


Macroéconomie Ouverte

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Plan du cours

1. Balance des paiements
2. Comptes nationaux
3. Le marché des changes
 - a) Le marché des biens
 - b) Les marchés financiers
4. Quel est le niveau optimal de compte courant?
5. Le taux de change réel d'équilibre
6. **Monnaie et taux de change à long terme**
7. Politique macro-économiques et taux de change à court terme
8. Taux de change fixe
9. Diversification de portefeuille



Monnaie et taux de change à long terme

Krugman, Obstfeld et Melitz , Chapitres 15 et 16

Preview

- What is money?
- Control of the supply of money
- The willingness to hold monetary assets
- A model of real monetary assets and interest rates
- A model of real monetary assets, interest rates, and exchange rates
- Long-run effects of changes in money on prices, interest rates, and exchange rates

What Is Money?

- Money is an asset that is widely used as a means of payment.
 - Different groups of assets may be classified as money.
 - Money can be defined narrowly or broadly.
 - Currency in circulation, checking deposits, and debit card accounts form a narrow definition of money.
 - Deposits of currency are excluded from this narrow definition, although they may act as a substitute for money in a broader definition.

What Is Money? (cont.)

- Money is a *liquid* asset: it can be easily used to pay for goods and services or to repay debt without substantial transaction costs.
 - But monetary or liquid assets earn *little or no interest*.
- Illiquid assets require substantial transaction costs in terms of time, effort, or fees to convert them to funds for payment.
 - But they generally earn a higher interest rate or rate of return than monetary assets.

What Is Money? (cont.)

- Let's group assets into monetary assets (or liquid assets) and nonmonetary assets (or illiquid assets).
- The demarcation between the two is arbitrary,
 - but currency in circulation, checking deposits, debit card accounts, savings deposits, and time deposits are generally more liquid than bonds, loans, deposits of currency in the foreign exchange markets, stocks, real estate, and other assets.

Money Supply

- The central bank substantially controls the quantity of money that circulates in an economy, the **money supply**.
 - In the U.S., the central banking system is the Federal Reserve System.
 - The Federal Reserve System directly regulates the amount of currency in circulation.
 - It indirectly influences the amount of checking deposits, debit card accounts, and other monetary assets.

Money Demand

- **Money demand** represents the amount of monetary assets that people are willing to hold (instead of illiquid assets).
 - What influences willingness to hold monetary assets?
 - We consider individual demand of money and aggregate demand of money.

What Influences Demand of Money for Individuals and Institutions?

- 1. Interest rates/expected rates of return** on monetary assets relative to the expected rates of returns on non-monetary assets.
- 2. Risk:** the risk of holding monetary assets principally comes from unexpected inflation, which reduces the purchasing power of money.
 - But many other assets have this risk too, so this risk is not very important in defining the demand of monetary assets versus nonmonetary assets.
- 3. Liquidity:** A need for greater liquidity occurs when the price of transactions increases or the quantity of goods bought in transactions increases.

What Influences Aggregate Demand of Money?

- 1. Interest rates/expected rates of return:** monetary assets pay little or no interest, so the interest rate on non-monetary assets like bonds, loans, and deposits is the opportunity cost of holding monetary assets.
 - A higher interest rate means a higher opportunity cost of holding monetary assets → lower demand of money.
- 2. Prices:** the prices of goods and services bought in transactions will influence the willingness to hold money to conduct those transactions.
 - A higher level of average prices means a greater need for liquidity to buy the same amount of goods and services → higher demand of money.

What Influences Aggregate Demand of Money? (cont.)

3. **Income:** greater income implies more goods and services can be bought, so that more money is needed to conduct transactions.
 - A higher real national income (GNP) means more goods and services are being produced and bought in transactions, increasing the need for liquidity → higher demand of money.

A Model of Aggregate Money Demand

The aggregate demand of money can be expressed as:

$$M^d = P \times L(R, Y)$$

where:

P is the price level

Y is real national income

R is a measure of interest rates on nonmonetary assets

$L(R, Y)$ is the aggregate demand of real monetary assets

Alternatively:

$$M^d/P = L(R, Y)$$

Aggregate demand of real monetary assets is a function of national income and interest rates.

Fig. 15-1: Aggregate Real Money Demand and the Interest Rate

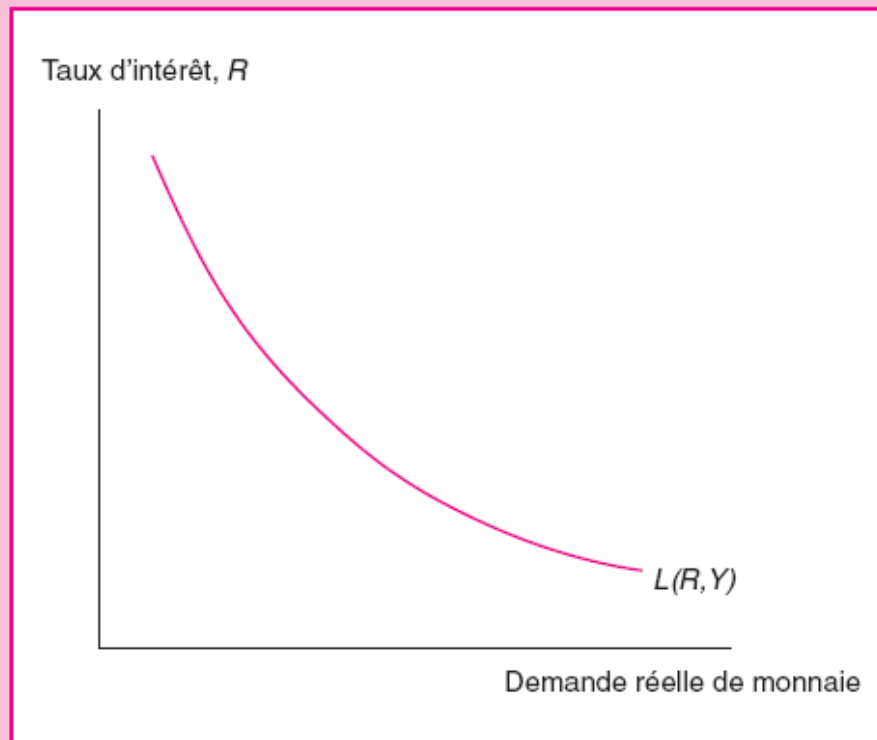


Figure 14.1 • La demande réelle de monnaie et le taux d'intérêt.

La demande réelle de monnaie suit une courbe décroissante en R , le taux d'intérêt : pour un niveau donné de revenu réel, Y , elle augmente lorsque le taux d'intérêt baisse.

Fig. 15-2: Effect on the Aggregate Real Money Demand Schedule of a Rise in Real Income

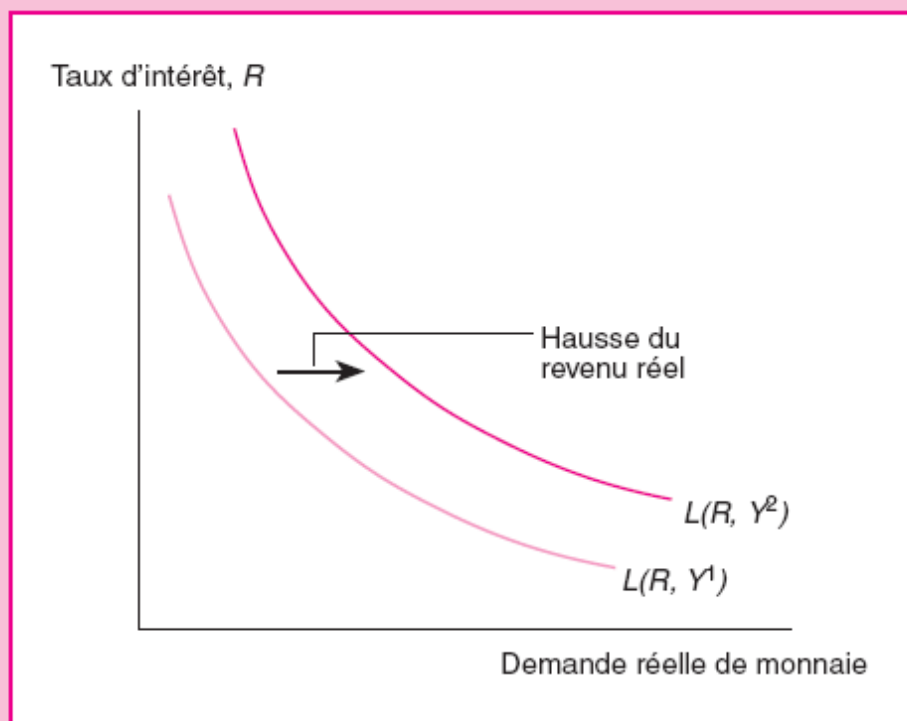


Figure 14.2 • L'effet d'une hausse du revenu réel sur la courbe de la demande de monnaie. Une hausse du revenu réel de Y^1 à Y^2 accroît les niveaux d'équilibre de la demande réelle de monnaie pour tous les niveaux du taux d'intérêt ; cela entraîne un déplacement vers le haut de la totalité de la courbe de demande.

A Model of the Money Market

- The money market is where monetary or liquid assets, which are loosely called “money,” are lent and borrowed.
 - Monetary assets in the money market generally have low interest rates compared to interest rates on bonds, loans, and deposits of currency in the foreign exchange markets.
 - Domestic interest rates directly affect rates of return on domestic currency deposits in the foreign exchange markets.

A Model of the Money Market

- When no shortages (excess demand) or surpluses (excess supply) of monetary assets exist, the model achieves an equilibrium:

$$M^s = M^d$$

- Alternatively, when the quantity of real monetary assets supplied matches the quantity of real monetary assets demanded, the model achieves an equilibrium:

$$M^s/P = L(R, Y)$$

A Model of the Money Market (cont.)

- When there is an excess supply of monetary assets, there is an excess demand for interest-bearing assets like bonds, loans, and deposits.
 - People with an excess supply of monetary assets are willing to offer or accept interest-bearing assets (by giving up their money) at lower interest rates.
 - Others are more willing to hold additional monetary assets as interest rates (the opportunity cost of holding monetary assets) fall.

A Model of the Money Market (cont.)

