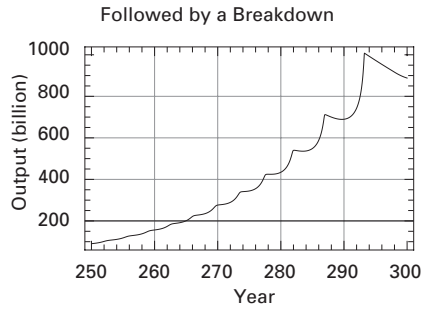
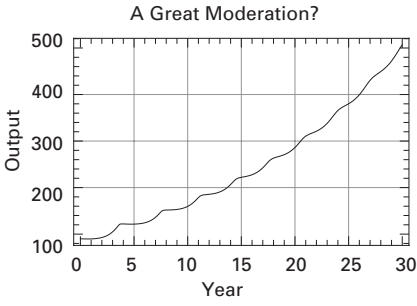
81 The empirical 'Money Multiplier', 1960-2012

82 The disconnect between private and fiat money during the Great Recession



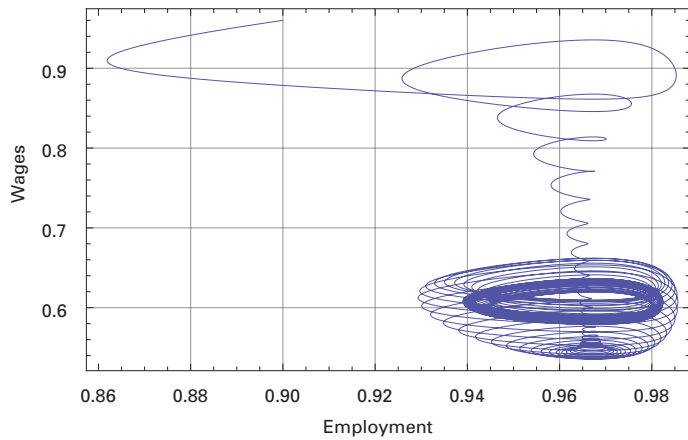
83 Goodwin's growth cycle model

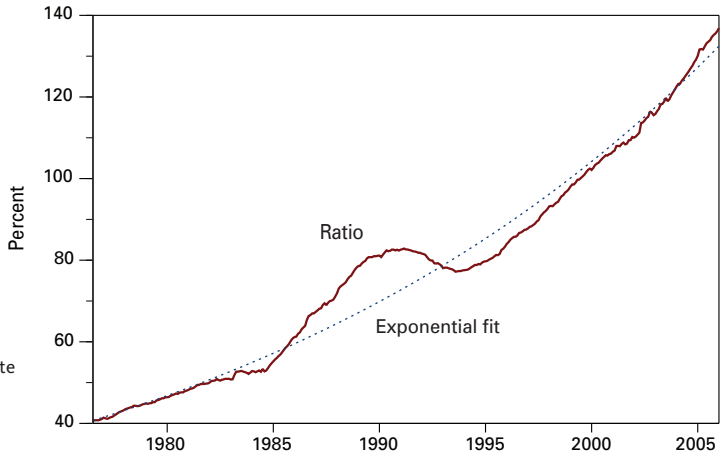




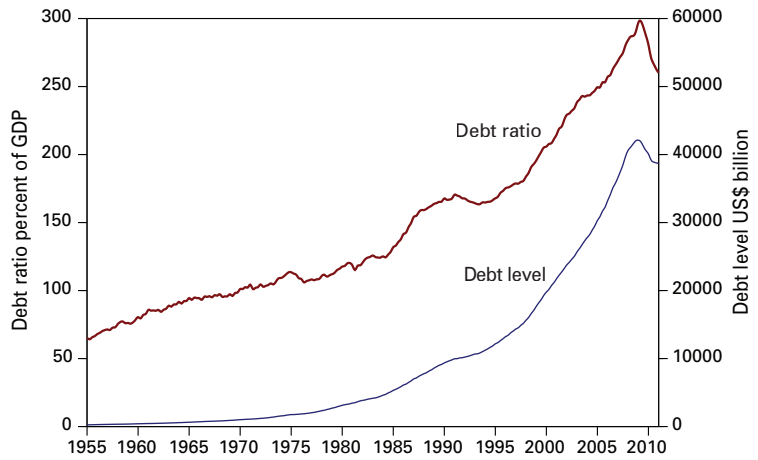
84 My 1995 Minsky model

85 Cyclical stability with a counter-cyclical government sector

