4
MACROECONOMIC COORDINATION: FUNDING ADJUSTMENTS

Sections —

Whenever ADF and ASF become unequal – no matter what the reason – money users and money suppliers will be unaware of the inequality; nonetheless, their normal behavior in response to their own individual situations will cause the magnitudes of ADF and ASF to approach each other. We will call this process the **funding adjustment**. Similarly, whenever GDP and APE for some reason become unequal, suppliers of goods and services will be unaware of the inequality; nonetheless, their normal behavior in response to their own individual situations will create **output-price adjustments** that will eliminate the gap between GDP and APE. Funding adjustments involve decisions and arrangements that can be made and executed very rapidly. In contrast, the output-price adjustments involve complex and sometimes risky decisions that producers will make following time consuming deliberations and implement cautiously. This permits us to **assume** that output-price adjustments will not commence until any needed funding adjustments have been completed.

Funding Adjustments

Each would-be purchaser of current domestic output will fall within one of the following groups:

Group 1 –   those with <u>just sufficient</u> available money balances to fund their current planned purchases;

Group 2 –   those with <u>insufficient</u> available money balances to fund their current planned purchases; and

Group 3 –   those with <u>more than sufficient</u> available money balances to fund their current planned purchases.

Do not associate Group 2 with the poor and Group 3 with the rich. Those associations would be totally inappropriate. Each one of us – rich and poor alike – spends time in all three groups. Also, nothing is being implied here about whether any of these would-be buyers either (a) can or cannot afford or (b) needs or does not need the planned purchases. In the current context, these are irrelevant issues. Given their current money balances, the members of Groups 2 and 3 face the following options:

Group 2		Group 3
beg,	←A→	give away,
borrow, or	←B→	lend, or
steal additional funds	←C→	hold idle the surplus funds
reduce non-GDP purchases	←D→	increase non-GDP purchases
reduce GDP purchases	←E→	increase GDP purchases

Banks and other financial intermediaries exist to encourage and facilitate use of option B by both groups. Use of options A, C, and D might affect the position of the ASF curve. Group 2's use of these options would tend to increase the

- 62 -

velocity of money (V) and that would push the ASF curve to the right. Use of options A, C, and D by Group 3 would have the opposite effects. Which way the ASF curve moves and how much it moves, if it moves at all, will be determined by the relative amounts that the two groups use those options. Similarly, use of option E by Group 2 would push the APE curve to the left; whereas, use of option E by Group 3 would shift the APE curve to the right. Again, the relative amounts that the two groups choose to use option E would determine whether the APE curve shifts and, if it does shift, would determine the direction and the extent of the shift. Option B is far and away the most popular option. Because of this and because it will significantly reduce the clutter in our diagrams, we shall use the **simplifying assumption** throughout the remainder of the book that

> *Groups 2 and 3 choose option B exclusively; this means that the APE and ASF curves do not shift during funding adjustments.*

This assumption will have no significant effects upon the outcomes of our analysis, because use of the other options will merely affect the extent that interest rates will move during the funding adjustments.

Funding Adjustment if ADF = ASF

Whenever ADF = ASF, the members of Groups 2 and 3 will be unaware of this equality. They will not know that the total supply of funding is just adequate to support the current demand for it. They will, of course, be aware of their own individual funding situations. Each member of Group 2 has too little funding and will seek to borrow more. At the same time, each member of Group 3 has more than enough funding and

will seek to lend his excess funds. Whenever ADF = ASF, the total amount of funds that members of Group 3 will be wanting to lend will exactly equal the total amount of funds that the members of Group 2 will be wanting to borrow.