- When there is an excess demand of monetary assets, there is an excess supply of interest-bearing assets like bonds, loans, and deposits.
 - People who desire monetary assets but do not have access to them are willing to sell nonmonetary assets in return for the monetary assets that they desire.
 - Those with monetary assets are more willing to give them up in return for interest-bearing assets as interest rates (the opportunity cost of holding money) rise.

Fig. 15-3: Determination of the Equilibrium Interest Rate

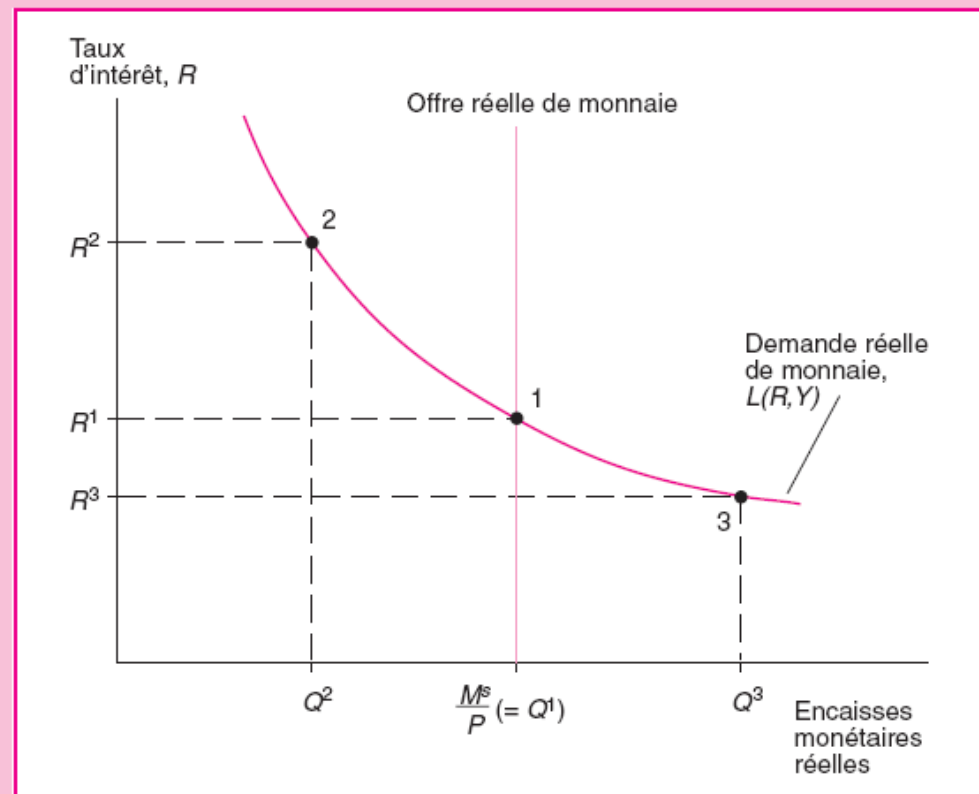


Figure 14.3 • La détermination du taux d'intérêt d'équilibre.

Lorsque P et Y sont donnés, l'équilibre du marché monétaire se situe au point 1 pour une offre réelle de monnaie égale à M^s / P . À ce point, la demande réelle de monnaie égale l'offre réelle, et le taux d'intérêt d'équilibre est R^1 .

Fig. 15-4: Effect of an Increase in the Money Supply on the Interest Rate

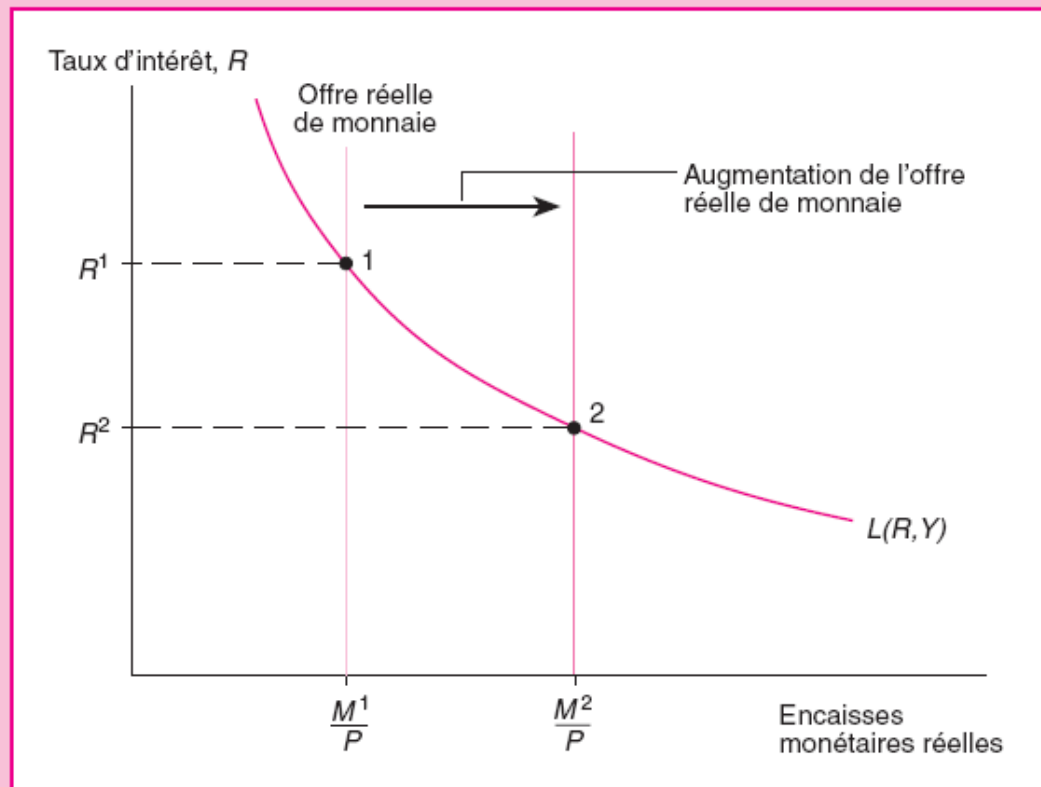


Figure 14.4 • L'effet d'une augmentation de l'offre de monnaie sur le taux d'intérêt.

Pour un niveau de prix donné, P , et un niveau de revenu réel donné, Y , une augmentation de l'offre de monnaie de M^1 à M^2 entraîne une baisse du taux d'intérêt de R^1 (point 1) à R^2 (point 2).

Fig. 15-5: Effect on the Interest Rate of a Rise in Real Income

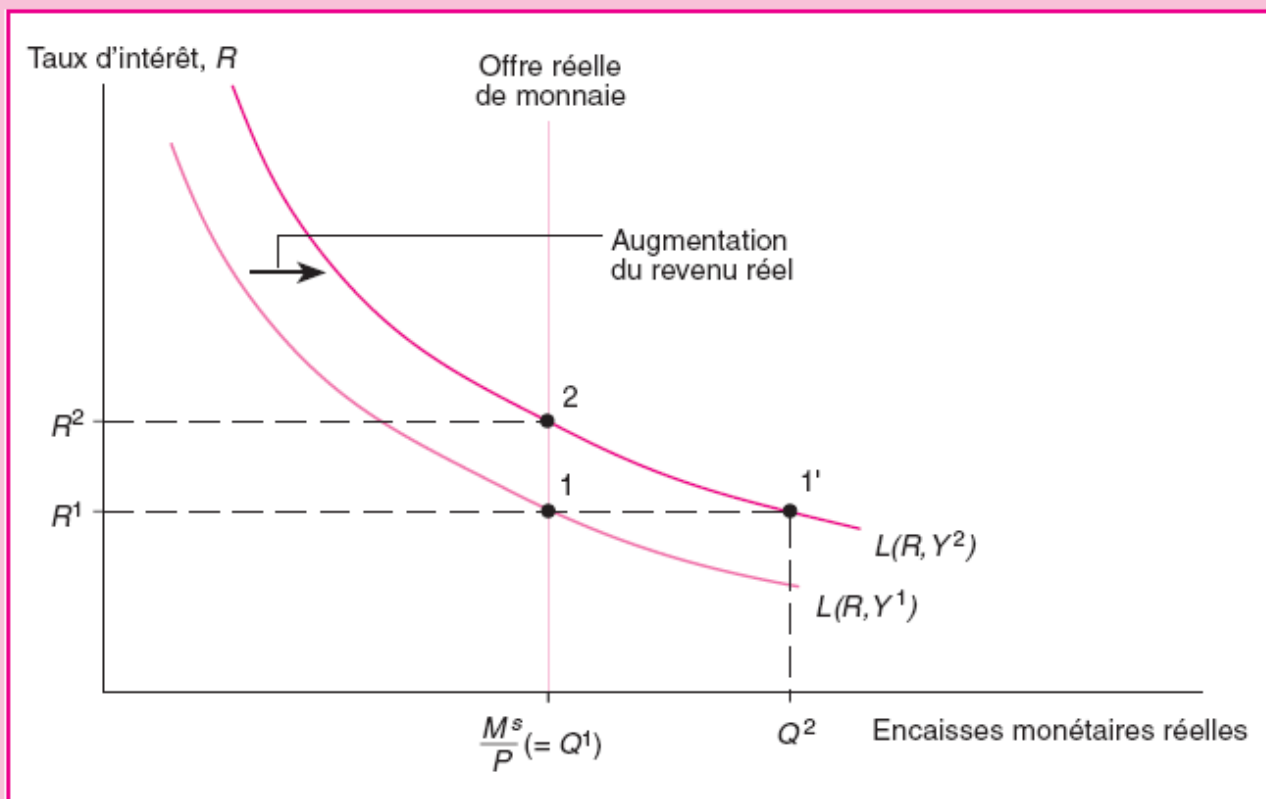


Figure 14.5 • L'effet d'une augmentation du revenu réel sur le taux d'intérêt.

Pour un niveau d'offre réelle de monnaie fixé, $M^s/P (= Q^1)$, une augmentation de l'offre de monnaie de Y^1 à Y^2 entraîne une hausse du taux d'intérêt de R^1 (point 1) à R^2 (point 2).