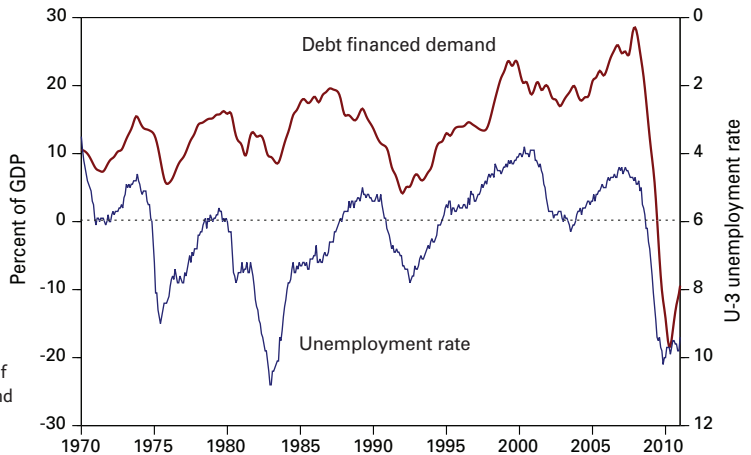




**86** Australia's private debt-to-GDP ratio, 1975-2005

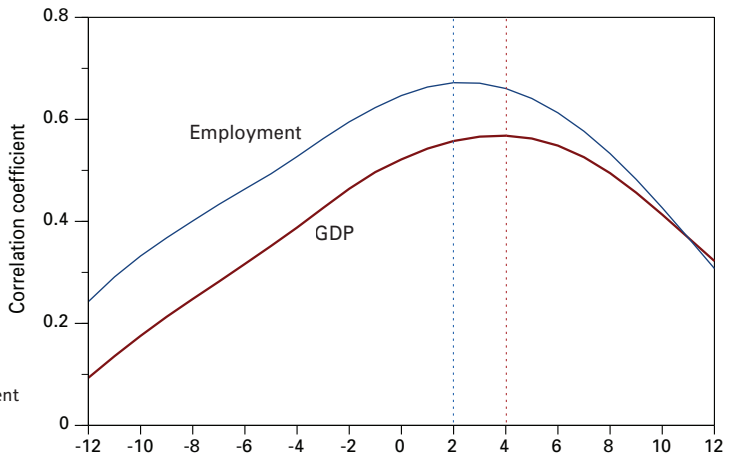


**87** US private debt

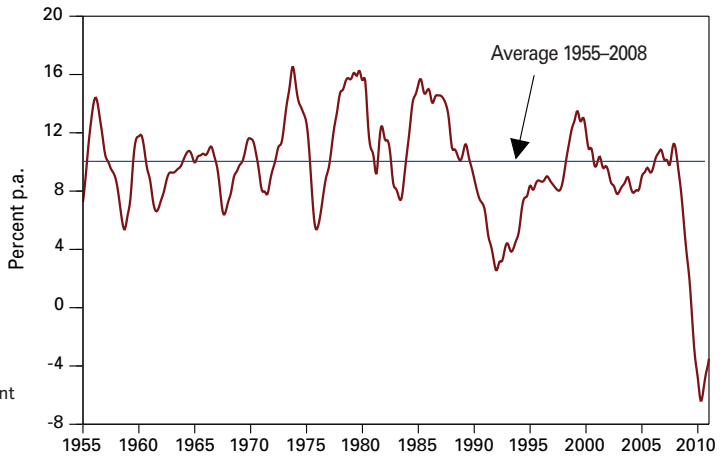


**88** The correlation of debt-financed demand and unemployment

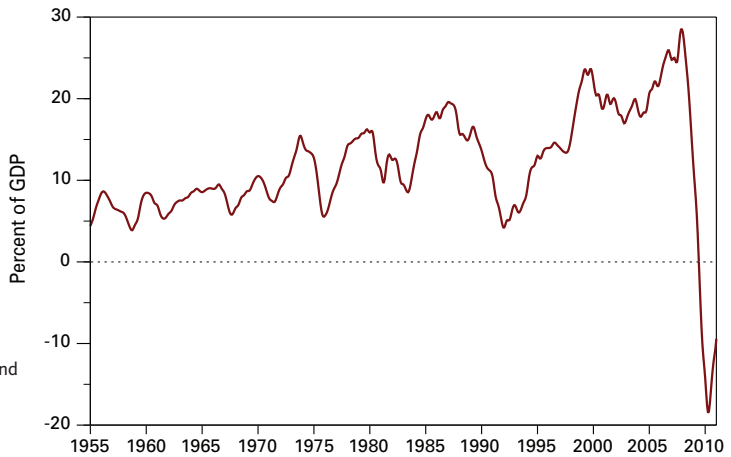
**89** Correlation of credit impulse and change in employment and GDP



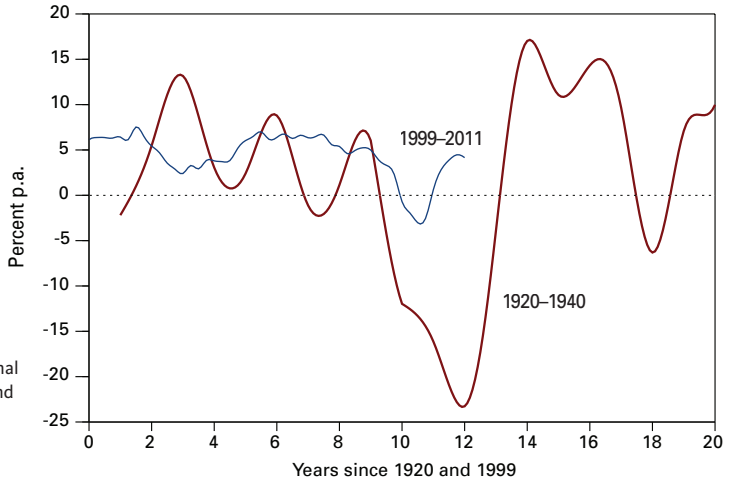
**90** Relatively constant growth in debt