Figure 4-1
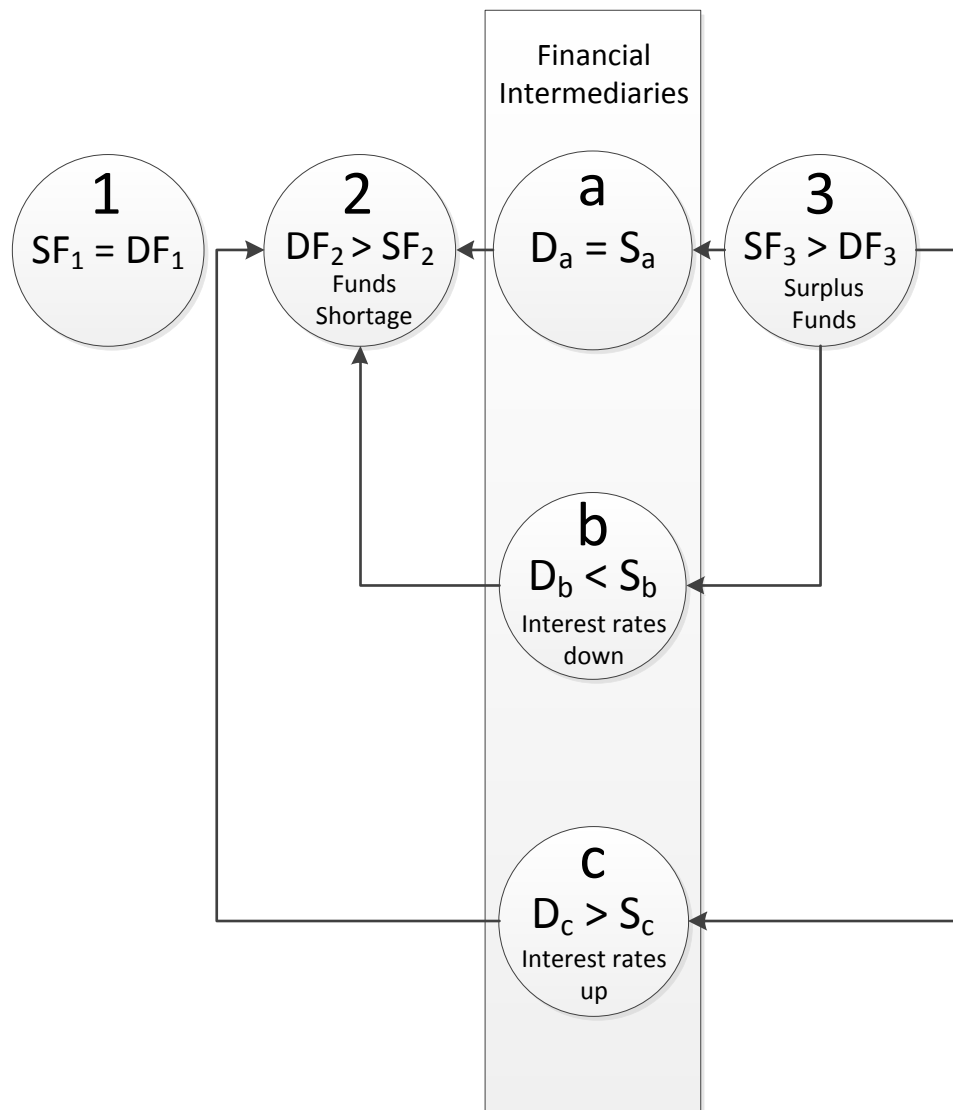
For simplicity, let's assume that the members of Group 2 react to their funding shortage exclusively by borrowing from financial intermediaries (banks and non-bank lenders) and that

the members of Group 3 use the entirety of their funding surplus to acquire assets of financial intermediaries (bank accounts and bonds issued by non-bank lenders). This will permit us to use Figure 4-1 to illustrate the mechanics of the funding adjustment. In the real world, where the members of Groups 2 and 3 face and use a mix of options (such as those listed on page 62), the funding adjustment will still function essentially as described here.

Figure 4-1 shows Groups 1, 2, and 3 of GDP purchasers, with the financial intermediaries positioned between Groups 2 and 3. SF_1, SF_2, and SF_3 represent the supplies of funding held respectively by the three groups. Similarly, DF_1, DF_2, and DF_3 represent their respective demands for funding. Given our simplifying assumptions, it is the case that

$$SF_1 + SF_2 + SF_3 = ASF \text{ and } DF_1 + DF_2 + DF_3 = ADF.$$

Hence, $ASF - ADF = (SF_1 - DF_1) + (SF_2 - DF_2) + (SF_3 - DF_3)$.

Because we are assuming that $SF_1 = DF_1$, it follows that

$$ASF - ADF = (SF_2 - DF_2) + (SF_3 - DF_3)$$

$$= (SF_3 - DF_3) - (DF_2 - SF_2).$$

$(SF_3 - DF_3)$ is the Group 3 funding surplus, and

$(DF_2 - SF_2)$ is the Group 2 funding shortage.

We are assuming that the Group 3 members are channeling their surplus funds into the financial intermediaries as shown by the arrows going from Group 3 to the financial intermediaries. The Group 2 members are negotiating loans from the financial intermediaries in a combined total amount that equals their funding shortage as shown by the arrows

going from the financial intermediaries to Group 2.