Marché financier: parité non-couverte des taux d'intérêt

$$R_t = R_t^* + \left(\frac{E_{t+1}^e - E_t}{E_t} \right)$$

- Le choix entre actifs nationaux et actifs étrangers (rappel)
- L'arbitrage implique que le taux d'intérêt intérieur soit à peu près égal au taux d'intérêt étranger plus le taux de dépréciation anticipé de la monnaie nationale.

Fig. 15-6:

Assets market equilibrium:

$$R_t = R_t^* + \left(\frac{E_{t+1}^e - E_t}{E_t} \right)$$

Money market equilibrium:

$$M^s/P = L(R, Y)$$

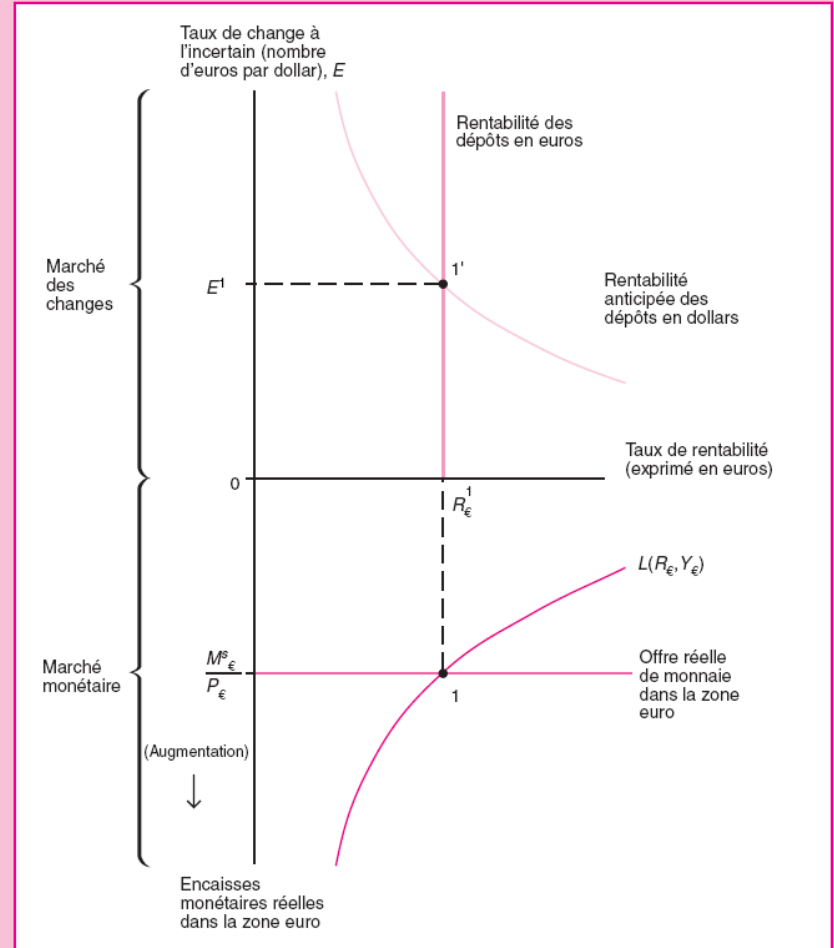


Figure 14.6 • L'équilibre simultané sur le marché monétaire de la zone euro et sur le marché des changes. Les deux marchés d'actifs sont à l'équilibre pour le taux d'intérêt en euros R^1 et le taux de change E^1 . Pour ces valeurs, l'offre de monnaie égale la demande de monnaie (point 1) et la parité des taux d'intérêt est vérifiée (point 1').

Fig. 15-7: Money Market/Exchange Rate Linkages

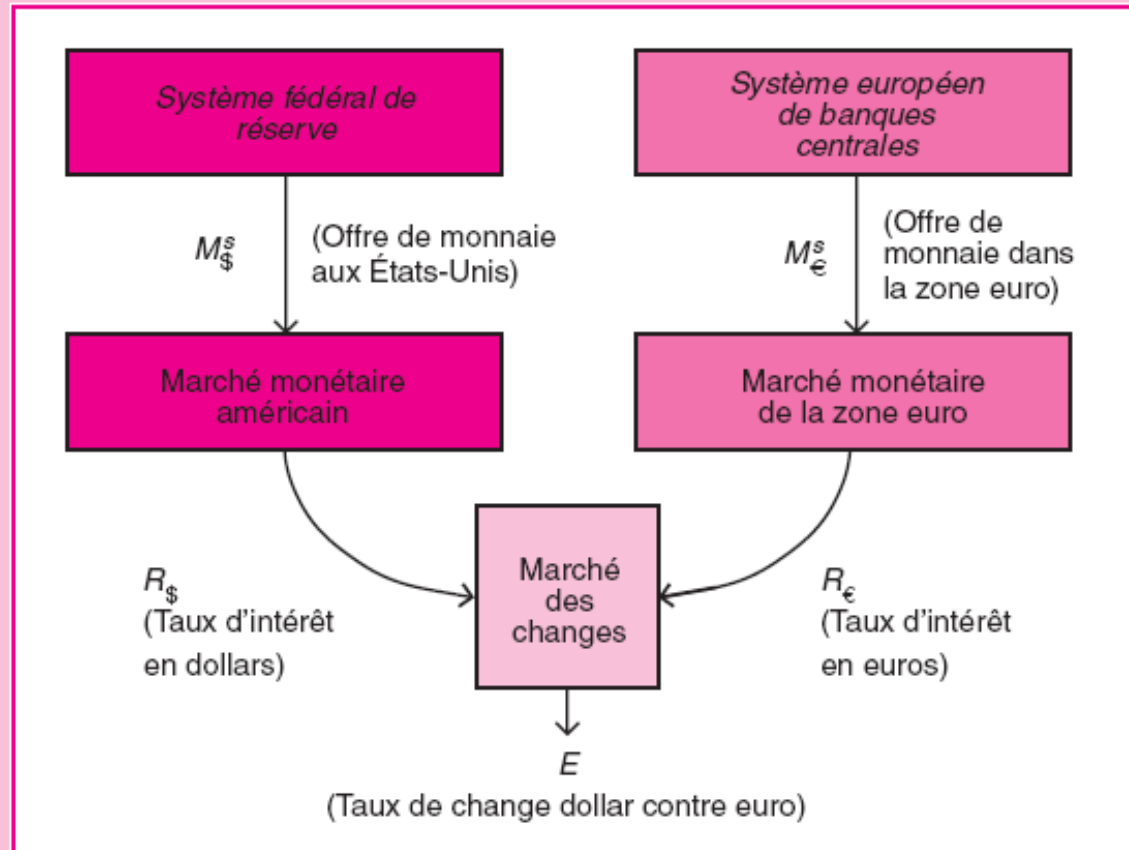


Figure 14.7 • Les liens entre le marché monétaire et le marché des changes.

La politique monétaire menée par le SEBC peut influencer sur le taux d'intérêt en euros, ce qui modifie le taux de change dollar contre euro qui équilibre le marché des changes. La Fed peut aussi agir sur le taux de change en modifiant l'offre de monnaie américaine et le taux d'intérêt en dollars.

Taux de change à l'incertain
(nombre d'euros par dollar), E

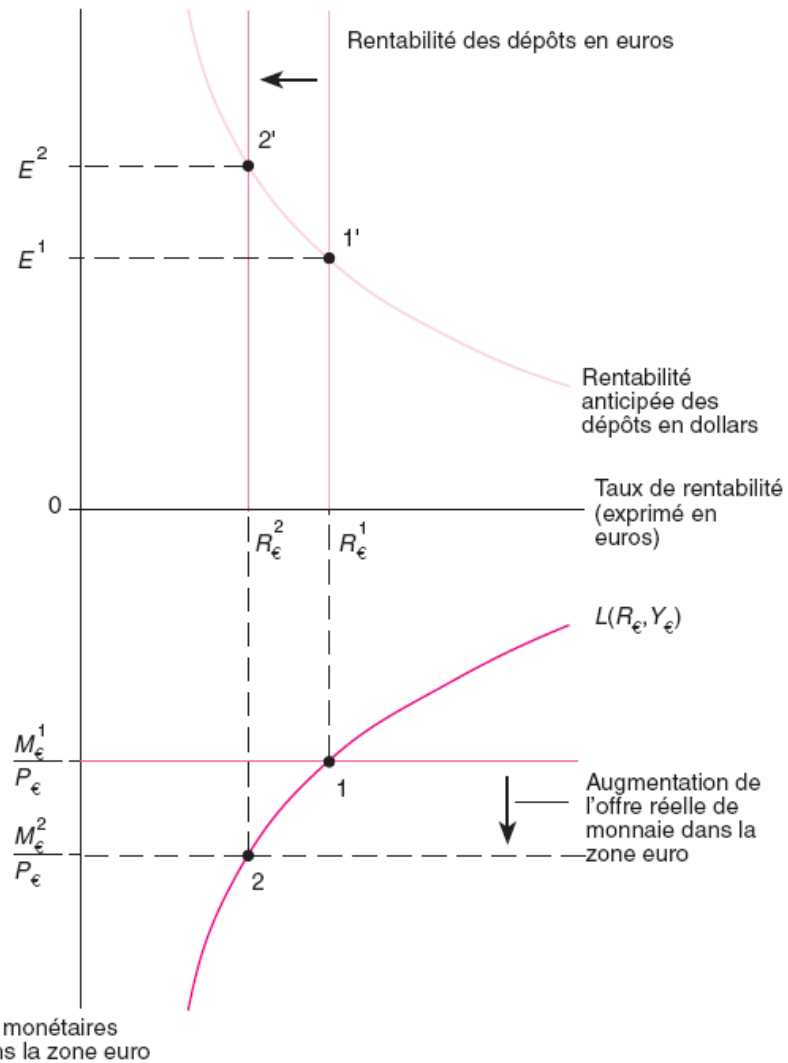


Figure 14.8 • L'effet d'une augmentation de l'offre de monnaie de la zone euro sur le taux de change dollar contre euro et le taux d'intérêt en euros.

Soit $P_€$ et $Y_€$ fixés. Lorsque l'offre de monnaie augmente de $M_€^1$ à $M_€^2$, le taux d'intérêt en euros baisse (le marché monétaire trouve un nouvel équilibre au point 2), et l'euro se déprécie par rapport au dollar (le marché des changes trouve un nouvel équilibre au point 2').