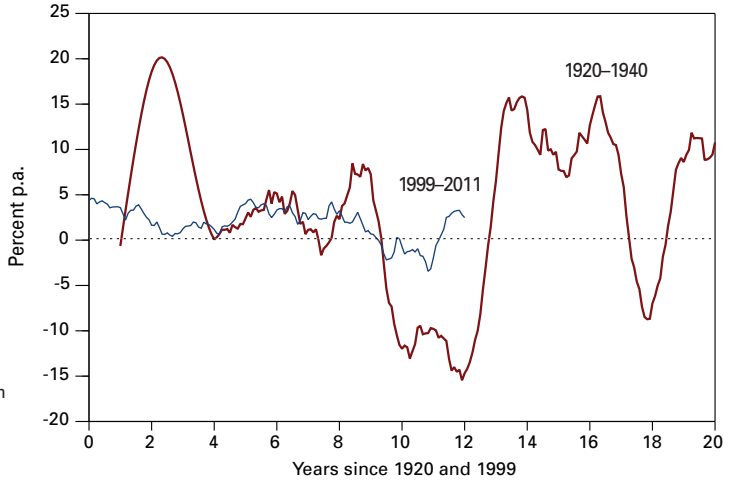
**91** Growing level of debt-financed demand as debt grew faster than GDP



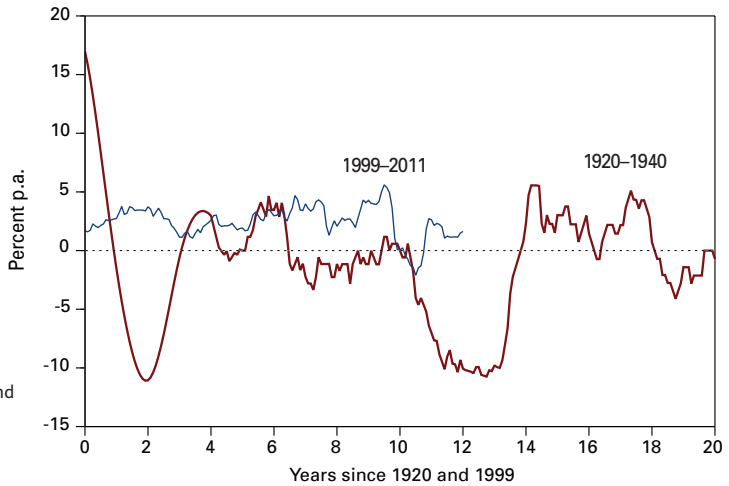
92 Change in nominal GDP growth then and now