There will inevitably be three groups of financial intermediaries, groups a, b, and c. One group, a, will find that the flow of funds S_a coming in from Group 3 matches the demand for funds D_a coming from Group 2. The financial intermediary group b will have a flow of funds S_b coming in from Group 3 that exceeds the demand for funds D_b from Group 2. Finally, the financial intermediary group c will have a flow of funds S_c coming in from Group 3 that is smaller than the demand for funds D_c from Group 2. Note that

$$S_a + S_b + S_c = (SF_3 - DF_3) \text{ and } D_a + D_b + D_c = (DF_2 - SF_2).$$

There is no reason to expect the financial intermediaries in group a to alter their interest rates. But, the financial intermediaries in group b will lower their interest rates in an effort to find more borrowers for their abundant loanable funds. Meanwhile, the financial intermediaries in group c will be raising their interest rates in an effort to attract more Group 3 funds. **{1}**

Whenever ASF = ADF, then $(SF_3 - DF_3) = (DF_2 - SF_2)$

$$S_a + S_b + S_c = D_a + D_b + D_c$$

But $S_a = D_a$, so $S_b + S_c = D_b + D_c$

Hence $S_b - D_b = D_c - S_c$

This means that the financial intermediaries in group b will be

---

1 To survive, banks must pay lower interest rates on deposits than the rates that they charge on loans. So, when banks change their interest rates, they move in the same direction both the rates that they pay on deposits and the rates that they charge on loans in order to maintain a profit-maximizing spread between these rates.

lowering their interest rates enough to close the same size of a gap that the financial intermediaries in group c are raising their interest rates to close. These group interest rate changes will offset each other, and the level of interest rates will not change.

Funding Adjustment if ADF > ASF

Whenever ADF exceeds ASF, the members of Groups 2 and 3 will be unaware of this inequality. They will not know that the total supply of funding is inadequate to support the current demand for it. They will, of course, be aware of their own individual funding situations. Each member of Group 2 has too little funding and will seek to borrow more. At the same time, each member of Group 3 has more than enough funding and will seek to lend those excess funds. Because ADF > ASF, the total amount of funds that members of Group 3 will be wanting to lend will be less than the total amount of funds that the members of Group 2 will be wanting to borrow.

Refer once again to Figure 4-1, and remember that group c financial institutions are raising interest rates in an effort to attract more deposits (S_c) while group b institutions are lowering interest rates in an effort to stimulate more borrowing (D_b). With ASF < ADF, it follows that

$$(SF_3 - DF_3) < (DF_2 - SF_2)$$

$$S_a + S_b + S_c < D_a + D_b + D_c$$

But $S_a = D_a$, so $S_b + S_c < D_b + D_c$

Hence $S_b - D_b < D_c - S_c$

Group b's interest rate cuts will be overpowered by group c's interest rate increases, because group c has a larger gap to close. The level of interest rates will rise.