Changes in the Domestic Money Supply

- An increase in a country's money supply causes interest rates to fall, rates of return on domestic currency deposits to fall, and the domestic currency to depreciate.
- A decrease in a country's money supply causes interest rates to rise, rates of return on domestic currency deposits to rise, and the domestic currency to appreciate.

Changes in the Foreign Money Supply

- How would a change in the supply of euros affect the U.S. money market and foreign exchange markets?
- An increase in the supply of euros causes a causes European interest rates to fall.
- The interest parity schedule shifts up.
- There is a depreciation of the euro (an appreciation of the dollar)

Changes in the Foreign Money Supply

- Analogously, a decrease in the supply of euros causes an appreciation of the euro (a depreciation of the dollar).

Assets market equilibrium:

$$R_t = R_t^* + \left(\frac{E_{t+1}^e - E_t}{E_t} \right)$$

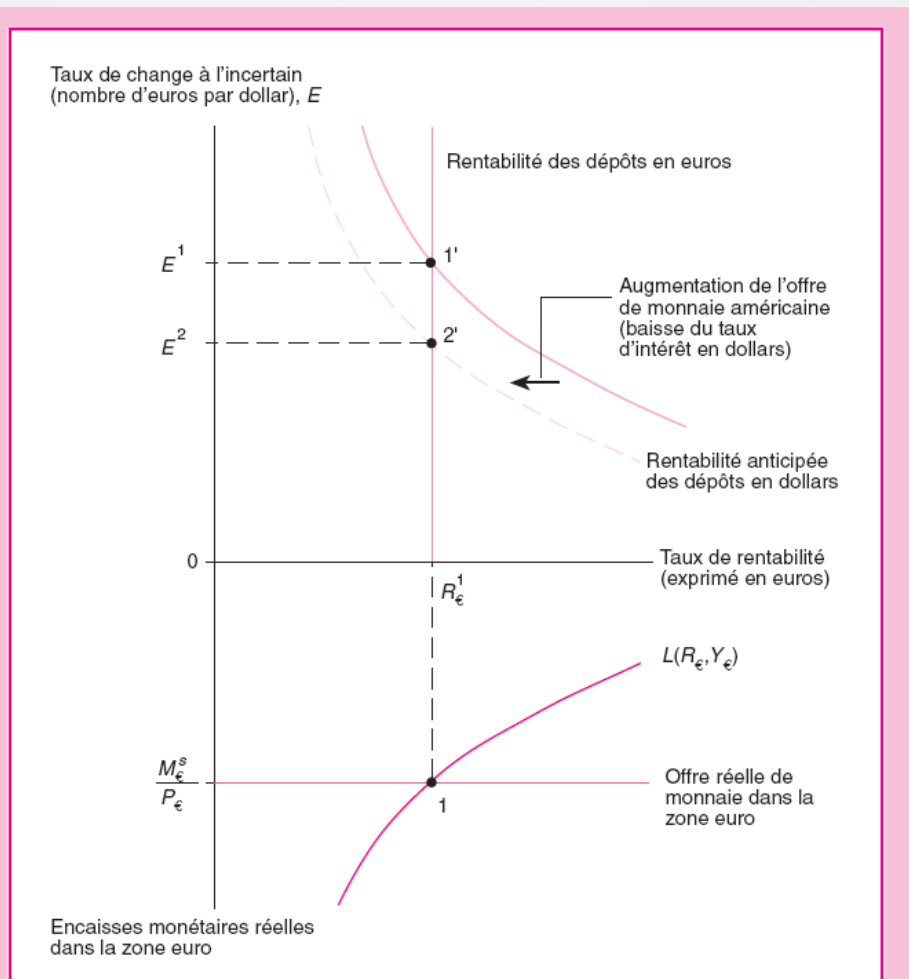


Figure 14.9 • L'effet d'une augmentation de l'offre de monnaie américaine sur le taux de change dollar contre euro.

Une augmentation de l'offre de monnaie américaine entraîne une appréciation de l'euro par rapport au dollar, en diminuant la rentabilité en euros des dépôts en dollars (diminution représentée par un déplacement vers la gauche de la courbe de rentabilité anticipée en dollars). L'équilibre du marché des changes se déplace du point 1' vers le point 2', mais l'équilibre du marché monétaire européen demeure au point 1.

Long Run and Short Run

- In the *short run*, prices do not have sufficient time to adjust to market conditions.
 - The analysis heretofore has been a short-run analysis.
- In the *long run*, prices of factors of production and of output have sufficient time to adjust to market conditions.
 - Wages adjust to the demand and supply of labor.
 - Real output and income are determined by the amount of workers and other factors of production—by the economy's productive capacity—not by the quantity of money supplied.
 - (Real) interest rates depend on the supply of saved funds and the demand of saved funds.

Long Run and Short Run (cont.)

- In the long run, the quantity of money supplied is predicted not to influence the amount of output, (real) interest rates, and the aggregate demand of real monetary assets $L(R, Y)$.
- However, the quantity of money supplied is predicted to make the level of average prices *adjust proportionally* in the long run.
 - The equilibrium condition $M^s/P = L(R, Y)$ shows that P is predicted to adjust proportionally when M^s adjusts, because $L(R, Y)$ does not change.

Long Run and Short Run (cont.)

- In the long run, there is a direct relationship between the inflation rate and changes in the money supply.

$$M^s = P \times L(R, Y)$$

$$P = M^s / L(R, Y)$$

$$\Delta P/P = \Delta M^s/M^s - \Delta L/L$$

- The inflation rate is predicted to equal the growth rate in money supply minus the growth rate in money demand.

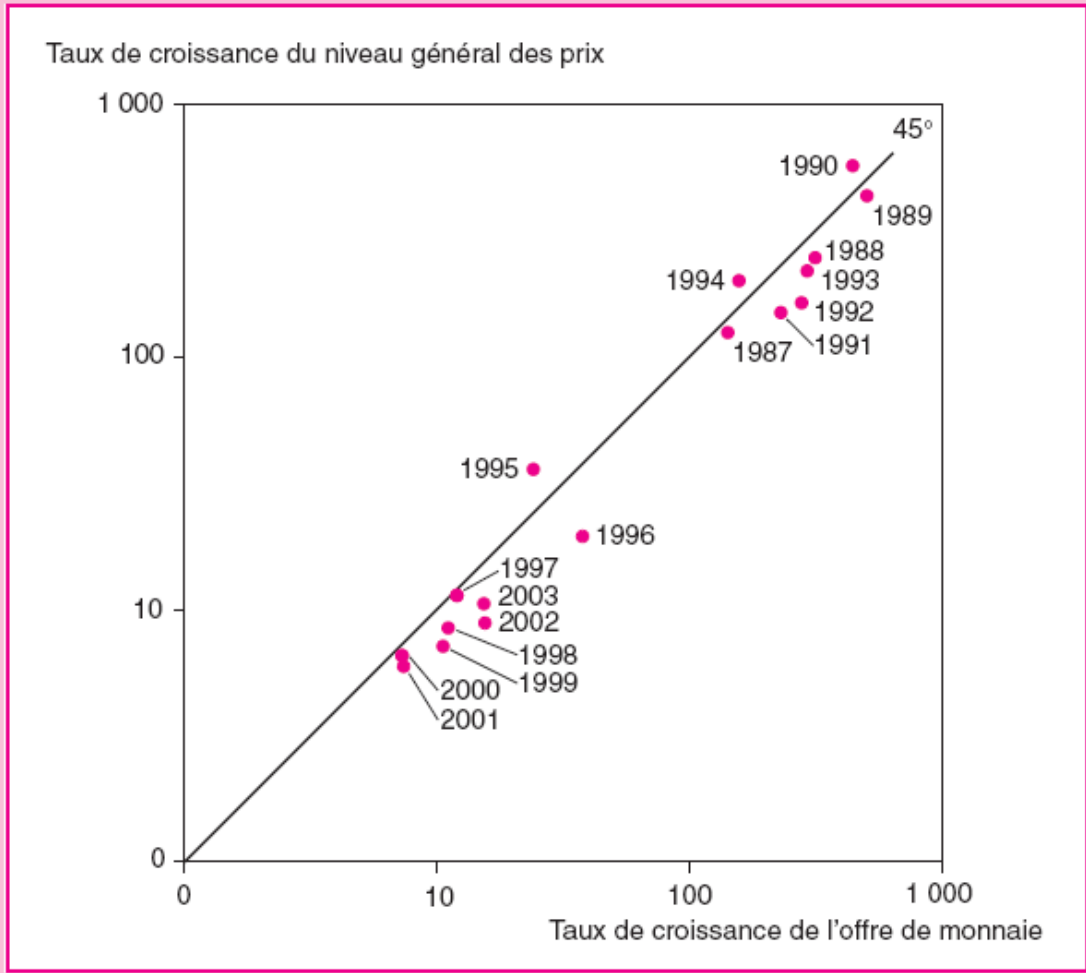


Figure 14.10 • La croissance monétaire et l'inflation, en moyenne annuelle, en Amérique latine entre 1987 et 2003.

Les données, année après année, suggèrent une forte relation positive entre la croissance moyenne de l'offre de monnaie des pays d'Amérique latine et leur taux d'inflation (les deux axes du graphique utilisent une échelle logarithmique).

Source : FMI, *Perspectives économiques mondiales*. Les données régionales agrégées sont pondérées en fonction de la part du PIB, exprimé en dollars, dans le PIB régional total, exprimé aussi en dollars.

Monetary Approach to Exchange Rates

- **Monetary approach to the exchange rate:** uses monetary factors to predict how exchange rates adjust in the long run, based on the absolute version of PPP.
 - It predicts that levels of average prices across countries adjust so that the quantity of real monetary assets supplied will equal the quantity of real monetary assets demanded:

$$P_{US} = M^s_{US} / L(R_{\$/}, Y_{US})$$

$$P_{EU} = M^s_{EU} / L(R_{\$/}, Y_{EU})$$

Marché des biens: Parité de pouvoir d'achat (rappel)

- **Parité de pouvoir d'achat (PPA):** Si l'indice de prix est calculé de la même manière dans tous les pays, et il n'y a pas de coûts impliqués dans le commerce international, le pouvoir d'achat de la monnaie dans les deux pays doit être identique:

$$P = EP^*$$

- Dans ce cas, les individus seraient toujours indifférent entre acheter les produits nationaux et les produits étrangers

Monetary Approach to Exchange Rates (cont.)