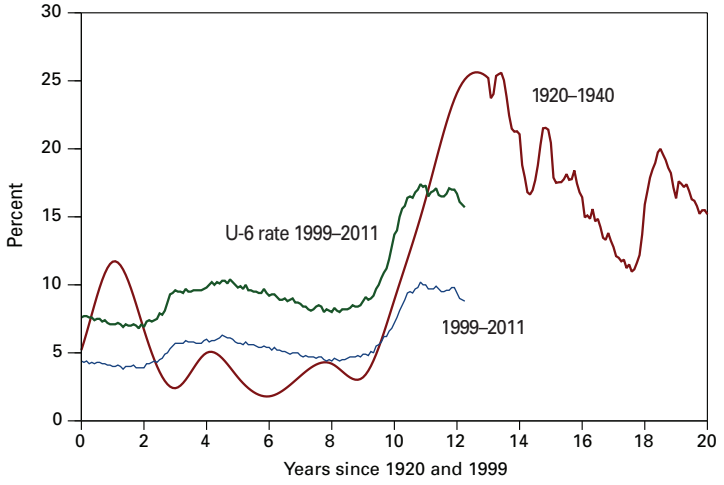
93 Real GDP growth then and now



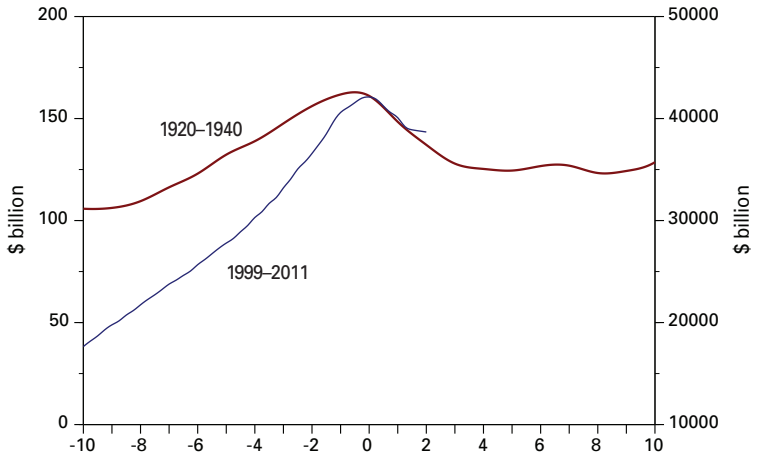
94 Inflation then and now



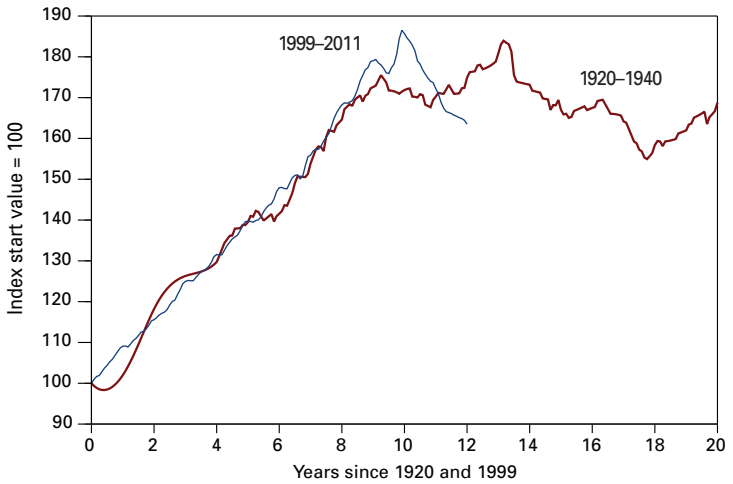
95 Unemployment then and now



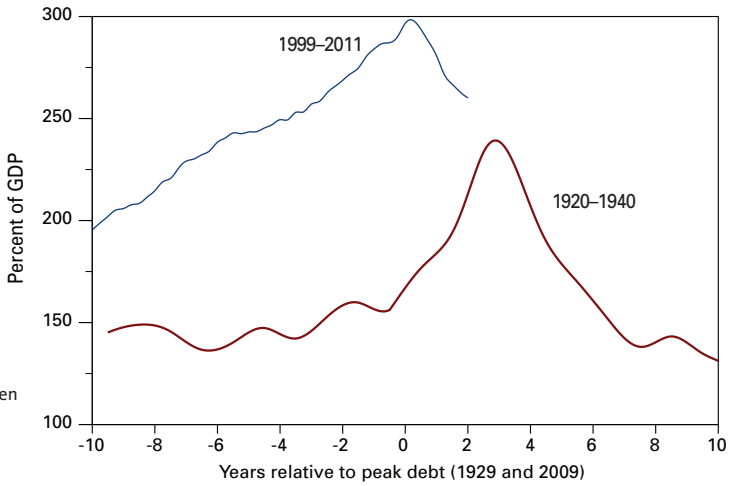
96 Nominal private debt then and now



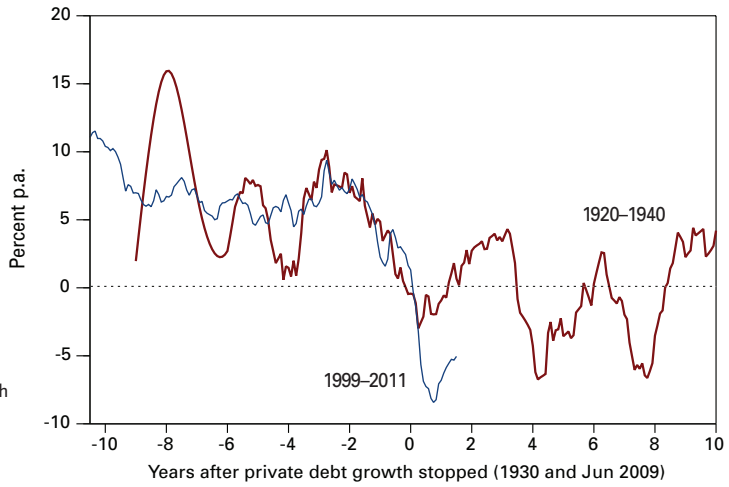
97 Real debt then and now



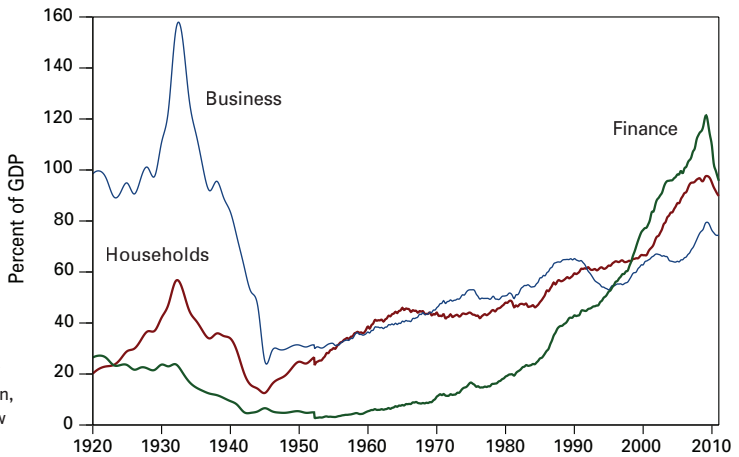
98 Debt to GDP then and now



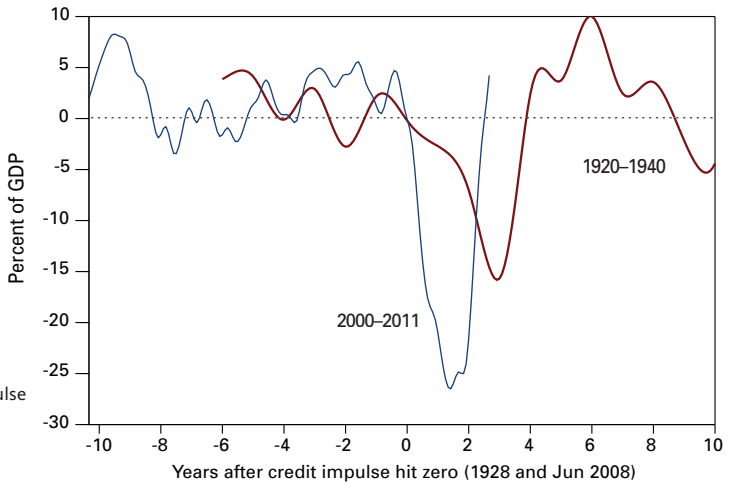
99 Real debt growth then and now