Remember that the ASF curve may lie anywhere relative to the GDP, APE, and IS curves. In Figure 4-2, the ASF curve lies relatively far to the right. In Figure 4-3 the ASF curve lies relatively far to the left. In both Figures 4-2 and 4-3, the prevailing (initial) level for interest rates is assumed to be i_1. At that interest rate level, ADF exceeds ASF; so, the level of interest rates will rise.
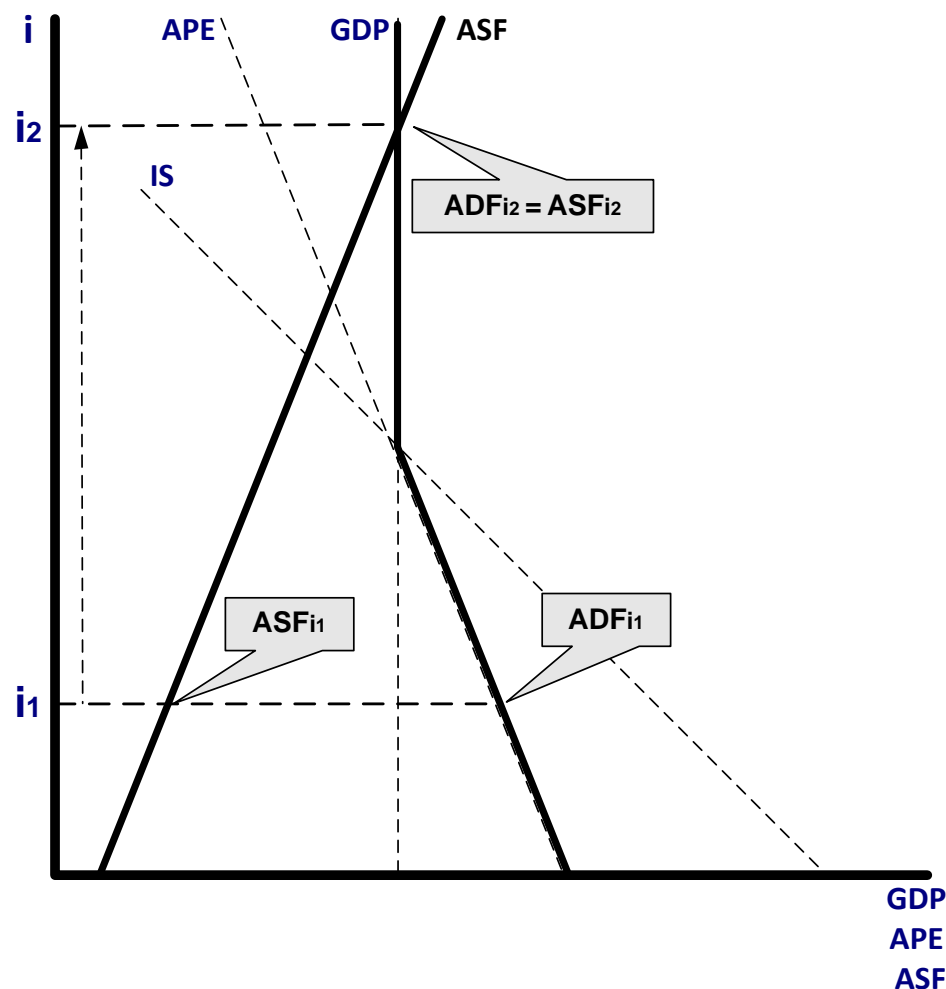
Figure 4-2
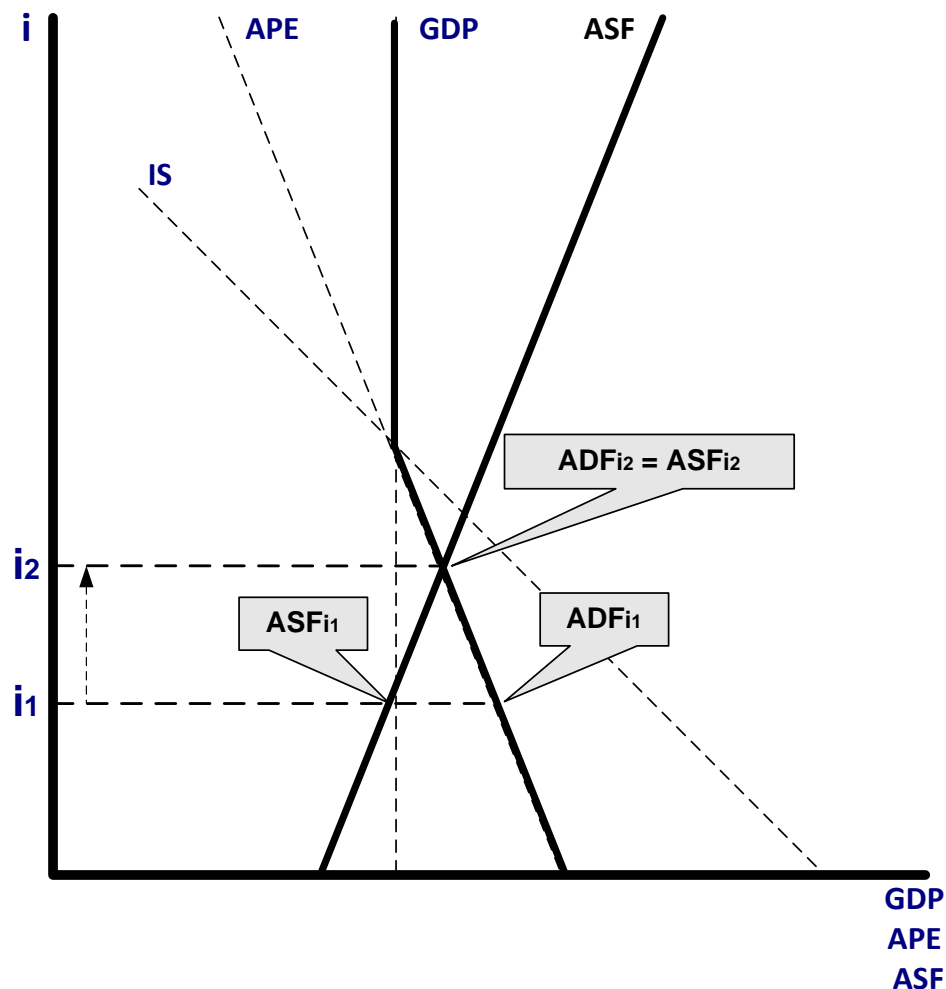
The interest rate level will continue to rise as long as ADF exceeds ASF, because group c's interest rate increases will