- To the degree that PPP holds and to the degree that prices adjust to equate the quantity of real monetary assets supplied with the quantity of real monetary assets demanded, we have the following prediction:
 - The exchange rate is determined in the long run by prices, which are determined by the relative supply and demand of real monetary assets in money markets across countries.

Équilibre à long terme:

- Marché de monnaie:

- $P_{US} = M^s_{US} / L(R_{\$,} Y_{US})$

- Marché financier: Parité non couverte des taux d'intérêt

$$R_t = R_t^* + \left(\frac{E_{t+1}^e - E_t}{E_t} \right)$$

- Marché de biens: Parité de pouvoir d'achat

$$P = EP^*$$

Effet d'Équilibre à long terme:

- Si l'offre de monnaie M^s est constante, ainsi que le niveau d'activité Y , le taux d'intérêt et le niveau de prix internationaux R^* et P^* , donc le taux de change est

constante:
$$\frac{E_{t+1}^e - E_t}{E_t} = 0$$

- La parité non-couverte des taux d'intérêt implique:

$$R_t = R_t^*$$

Équilibre à long terme:

- Marché de monnaie:
 - $P = M^S/L(R^*, Y)$
- Si la demande et l'offre de monnaie ne changent pas, les prix restent constants.
- Une augmentation de l'offre de monnaie entraîne, à long terme, une augmentation proportionnel des prix:

- $$\frac{\Delta P}{P} = \frac{\Delta M^S}{M^S}$$

Money and Prices in the Long Run

- How does a change in the money supply cause prices of output and inputs to change?
- 1. **Excess demand of goods and services:** a higher quantity of money supplied implies that people have more funds available to pay for goods and services.
 - To meet high demand, producers hire more workers, creating a strong demand of labor services, or make existing employees work harder.
 - Wages rise to attract more workers or to compensate workers for overtime.
 - Prices of output will eventually rise to compensate for higher costs.

Money and Prices in the Long Run (cont.)

- Alternatively, for a fixed amount of output and inputs, producers can charge higher prices and still sell all of their output due to the high demand.

2. Inflationary expectations:

- If workers expect future prices to rise due to an expected money supply increase, they will want to be compensated.
- And if producers expect the same, they are more willing to raise wages.
- Producers will be able to match higher costs if they expect to raise prices.
- Result: expectations about inflation caused by an expected increase in the money supply causes actual inflation.

Effet d'une augmentation de l'offre de monnaie:

- Parité de pouvoir d'achat:
 - $P = EP^*$
- Si les prix internationaux sont constants, les prix domestiques et le taux de change changent ensemble:
 - $\frac{\Delta P}{P} = \frac{\Delta E}{E}$
- Donc, à long terme:
 - $\frac{\Delta M^S}{M^S} = \frac{\Delta P}{P} = \frac{\Delta E}{E}$

Variations du taux de change et du ratio des niveaux de prix entre les États-Unis et le Japon (pourcentage par mois)

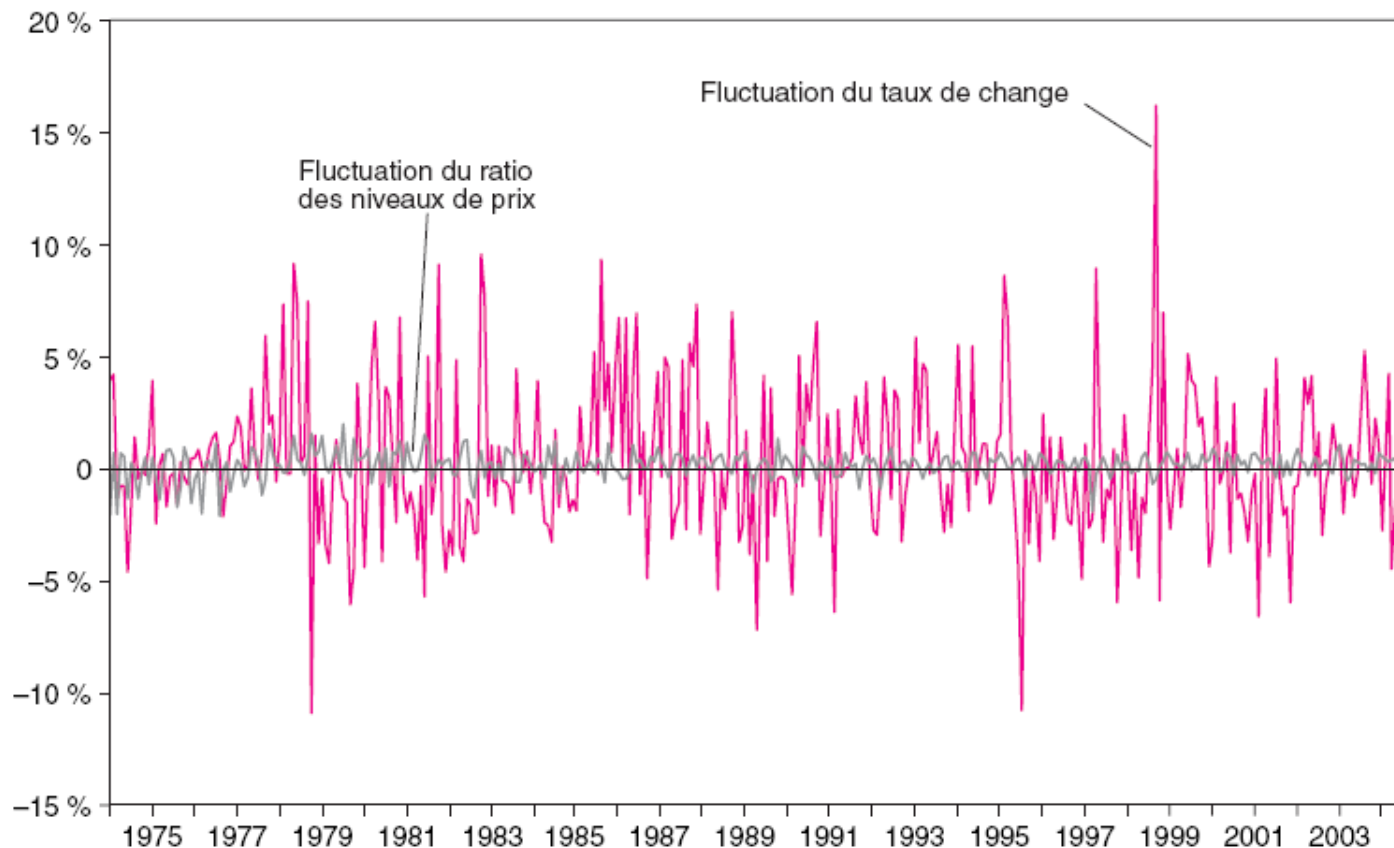


Figure 14.11 • Les fluctuations du taux de change dollar contre yen et du ratio des niveaux de prix américain et japonais.

La variabilité du taux de change est beaucoup plus forte que celle du rapport des niveaux de prix, ce qui suggère que ces derniers sont plus rigides à court terme que le taux de change.

Source : Fonds monétaire International, *Statistiques financières internationales*.

Money, Prices, Exchange Rates, and Expectations

- When we consider price changes in the long run, inflationary expectations will have an effect in foreign exchange markets.
- Suppose that expectations about inflation change as people change their minds, but actual adjustment of prices occurs afterwards.

Taux de change à l'incertain
(nombre d'euros par dollar), E

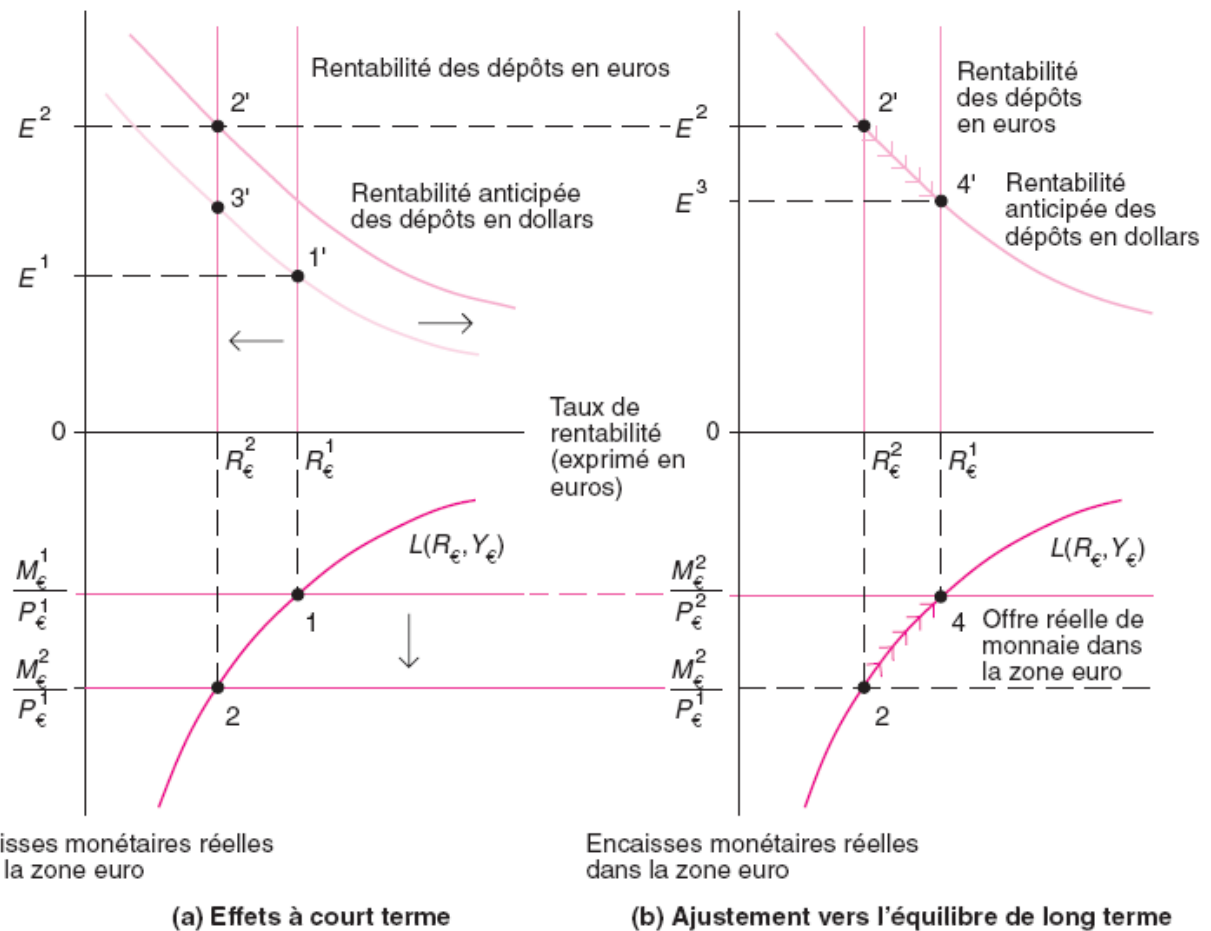


Figure 14.12 • Les effets de court terme et de long terme d'un accroissement de l'offre de monnaie aux États-Unis (pour un produit intérieur, Y , donné).