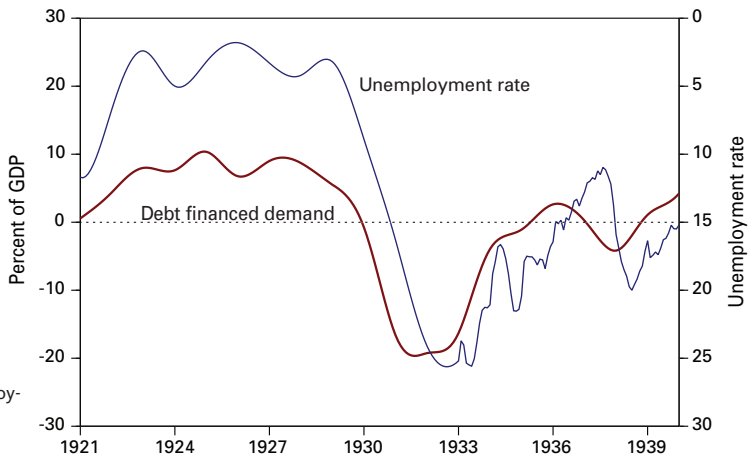
100 Debt by sector - business debt then, household debt now



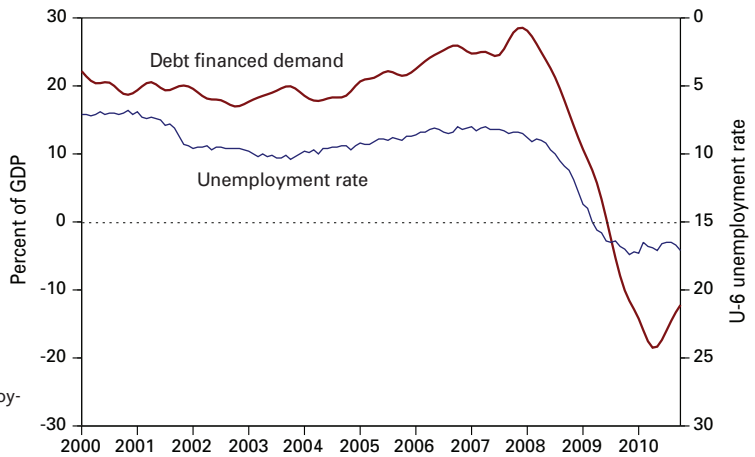
**101** The Credit Impulse then and now



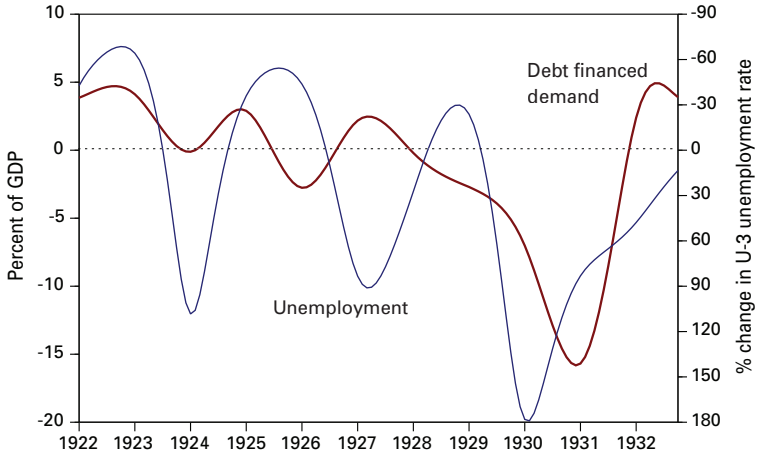
**102** Debt-financed demand and unemployment, 1920-40



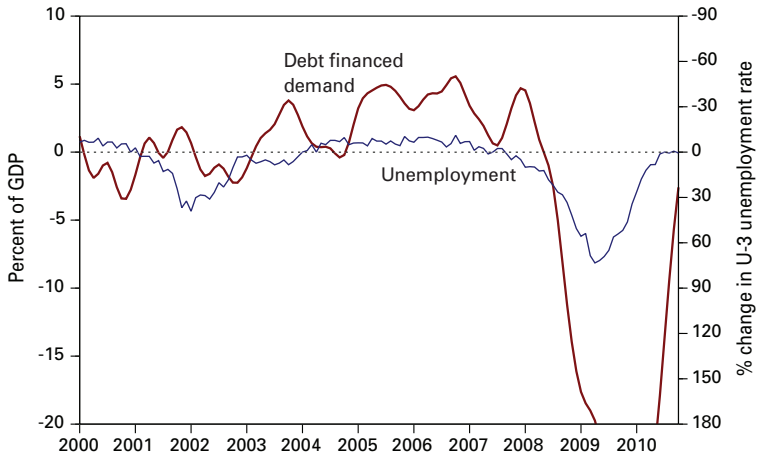
**103** Debt-financed demand and unemployment, 1990-2011



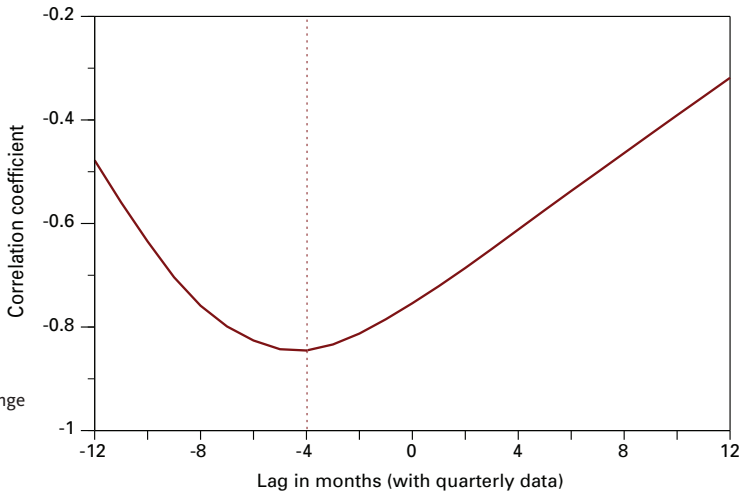
104 Credit Impulse and change in unemployment, 1920-40