outweigh group b's interest rate cuts. So, interest rates will rise to the level of i_2, where ADF = ASF. As interest rates rise, APE falls (a movement upward along the APE curve), and ASF rises (a movement upward along the ASF curve) as banks expand lending (hence, create more money) and as the velocity of money increases in response to more non-bank lending. **{2}** If, as in Figure 4-2, ADF = APE, then ADF declines as interest rates rise.

Figure 4-3

---

2 Remember that the magnitudes of APE and ASF are measured horizontally from the vertical axis.

Figure 4-3 illustrates the same process for a situation in which the ASF curve lies much farther to the left and cuts through the vertical portion of the ADF curve. As i rises from the i_1 level, APE drops (a movement upward along the APE line, the slanted portion of the ADF curve), and at first so does ADF. But once APE drops below GDP, the continued rise in interest rates up to the i_2 level no longer causes a fall in ADF. This is because APE is falling farther and farther below GDP as interest rates rise, and the fall in the need for funds to finance APE is exactly offset by an increased need of businesses to fund unwanted inventory accumulations.

Funding Adjustment if ADF < ASF

Whenever ASF exceeds ADF, the members of Groups 2 and 3 will be unaware of this inequality. They will not know that the total supply of funding exceeds what is needed to support the current demand for it. They will, of course, be aware of their own individual funding situations. Each member of Group 2 has too little funding and will seek to borrow more. At the same time, each member of Group 3 has more than enough funding and will seek to lend those excess funds. Because ASF > ADF, the total amount of funds that members of Group 3 will be wanting to lend will exceed the total amount of funds that the members of Group 2 will be wanting to borrow.

Refer once again to Figure 4-1, and remember that group c financial institutions are raising interest rates in an effort to attract more deposits (S_c) while group b institutions are lowering interest rates in an effort to stimulate more borrowing (D_b). With ASF > ADF, it follows that