(a) L'ajustement du marché des actifs à court terme. (b) L'évolution du taux d'intérêt, du niveau général des prix et du taux de change au cours du temps, pendant que l'économie converge vers son équilibre à long terme.

Money, Prices, and Exchange Rates in the Long Run (cont.)

- A permanent increase in a country's money supply causes a proportional long-run depreciation of its currency.
 - However, the dynamics of the model predict a large depreciation first and a smaller *subsequent appreciation*.
- A permanent decrease in a country's money supply causes a proportional long-run appreciation of its currency.
 - However, the dynamics of the model predict a large appreciation first and a smaller *subsequent depreciation*.

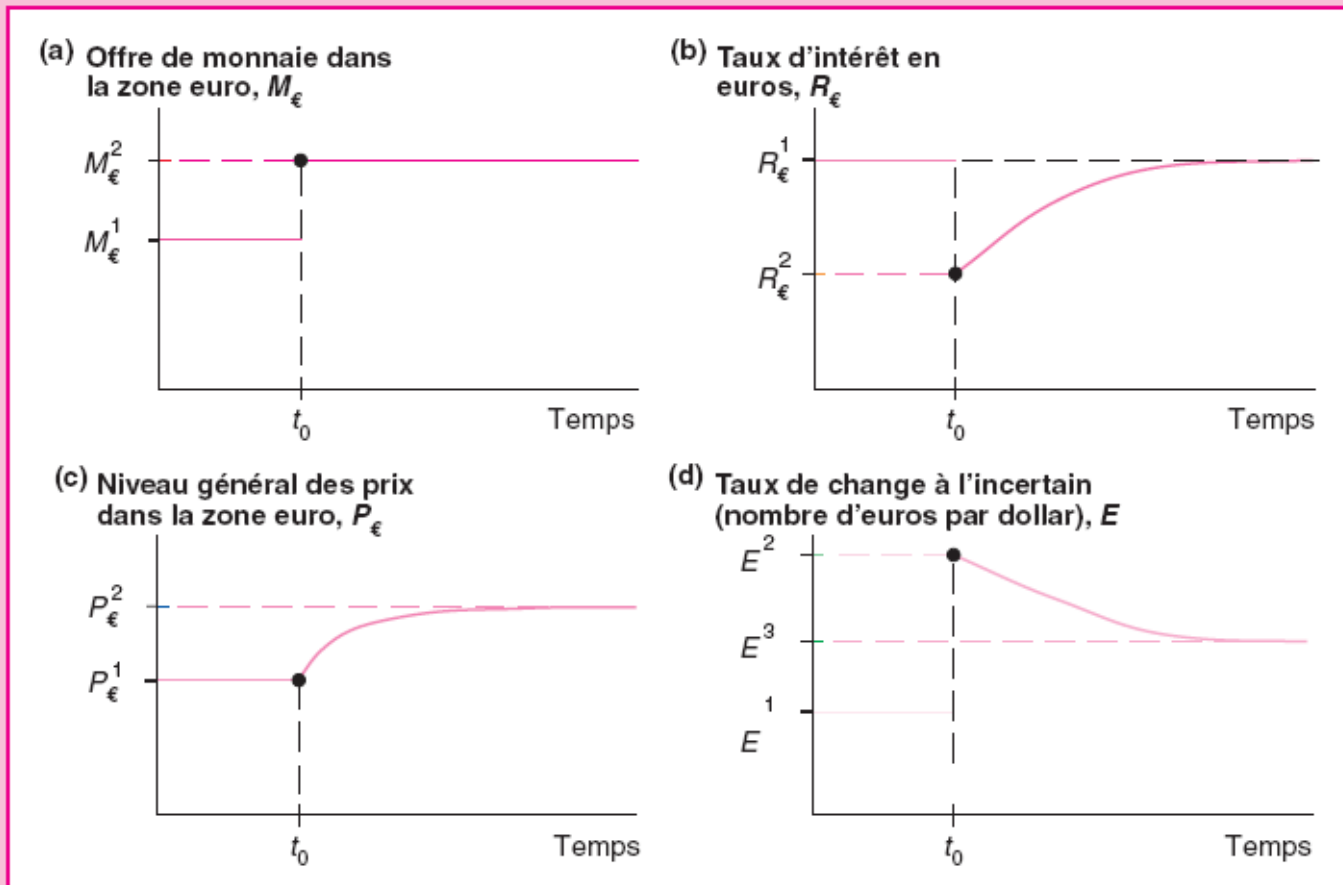


Figure 14.13 • Les trajectoires, au cours du temps, des variables macroéconomiques après une augmentation permanente de l'offre de monnaie dans la zone euro.

Après l'augmentation de l'offre de monnaie en t_0 (voir figure (a)), le taux d'intérêt (voir figure (b)), le niveau général des prix (voir figure (c)) et le taux de change (voir figure (d)) s'ajustent au cours du temps jusqu'à atteindre leur niveau de long terme. Comme le montre la figure (d), le taux de change surréagit dans un premier temps par un saut instantané de son niveau initial E^1 jusqu'à E^2 , avant de converger progressivement vers sa valeur de long terme, E^2 .

Exchange Rate Overshooting

- The exchange rate is said to **overshoot** when its immediate response to a change is greater than its long-run response.
- Overshooting is predicted to occur when monetary policy has an immediate effect on interest rates, but not on prices and (expected) inflation.
- Overshooting helps explain why exchange rates are so *volatile*.

Summary

1. Money demand for individuals and institutions is primarily determined by interest rates and the need for liquidity, the latter of which is influenced by prices and income.
2. Aggregate money demand is primarily determined by interest rates, the level of average prices, and national income.
 - Aggregate demand of real monetary assets depends negatively on the interest rate and positively on real national income.

Summary (cont.)

3. When the money market is in equilibrium, there are no surpluses or shortages of monetary assets: the quantity of real monetary assets supplied matches the quantity of real monetary assets demanded.
4. Short-run scenario: changes in the money supply affect domestic interest rates, as well as the exchange rate. An increase in the domestic money supply
 1. lowers domestic interest rates,
 2. thus lowering the rate of return on deposits of domestic currency,
 3. thus causing the domestic currency to depreciate.

Summary (cont.)

5. Long-run scenario: changes in the quantity of money supplied are matched by a proportional change in prices, and do not affect real income and real interest rates. An increase in the money supply
 1. causes expectations about inflation to adjust,
 2. thus causing the domestic currency to depreciate further,
 3. and causes prices to adjust proportionally in the long run,
 4. thus causing interest rates to return to their long-run values,
 5. and causes a proportional *long-run* depreciation in the domestic currency.

Summary (cont.)

6. Interest rates adjust immediately to changes in monetary policy, but prices and (expected) inflation may adjust only in the long run, which results in overshooting of the exchange rate.
 - Overshooting occurs when the immediate response of the exchange rate due to a change is greater than its long-run response.
 - Overshooting helps explain why exchange rates are so volatile.

Monetary Approach to Exchange Rates (cont.)

- To the degree that PPP holds and to the degree that prices adjust to equate the quantity of real monetary assets supplied with the quantity of real monetary assets demanded, we have the following prediction:
 - The exchange rate is determined in the long run by prices, which are determined by the relative supply and demand of real monetary assets in money markets across countries.

Monetary Approach to Exchange Rates (cont.)

Predictions about changes in

1. *Money supply*: a permanent rise in the domestic money supply
 - causes a proportional increase in the domestic price level,
 - thus causing a proportional depreciation in the domestic currency (through PPP).
 - This is same prediction as long-run model without PPP.

Monetary Approach to Exchange Rates (cont.)

2. *Output level*: a rise in the domestic level of production and income (output)
 - raises domestic demand of real monetary assets,
 - and is associated with a decreasing level of average domestic prices (for a fixed quantity of money supplied),
 - thus causing a proportional appreciation of the domestic currency (through PPP).
- Changes in money supply or money demand cause prices to adjust so that the quantity of real monetary assets supplied matches the quantity of real monetary assets demanded, and cause exchange rates to adjust according to PPP.

Monetary Approach to Exchange Rates (cont.)

- A change in the money supply results in a change in the level of average prices.
- A change in the *growth rate* of the money supply results in a change in the *growth rate* of prices (inflation).
 - A constant growth rate in the money supply results in a persistent growth rate in prices (persistent inflation) at the same constant rate, when other factors are constant.
 - Inflation does not affect the productive capacity of the economy and real income from production in the long run.
 - Inflation, however, does affect nominal interest rates. How?

The Fisher Effect

- The **Fisher effect** (named affect Irving Fisher) describes the relationship between nominal interest rates and inflation.
 - Derive the Fisher effect from the interest parity condition:
$$R_{\$} - R_{\epsilon} = (E_{\$/\epsilon}^e - E_{\$/\epsilon})/E_{\$/\epsilon}$$
 - If financial markets expect (relative) PPP to hold, then expected exchange rate changes will equal expected inflation between countries: $(E_{\$/\epsilon}^e - E_{\$/\epsilon})/E_{\$/\epsilon} = \pi_{US}^e - \pi_{EU}^e$
 - Therefore, $R_{\$} - R_{\epsilon} = \pi_{US}^e - \pi_{EU}^e$
 - The Fisher effect: a rise in the domestic inflation rate causes an equal rise in the interest rate on deposits of domestic currency in the long run, when other factors remain constant.