105 Credit Impulse and change in unemployment, 1990-2010



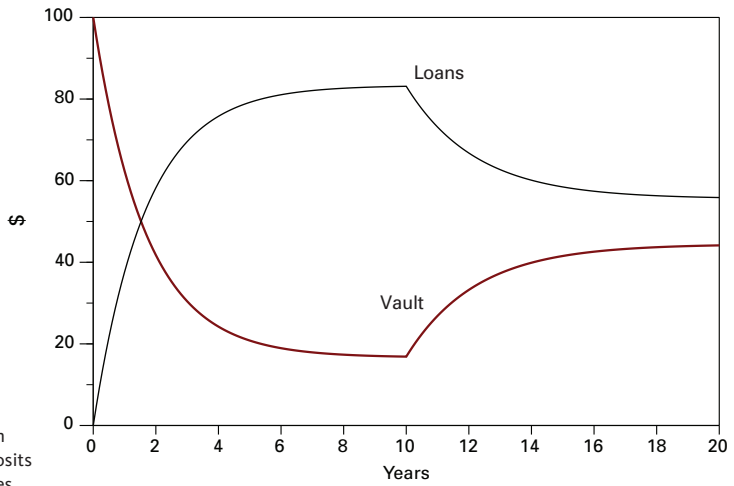
106 The Credit Impulse leads change in unemployment



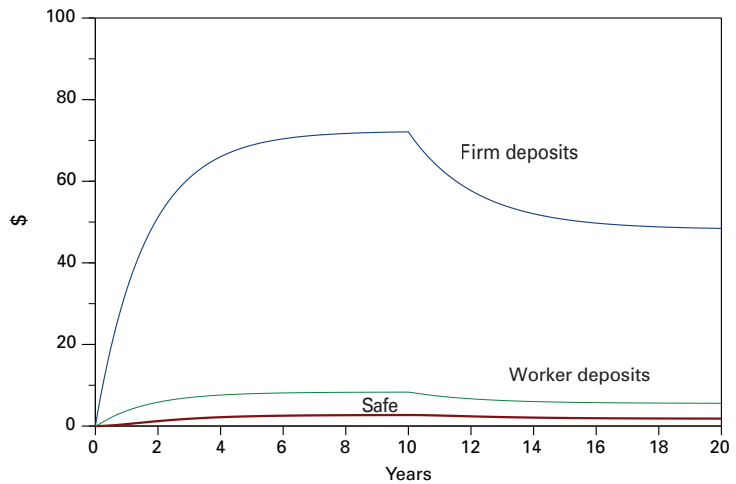




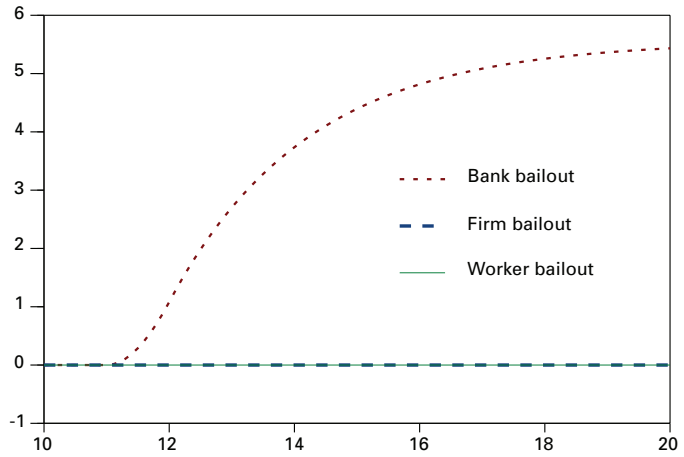
107 A nineteenth-century private banknote



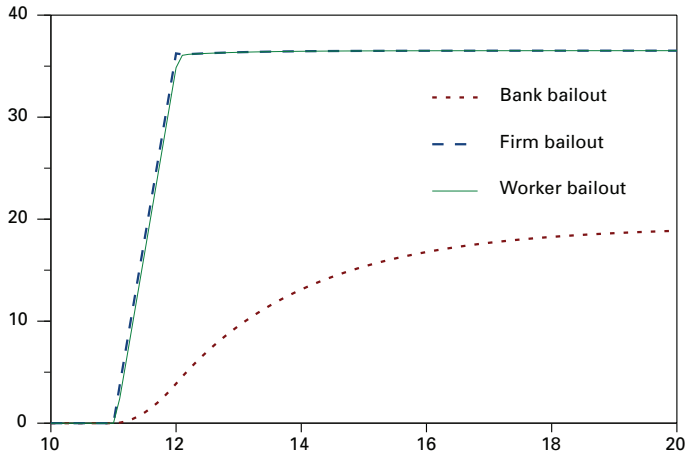
108 A credit crunch causes a fall in deposits and a rise in reserves in the bank's vault



