

the amount that can be borrowed, then even a one-time tax rebate would increase consumption substantially. The rebate would reduce the liquidity constraint. Regarding the efficacy of temporary tax changes, therefore, the crucial issue is the importance of liquidity constraints.

Monetary Policy and Consumption

In our analysis of monetary policy effects, the main focus was on investment. The life cycle hypothesis implies that monetary policy has important direct effects on consumption as well. According to the life cycle hypothesis, household wealth is one of the main determinants of consumption. Monetary policy affects wealth and therefore consumption. Monetary policy actions affect wealth primarily by affecting interest rates and consequently the market value of assets, such as government and private bonds and corporate equities (stocks). In Chapter 7, we analyzed the relationship between the interest rate and the market value of bonds. An increase in the interest rate resulting from a tight money policy causes bond prices to fall and, hence, households to suffer capital losses on bonds. A decline in interest rates resulting from an expansionary monetary policy causes bond prices to rise, with resulting capital gains on bonds. Equity prices are also expected to move inversely with interest rates. Equities pay streams of dividends, and with higher market interest rates, the price that investors are willing to pay for an equity with a given dividend flow falls.

Tight money policies therefore reduce wealth and consumption, whereas expansionary policies have the opposite effects. Empirical work by Modigliani, mentioned previously, indicates that effects on consumption are a large component of the overall effects of monetary policy.

The hypothesis that liquidity constraints are important provides an additional channel by which monetary policy might affect consumption. Tight money policies result in larger down-payment requirements and stricter credit standards for consumer credit, thus increasing the severity of the liquidity constraint facing many households. Expansionary monetary policies make credit more available and reduce liquidity constraints. An illustration of how consumption may be affected by liquidity constraints, whether real or only perceived, came in the spring of 1980. The Federal Reserve, in an effort to reduce the growth of consumer credit, instituted a number of credit controls. Apparently the public overreacted and feared that credit would simply become unavailable. Owing in part to this expected liquidity constraint, real consumer expenditure fell by 10.5 percent at an annual rate in the second quarter of 1980.

permanent income hypothesis

shares with the life cycle hypothesis the view that consumption depends on a long-term average of income earned from labor and asset holdings

The Permanent Income Hypothesis

An alternative explanation of consumer behavior is the **permanent income hypothesis** suggested by Milton Friedman.¹¹ This hypothesis shares with the life cycle hypothesis the assumption that long-term income is the primary determinant of consumption.

¹¹Milton Friedman, *A Theory of the Consumption Function* (Princeton, N.J.: Princeton University Press, 1957).

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Friedman's Consumption Function

Friedman postulates that consumption is proportional to permanent income:

$$C = \kappa Y^p \quad (21.10)$$

where Y^p is permanent income and κ (Greek kappa) is the factor of proportionality ($\kappa > 0$). Permanent income is expected average long-term income from both "human and nonhuman wealth"—that is, both expected labor income (the return to human wealth or human capital) and expected earnings from asset holdings (non-human wealth).¹²

Friedman does not expect this equation to predict consumption perfectly. In addition to the part of consumption determined on the basis of permanent income, in any period there is a random element to consumption that Friedman terms "transitory" consumption. Similarly, in any period, there is a transitory component of income; measured income generally does not equal permanent income for the individual or in the aggregate. We can then write measured income (Y) as

$$Y = Y^p + Y^t$$

where Y^t is transitory income, which may be either positive or negative, causing measured income to exceed or fall short of permanent income. According to the permanent income hypothesis, only the permanent component of income influences consumption. Consumption, even the transitory component of consumption, is independent of transitory income.

As with the life cycle hypothesis, in order to implement the permanent income hypothesis, we must make an assumption about how individuals form long-term expectations about income. Friedman assumed that individuals revise their initial estimate of permanent income from period to period in the following manner:

$$Y_t^p = Y_{t-1}^p + j(Y_t - Y_{t-1}^p), \quad 0 < j < 1 \quad (21.11)$$

Equation (21.11) states that in each period individuals adjust their estimate of permanent income by a fraction j of the discrepancy between actual income in the current period and the prior period's estimate of permanent income. For example, suppose $j = 0.40$. Then, coming into 2000, assume that an individual estimated her permanent income to be \$30,000 (Y_{t-1}^p), but actual income in 2000 turned out to be \$40,000 (Y_t). From equation (21.11), we compute

$$\begin{aligned} Y_t^p &= \$30,000 + 0.40(\$40,000 - \$30,000) \\ &= \$34,000 \end{aligned}$$

The individual assumes that 40 percent (\$4,000) of the deviation of actual income from the previous estimate of permanent income represents a change in permanent income, whereas the other 60 percent (\$6,000) is transitory income.

The permanent income hypothesis can explain the puzzles about the consumption-income relationship discussed earlier. The permanent income hypothesis is consistent

¹²Although here we drop the D subscript, which indicates disposable income, each of the income concepts discussed is net of taxes.

with the proportional long-run consumption function (APC is constant) and the non-proportional short-run consumption function (APC declines as Y increases) found in time series data. In the long run, income growth is dominated by changes in permanent income, with positive and negative transitory changes in income canceling out. The long-run consumption-income relationship will therefore be approximately the proportional relationship given by equation (21.10) with constant APC equal to κ . In the short run, years of high income will generally be years when the transitory component of income is positive. Because consumption rises only with increases in permanent income, in these high-income years the ratio of consumption to measured income [$APC = C/Y = C/(Y^p + Y^t)$] will be low. In low-income years when transitory income is generally negative, permanent income will be above measured income, and the ratio of consumption, which depends on permanent income, to measured income will be high (APC will be high).

Cross-sectional budget studies indicate that high-income families have a lower APC than low-income families, a finding that is also consistent with the permanent income hypothesis. A sample of high-income families at a given time is likely to contain more than a proportionate number of families experiencing positive transitory income flows ($Y^t > 0$). Because the consumption levels of these families depend only on their permanent incomes, the measured APCs for these families will be low, bringing down the average APC for the high-income group. On the other hand, a group of families with a low income at a given point in time will contain a disproportionate share of families with a negative transitory income component and hence a high measured APC. Consequently, the average APC for the low-income group will be pushed up.

Finally, the permanent income hypothesis is consistent with the failure of quarter-to-quarter movements of consumption to follow closely such short-run movements in income. Quarter-to-quarter income changes will contain many transitory changes to which consumption does not respond. Likewise, according to Friedman's hypothesis, there is a transitory component to consumption that is not related to income.

Policy Implications of the Permanent Income Hypothesis

The policy implications that follow from the permanent income hypothesis are similar to those of the life cycle hypothesis. With respect to fiscal policy and in particular to the Keynesian multiplier process, the crucial question again is whether consumption responds strongly to changes in *current* income. The short-run MPC, the change in consumption per unit change in current income, will be

$$\frac{\Delta C_t}{\Delta Y_t} = \kappa j \quad (21.12)$$

that is, the long-run MPC out of permanent income ($\Delta C/\Delta Y^p$), κ , multiplied by the fraction by which the individual's estimate of permanent income is adjusted to a change in actual income, $j(\Delta Y_t^p/\Delta Y_t)$; see equation 21.11). If individuals adjust their estimates of permanent income to changes in current income only slowly over time, j , and therefore the MPC out of current income, will be small. For example, if κ is 0.9 but j is 0.3, the MPC out of current income will be

$$\frac{\Delta C_t}{\Delta Y_t} = \kappa j = 0.9 \times 0.3 = 0.27$$

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