Monetary Approach to Exchange Rates

- Suppose that the U.S. central bank unexpectedly increases the growth rate of the money supply at time t_0 .
- Suppose also that the inflation rate is π in the US before t_0 and $\pi + \Delta\pi$ after this time, but that the European inflation rate remains at 0%.
- According to the Fisher effect, the interest rate in the U.S. will adjust to the higher inflation rate.

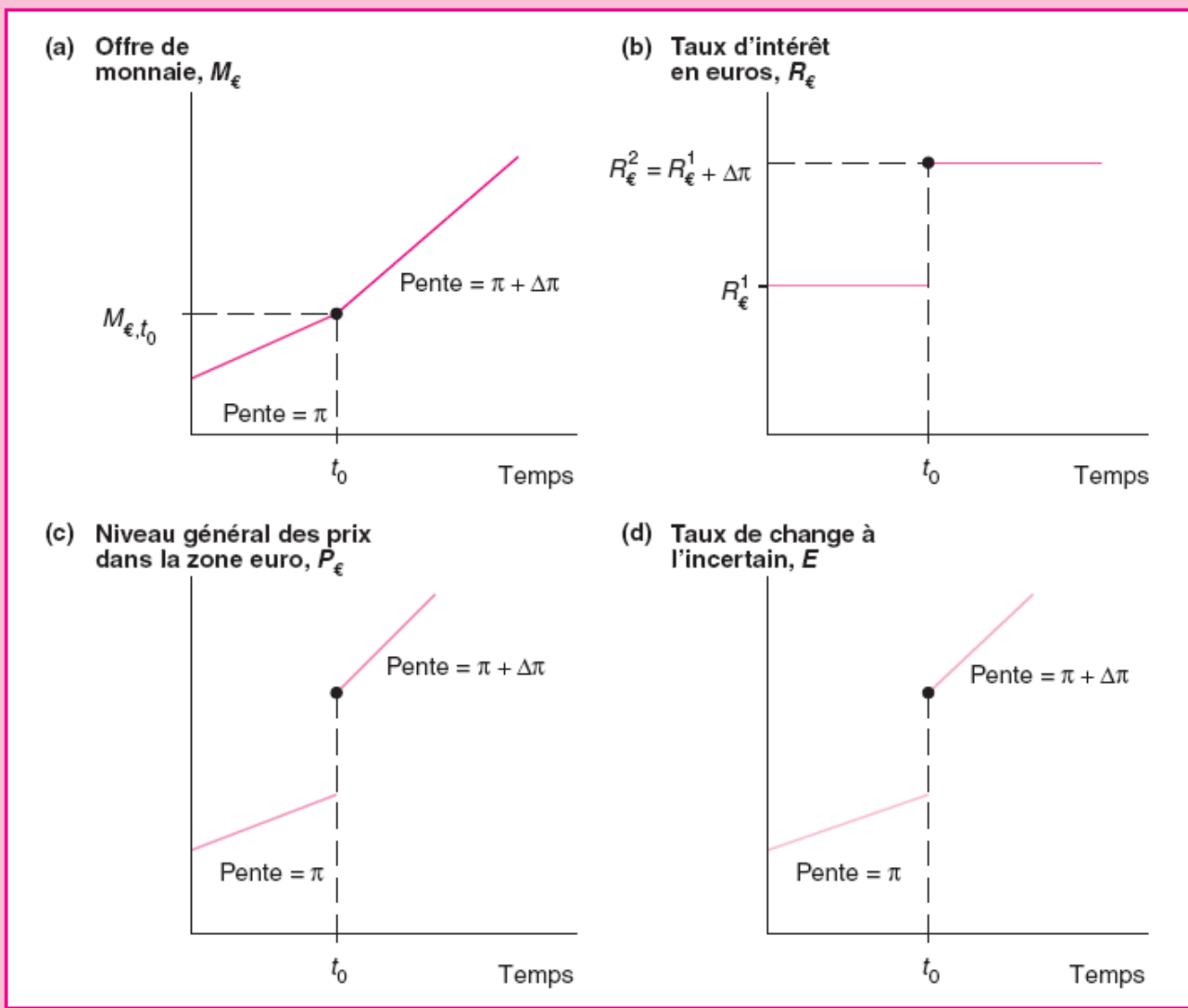


Figure 15.1 • Trajectoire à long terme des variables macroéconomiques, à la suite d'une hausse permanente du taux de croissance de l'offre de monnaie.

À la suite de la hausse du taux de croissance de l'offre de monnaie en t_0 [voir schéma (a)], le taux d'intérêt [voir schéma (b)], le niveau général des prix [voir schéma (c)] et le taux de change [voir schéma (c)] vont retrouver leur trajectoire à long terme. Notons que nous utilisons le logarithme de l'offre de monnaie, du niveau général des prix et du taux de change, ce qui signifie que les variations à taux constant apparaissent sous forme de droite. La pente des droites est égale au taux de croissance des variables.

Monetary Approach to Exchange Rates (cont.)

- The increase in nominal interest rates decreases the demand of real monetary assets.
- In order for the money market to maintain equilibrium in the long run, prices must jump so that

$$P_{US} = M_{US}^s / L(R_{\$/r}, Y_{US})$$

- In order to maintain PPP, the exchange rate must jump (the dollar must depreciate) so that

$$E_{\$/\epsilon} = P_{US} / P_{EU}$$

- Thereafter, the money supply and prices are predicted to grow at rate $\pi + \Delta\pi$ and the domestic currency is predicted to depreciate at the same rate.

Shortcomings of PPP

- There is little empirical support for absolute purchasing power parity.
 - The prices of identical commodity baskets, when converted to a single currency, differ substantially across countries.
- Relative PPP is more consistent with data, but it also performs poorly to predict exchange rates.

Taux de change (USD/JPY),
Rapport des prix japonais et américains ($P_{¥}/P_{\$}$)

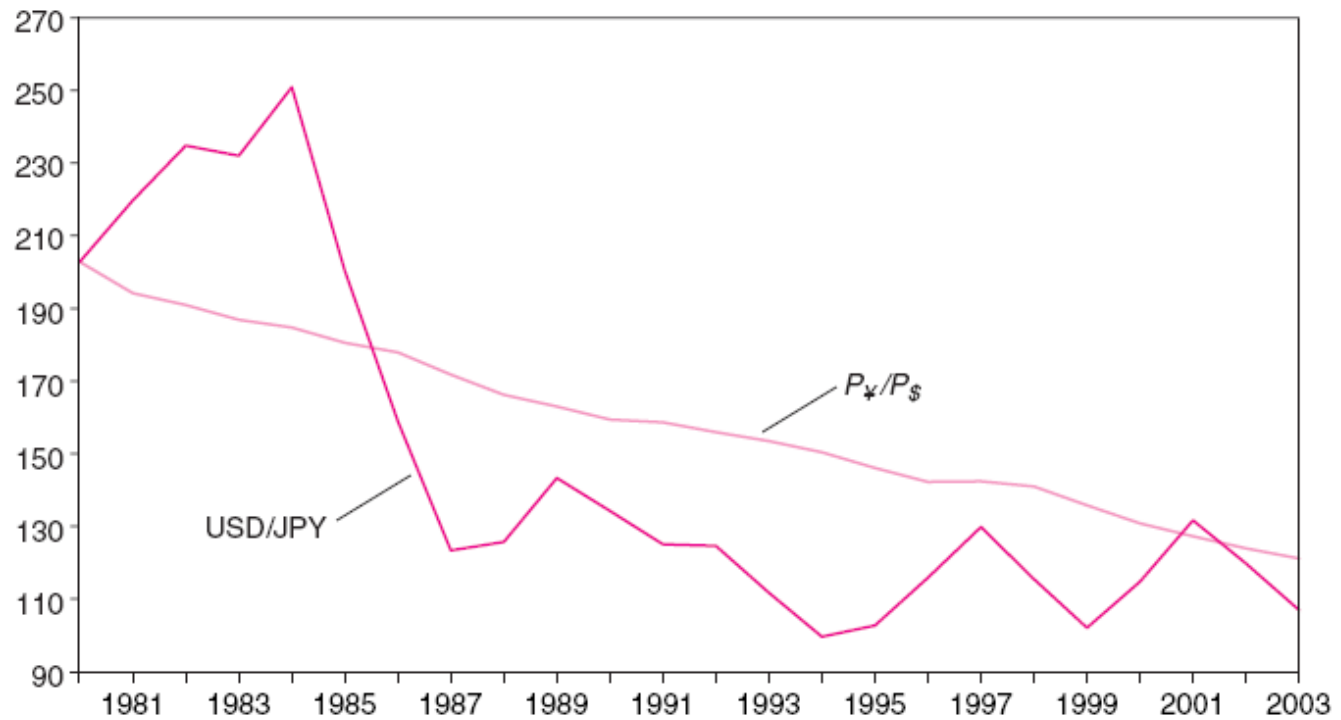


Figure 15.2 • Taux de change et rapport du niveau général des prix entre le Japon et les États-Unis, 1980-2003.

La figure montre que la PPA relative a été incapable d'expliquer le taux de change yen contre dollar après 1980.

Source : FMI, *Statistiques financières Internationales*. Les valeurs sont celles de fin d'année.

Shortcomings of PPP (cont.)

Reasons why PPP may not be accurate: the law of one price may not hold because of

1. Trade barriers and nontradable products
2. Imperfect competition
3. Differences in measures of average prices for baskets of goods and services

Shortcomings of PPP (cont.)

- **Trade barriers and nontradable products**
 - Transport costs and governmental trade restrictions make trade expensive and in some cases create nontradable goods or services.
 - Services are often not tradable: services are generally offered within a limited geographic region (for example, haircuts).
 - The greater the transport costs, the greater the range over which the exchange rate can deviate from its PPP value.
 - One price need not hold in two markets.

Shortcomings of PPP (cont.)

- **Imperfect competition** may result in price discrimination: “pricing to market.”
 - A firm sells the same product for different prices in different markets to maximize profits, based on expectations about what consumers are willing to pay.
 - One price need not hold in two markets.

Shortcomings of PPP (cont.)