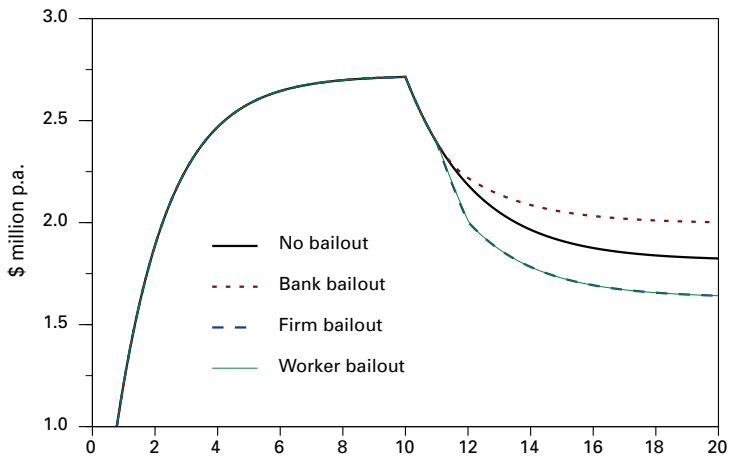
109 A bank bailout's impact on loans



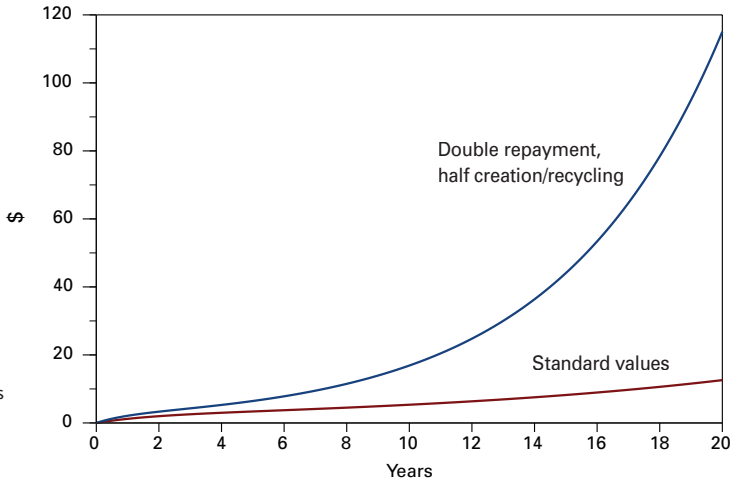
110 A bank bailout's impact on incomes



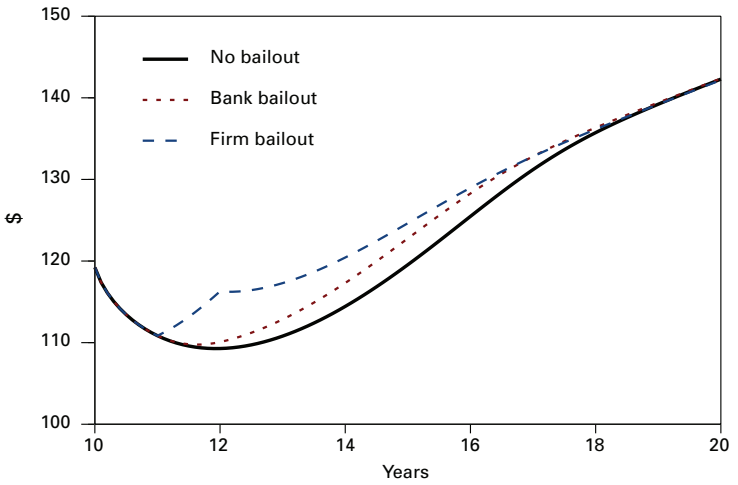
111 A bank bailout's impact on bank income



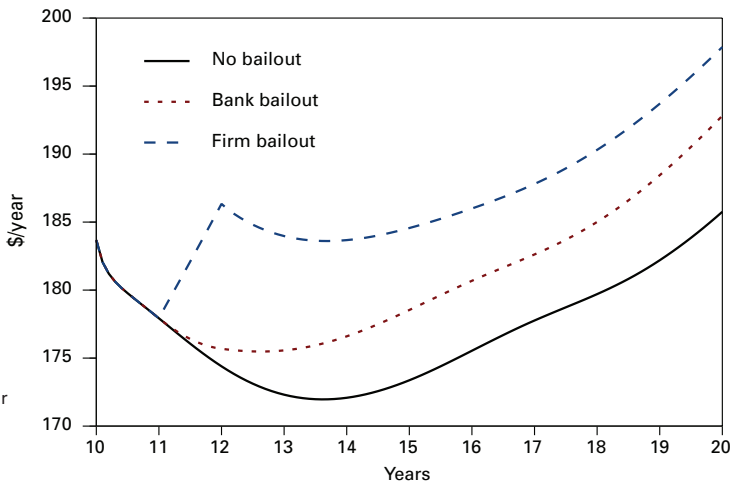
112 Bank income grows if debt grows more rapidly



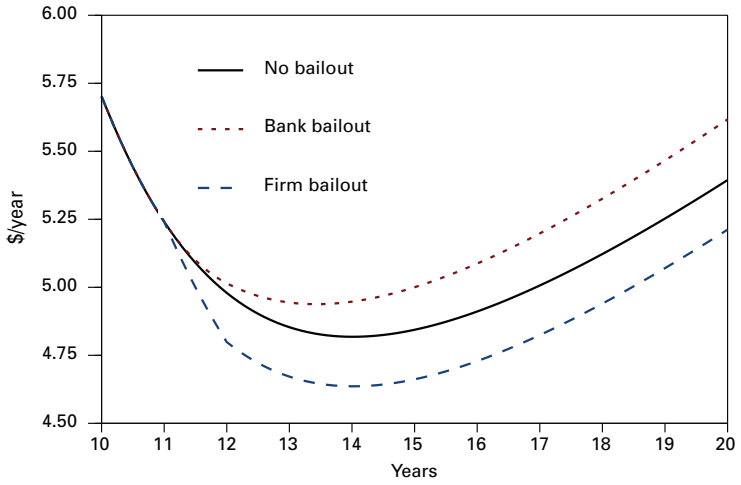
113 Loans grow more with a debtor bailout