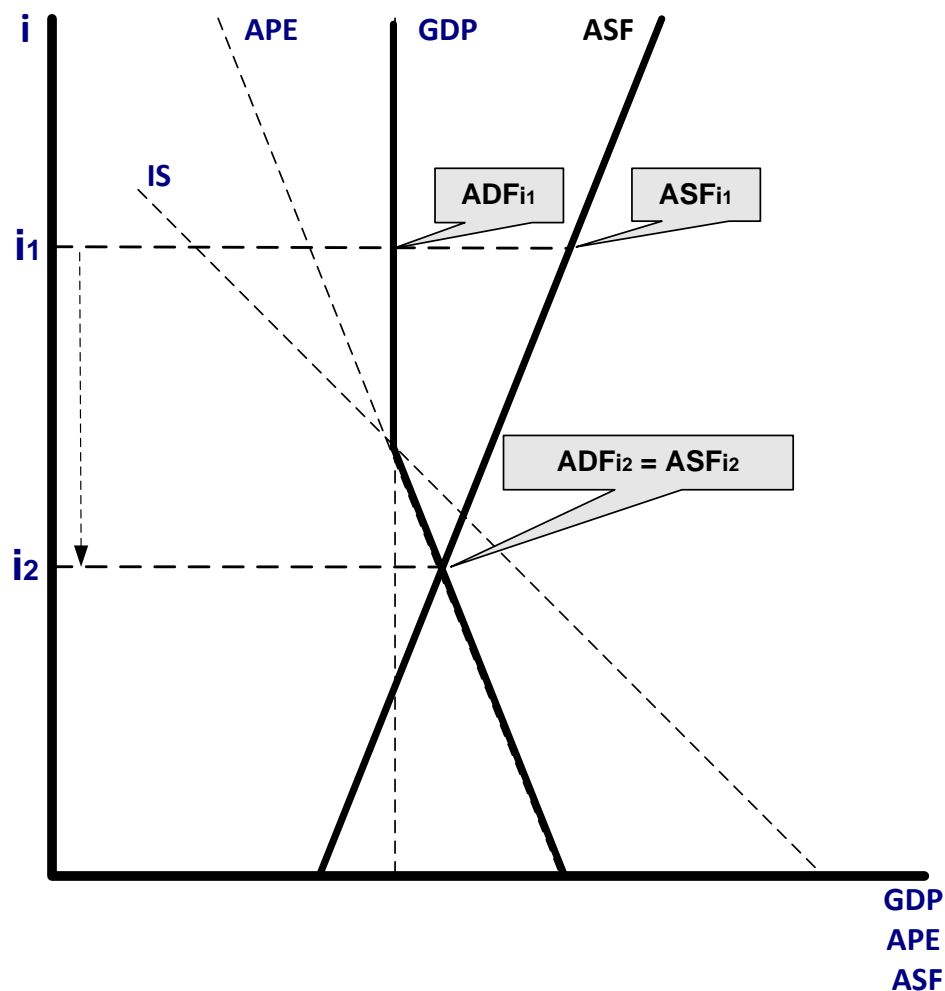$$(SF_3 - DF_3) > (DF_2 - SF_2)$$

$$S_a + S_b + S_c > D_a + D_b + D_c$$

But $S_a = D_a$, so $S_b + S_c > D_b + D_c$

Hence $S_b - D_b > D_c - S_c$

In this case, the financial intermediaries in group b have a larger gap to close than will those in group c. So, group b's interest rate cuts will exceed group c's interest rate increases. The level of interest rates will fall.

Figure 4-4

In Figure 4-4, the prevailing (initial) level for interest rates is assumed to be i_1. At that interest rate level, ASF exceeds

ADF; so, the level of interest rates will fall. The interest rate level will continue to fall as long as ASF exceeds ADF, because group b's interest rate decreases will outweigh group c's interest rate increases. So, interest rates will fall to the level of i_2, where ADF = ASF. As interest rates fall, APE rises (a movement downward along the APE curve), and ASF falls (a movement downward along the ASF curve) as banks reduce lending (hence, cut the money supply) and as the velocity of money decreases in response to less non-bank lending. Although APE is increasing, ADF does not increase until interest rates fall enough so that APE becomes larger than GDP. This is because as long as APE remains less than GDP, APE increases result in a corresponding rise in the need for funds to finance APE that is exactly offset by a reduced need of businesses to fund unwanted inventory accumulations. Once APE exceeds GDP, continued falls in the interest rate will increase both APE and ADF.

Funding Adjustments, Final Comments

We have seen that, whenever an inequality develops between ADF and ASF, households and institutions – each reacting to its own excessive or insufficient funding for current domestic output purchases, but wholly unaware of whether there may be either a general excess or inadequacy of funding relative to the demand for it – will unknowingly set into motion the funding adjustment process that continues to push the magnitudes of ADF and ASF towards each other until equality between them is restored. No one involved in this whole process is at all aware of either ADF or ASF or has any desire whatever to make them equal. Each is only concerned about his own situation; nonetheless, their combined actions do result in equality between ADF and ASF.

Whenever ASF < ADF, then the level of interest rates will rise. As interest rates rise, ASF will rise and APE will fall. This will continue until ASF = ADF at which time interest rates will stop rising. Whenever ASF > ADF, the level of interest rates will fall. As interest rates fall, ASF will fall and APE will rise. This will continue until ASF = ADF at which time interest rates will stop falling.

At the end of the funding adjustment – with ADF = ASF – the existing aggregate demand for current domestic output is fully funded and ready to confront the available supply (GDP). If that supply is either too small (GDP < APE) or too large (GDP > APE), then the macroeconomic coordination process will move on into an output-price adjustment phase that is unknowingly triggered by the nation's producers – each reacting to its own situation and unaware of the relative magnitudes of GDP and APE.

When the funding adjustment ends, one of the following situations will prevail:

$$GDP \ = \ APE \ = \ ASF \ ,$$

$$or \quad GDP \ < \ APE \ = \ ASF \ ,$$

$$or \quad APE \ < \ GDP \ = \ ASF \ .$$

The two situations with inequalities will trigger output-price adjustments.