- **Differences in the measure of average prices for goods and services**
 - levels of average prices differ across countries because of differences in how representative groups (“baskets”) of goods and services are measured.
 - Because measures of groups of goods and services are different, the measure of their average prices need not be the same.
 - One price need not hold in two markets.

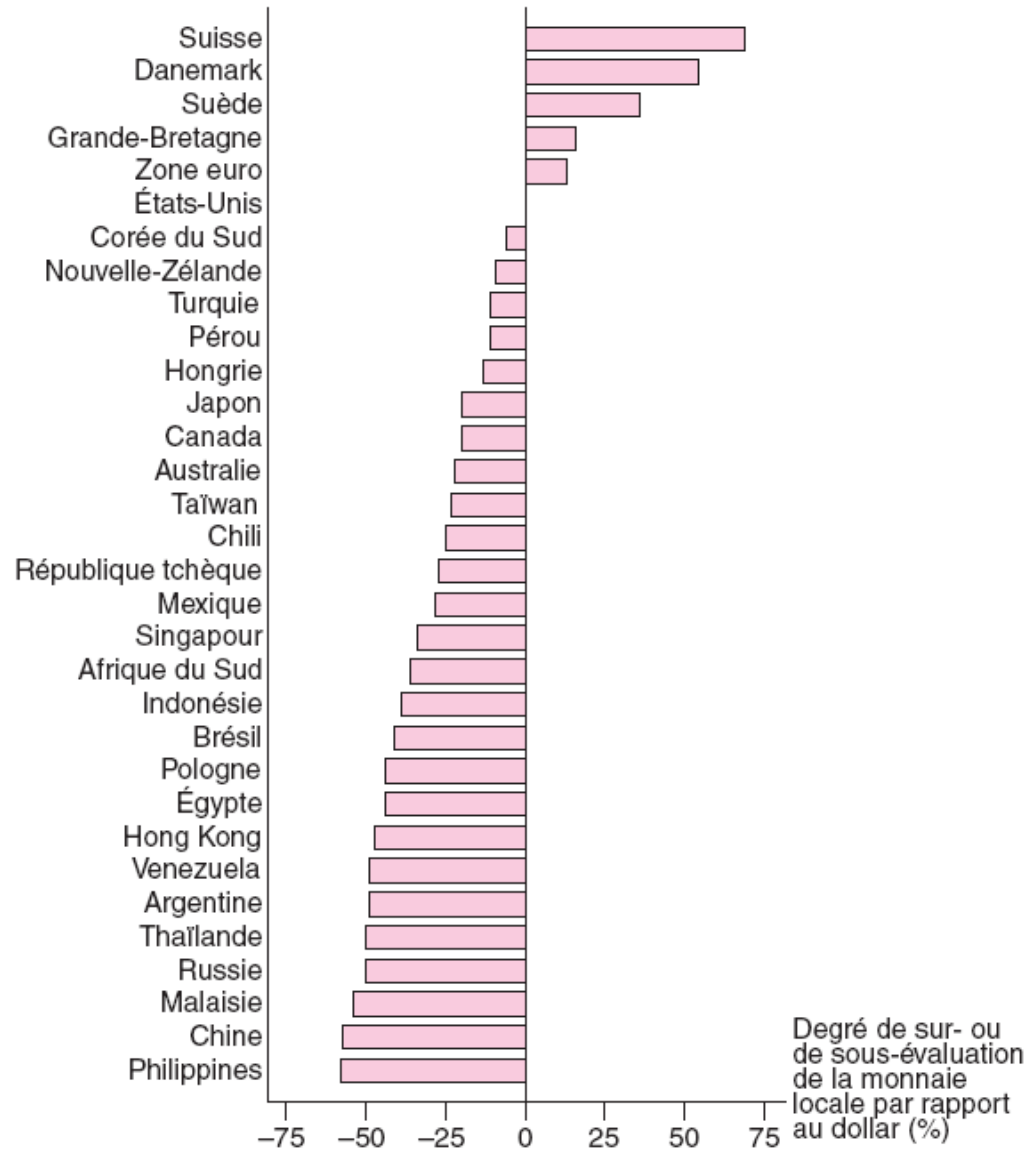


Figure 15.3 • Dérogation de l'indice Big Mac par rapport à la PPA.

Source : *The Economist*, 27 mai 2004.



Figure 15.4 • Niveau général des prix et revenus réels, 2000.

Le niveau général des prix est d'autant plus élevé que le revenu réel est important. Chaque pays est représenté par un point. La droite indique la meilleure prédiction statistique du niveau général des prix d'un pays, relativement aux États-Unis, en se fondant sur son revenu réel par tête.

Source : Table Penn World, Mark 6.1.

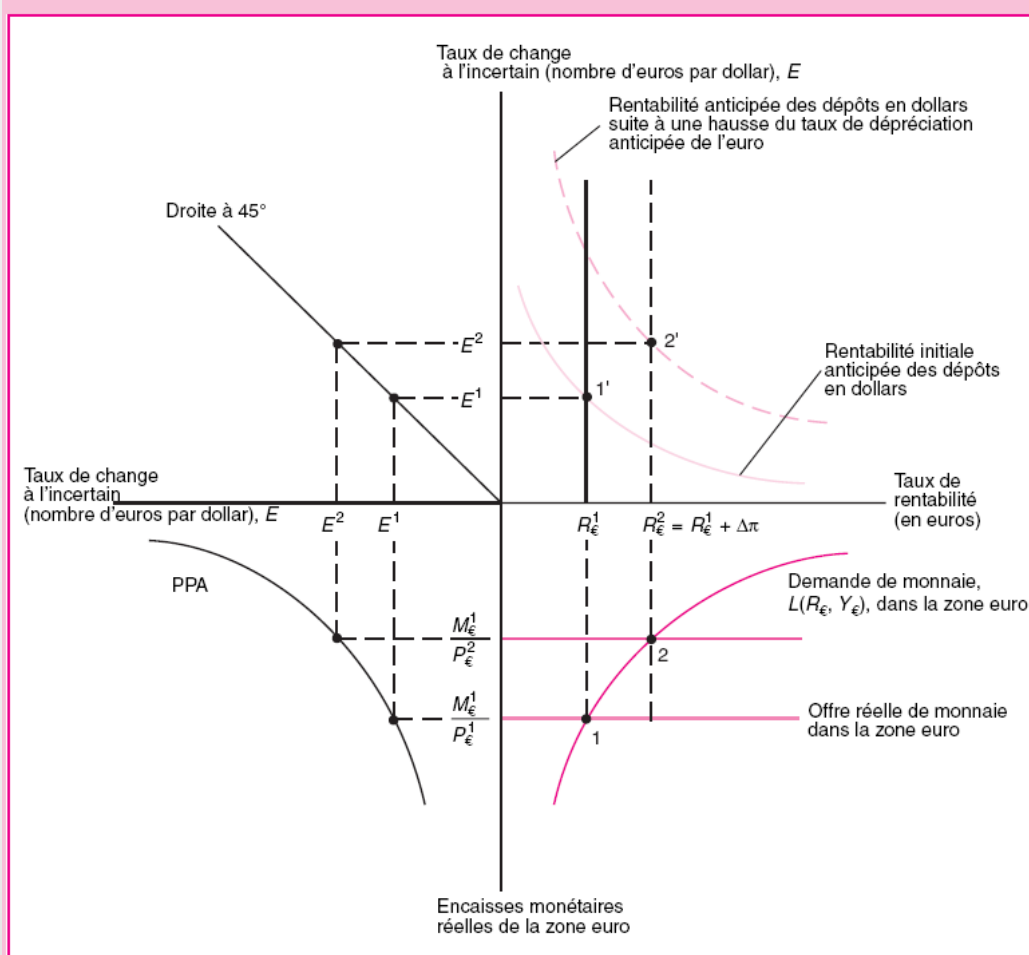


Figure 15A.1 • Comment une hausse du taux de croissance de la monnaie européenne agit sur les taux d'intérêt en euros et sur le taux de change contre dollar, lorsque les prix sont flexibles.

Lorsque les prix des biens sont parfaitement flexibles, le diagramme de l'équilibre du marché monétaire (cadran sud-est) montre les deux effets d'une hausse, Dp , du taux de croissance futur de l'offre de monnaie de la zone euro. Cette variation va (i) augmenter le taux d'intérêt en euros de $R_€^1$ à $R_€^2 = R_€^1 + \Delta\pi$, comme le prédit l'effet Fisher, et (ii) induire un saut vers le haut du niveau général des prix dans la zone euro, de $P_€^1$ à $P_€^2$. Par conséquent, l'équilibre sur le marché de la monnaie passe du point 1 au point 2. (Comme $M_€^1$ ne change pas immédiatement, l'offre d'encasques réelles européennes baisse jusqu'à $M_€^1/P_€^2$, rendant l'offre réelle de monnaie compatible avec la demande de monnaie plus faible.) La relation de la PPA dans le cadran sud-ouest montre que le saut du niveau général des prix, de $P_€^1$ à $P_€^2$, demande une dépréciation réelle de l'euro par rapport au dollar (le taux de change passe de E^1 à E^2). Sur le diagramme du marché des changes (cadran nord-est), cette dépréciation de l'euro est présentée comme un mouvement du point 1' vers le point 2'. L'euro se déprécie, malgré la hausse de $R_€$, car les anticipations sur une dépréciation future de l'euro par rapport au dollar provoquent un déplacement vers la droite de la relation représentant le rendement anticipé en dollars des dépôts en euros.

Summary

1. The law of one price says that the same good in different competitive markets must sell for the same price, when transportation costs and barriers between markets are not important.
2. Purchasing power parity applies the law of one price for all goods and services among all countries.
 - Absolute PPP says that currencies of two countries have the same purchasing power.
 - Relative PPP says that changes in the nominal exchange rate between two countries equals the difference in the inflation rates between the two countries.

Summary (cont.)

3. The monetary approach to exchange rates uses PPP and the supply and demand of real monetary assets.
 - Changes in the growth rate of the money supply influence inflation and exchange rates.
 - Expectations about inflation influence the exchange rate.
 - The Fisher effect shows that differences in nominal interest rates are equal to differences in inflation rates.
4. Empirical support for PPP is weak.
 - Trade barriers, nontradable products, imperfect competition and differences in price measures may cause the empirical shortcomings of PPP.