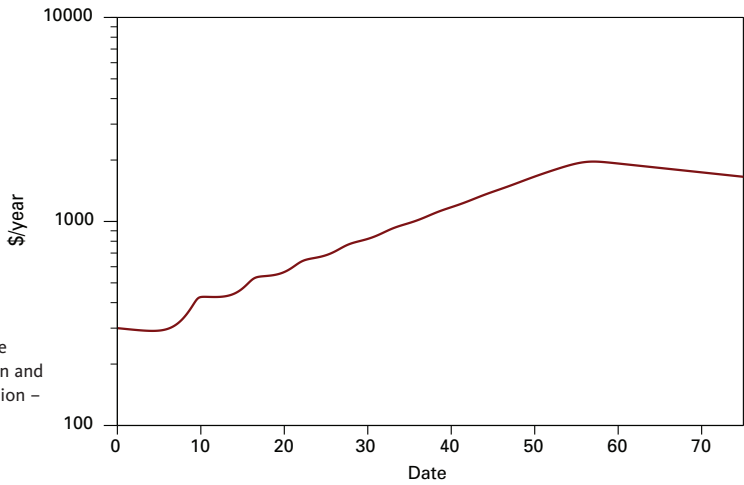
114 Profits do better with a debtor bailout



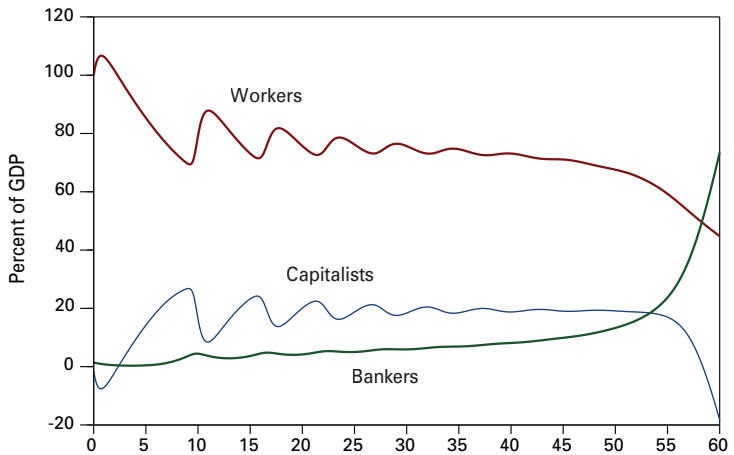
115 Bank income does better with a bank bailout



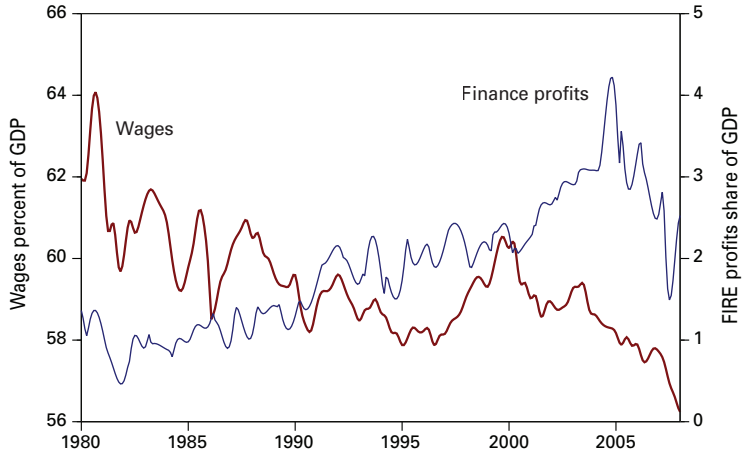
116 Modeling the Great Moderation and the Great Recession - output



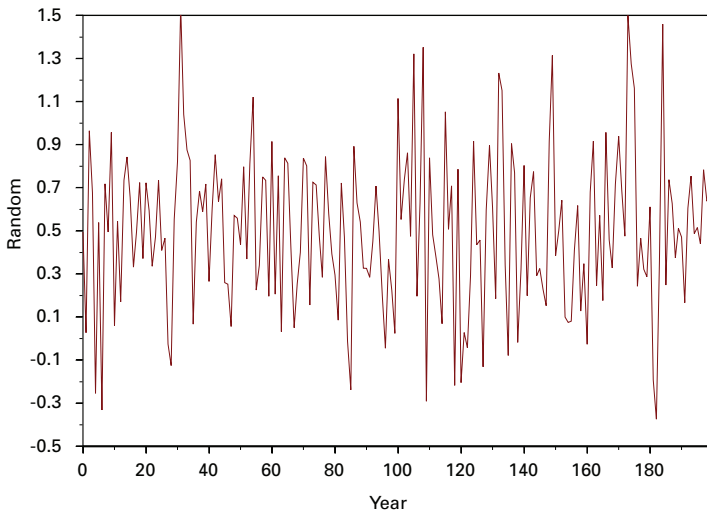
117 Income distribution - workers pay for the debt



118 Actual income distribution matches the model



119 Lemming population as a constant subject to exogenous shocks



120 Lemming population as a variable with unstable dynamics

