ECON 210C PROBLEM SET # 2

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1. Investment and the Housing Market

(a).

(1) $I = \psi(P)$: Gross investment in housing is an increasing function of the price of houses. This specification implies that housing investment can be interpreted as the supply of new housing.

(2) $r + \delta = (R + \dot{P})/P$: This implies that the costs of investing into a house, namely forgone investment income and depreciation are equal to the benefits, namely rental payments and capital gains.

(3) $R = R(H)$: Rental cost is a decreasing function of the size of the housing stock.

(4) $\dot{H} = I - \delta H$: The housing stock can change in two ways, housing investment and depreciation.

(b). We merely substitute to obtain

$$\dot{H} = \psi(P) - \delta H$$
$$r + \delta = (R(H) + \dot{P})/P$$

(d). Rewriting the equation for $\dot{P}$ gives

$$\dot{P} + R(H) = P(r + \delta)$$

implying an increase in r must increase $R(H)$ correspondingly given $\dot{P} = 0$. Since R is a decreasing function of H, we have that H decreases and the $\dot{P} = 0$ locus shifts to the left.

(e). If we go from r to r^*, where $r < r^*$, then P immediately drops to the level $\frac{R(H)}{r^* + \delta}$, as the higher opportunity cost of investing in housing reduces the quantity of housing investment. As housing investment decreases, the quantity of housing stock decreases gradually until $R(H)$ goes up to the $\dot{P} = 0$ point.

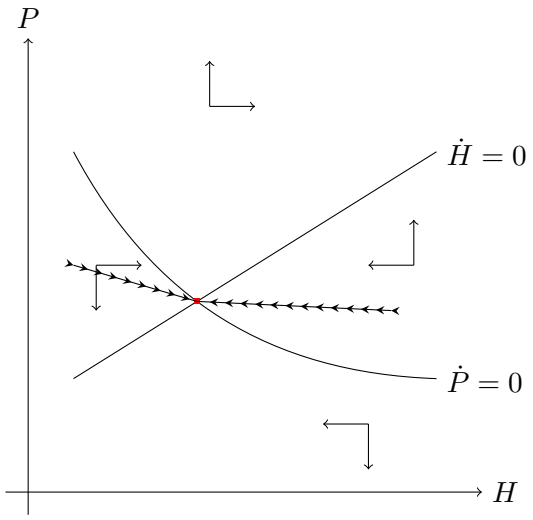

FIGURE 1. Phase diagram for 1c

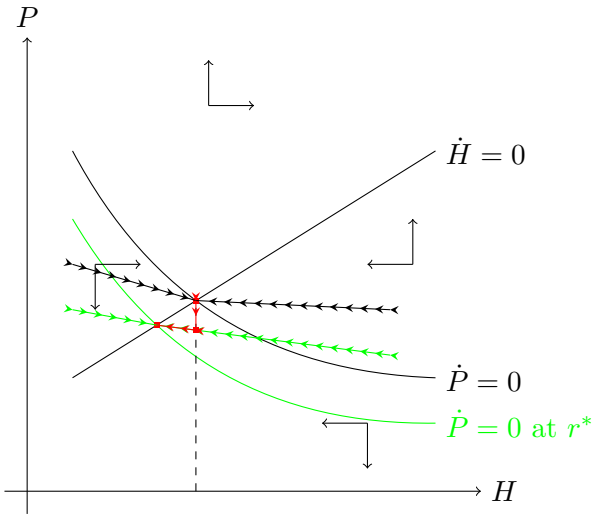

FIGURE 2. Change in the real interest rate