Case B: W/PH is on the upward part of the supply and W/PL is on the vertical portion..
W/PH <Wk and Wk =or < W/PL< Wc, so L= Lo.
It is easily verified that in Case A, holding Me constant and reducing ML, W is decreased.
limit to how low ML can be and still be in Case A is when W/PL = Wk.
For values of ML less than this critical value, the model changes regime to Case B, as long
lower values of PL are such that W/PL are < or = Wc, the competitive market clearing rea
wage.
For values of ML less than this second critical value of ML, the model changes regime to (

$$E\Pi(X) := (X)\cdot\left[(Lo)^{(\theta)} - \frac{W}{PL}\cdot Lo\right] + (1-X)\cdot\left[\left(\frac{W}{PH(X)}\right)^{(\theta\cdot\psi)} - \frac{W}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi}\right]$$

$$\frac{d}{dW}E\Pi(X) \to \frac{-X}{PL}\cdot Lo + (1-X)\cdot\left[\left(\frac{W}{PH(X)}\right)^{\theta\cdot\psi}\cdot\theta\cdot\frac{\psi}{W} - \frac{1}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi} - \frac{1}{PH(X)}\cdot\left(\right.\right.$$

$$0 = \frac{d}{dW}E\Pi(X) \text{ solve}, W \to$$

This generates "no solution was found" because the optimal wage is at the boundry where Wk = W/PL. The first term is neg. In order to verify this differeniate the la term.

$$\frac{d}{dW}\left[\left(\frac{W}{PH(X)}\right)^{\theta\cdot\psi}\cdot\theta\cdot\frac{\psi}{W} - \frac{1}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi} - \frac{1}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi}\cdot\psi\right] \to \left(\frac{W}{PH(X)}\right)^{\theta}$$

Because $\theta\cdot\psi$ < 1 this must be negative for all W. Consider that Case A is gererated by low M's "clos
lower values ML are chosen, then the opt.W in Case A become larger until the point when W/PL= Wk
critical value the opt.nominal wage will not change so long as Case B applies, but the real wage W/P
generate lower and lower valuesof PL. I will solve for the critical value of ML and Thereby detremine

Again solve (19) and (20) for PL in terms of ML and W and PH in terms of MH and W, and substute into the opt. W equ. above.For X = .2

$X := .2$

$Y := (1-k)\cdot\frac{M}{P}$ $Y := \left(\frac{W}{P}\right)^{(\theta\cdot\psi)}$ $PH := \left[(1-k)\cdot MH\cdot W^{-(\theta\cdot\psi)}\right]^{\frac{1}{(1-\theta\cdot\psi)}}$

$Lo := .5$ $PL := (1-k)\cdot ML\cdot Lo^{-(\theta)}$

$k := .5$ $\theta := .6$ $\psi := .9$ $wk := (Lo)^{\frac{1}{\psi}}$

$ML := 3.415$

$Me := 3.685$ $MH(X) := \frac{(Me - X\cdot ML)}{(1-X)}$ $YL := Lo^{\theta}$ $wk = 0.463$

$MH(X) = 3.752$

This is the solution for case A at the lower bound where regimes shift.
We verify that this occurs at ML= 3.41.

$$f(W) := W - \exp\left[\frac{\ln\left[-(1+\psi)\cdot\frac{-X\cdot\left[(1-k)\cdot\frac{MH(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}\cdot\exp\left[\psi\cdot\ln\left[\frac{\left[(1-k)\cdot\frac{M}{W}\cdots\right.}{\left[(1-k)\cdot\frac{\cdots}{W}\cdots\right.}\cdots\right.\right.}{\psi\cdot\theta\cdot\left[(1-k)\cdot\frac{MH(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}\cdot\cdots}\right]}{\cdots}\right]$$

$root(f(W), W) = 1.198$ $PL := (1-k)\cdot ML\cdot Lo^{-(\theta)}$

$W := root(f(W), W)$ $W = 1.198$

PL varies directly with ML in case B. But at this critcal value of ML the same value of PL is generated as when

$PH(X) := \left[(1-k)\cdot\frac{MH(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}$ PL= $\left[(1-k)\cdot\frac{ML}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}$

$PH(X) = 3.177$ $PL = 2.588$ $Pe := X \cdot PL + (1 - X) \cdot PH(X)$

$Pe = 3.059$

$wc := \theta \cdot Lo^{(\theta - 1)}$ $\frac{W}{Pe} = 0.392$ $W = 1.198$

$wc = 0.792$ $\frac{W}{PH(X)} = 0.377$

$wk := (Lo)^{\frac{1}{\psi}}$ $wk = 0.463$ $\frac{W}{PL} = 0.463$

I verified that for X = .2 that the choice of ML = 3.415 and Me= 3.685 will generate W/PL = wk and that the opt. nominal wage is W = 1.196 in Case B.for all values of ML < 3.415. X = .001 is only of interest in case A as a benchmark for the det. case.

$LH(X) := \left(\frac{W}{PH(X)}\right)^{\psi}$ $LL := \left(\frac{W}{PL}\right)^{\psi}$

$LH(X) := \left[(1 - k) \cdot \frac{MH(X)}{PH(X)}\right]^{\frac{1}{\theta}}$ $LH(X) = 0.416$ $LL = 0.500$

$YH(X) := (1 - k) \cdot \frac{MH(X)}{PH(X)}$ $YL := (1 - k) \cdot \frac{ML}{PL}$ $LH(X)^{\theta} = 0.591$

$YH(X) = 0.591$ $YL = 0.660$ $LL^{\theta} = 0.660$

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Case C.

$$\left.\frac{W}{PH(X)}\right)^{\psi}\cdot\psi\right]$$

$$\cdot\psi}\cdot\theta^{2}\cdot\frac{\psi^{2}}{W^{2}}-\left(\frac{W}{PH(X)}\right)^{\theta\cdot\psi}\cdot\theta\cdot\frac{\psi}{W^{2}}-\frac{1}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi}\cdot\frac{\psi}{W}-\frac{1}{PH(X)}\cdot\left(\frac{W}{PH(X)}\right)^{\psi}\cdot\frac{\psi^{2}}{W}$$

se" to Me. Holding Me constant, as lower and
k is reached.For value of ML lower than this
L will increase as ML continues to decrease and
the value of W for Case B.

$$\frac{\cdots\frac{\frac{\cdots \mathrm{H}(X)}{\cdots^{(\theta\cdot\psi)}}\Bigg]^{\frac{1}{(1-\theta\cdot\psi)}}}{\frac{\mathrm{ML}}{\cdots^{(\theta\cdot\psi)}}\Bigg]^{\frac{1}{(1-\theta\cdot\psi)}}}\Bigg]\Bigg]-\left[(1-k)\cdot\frac{\mathrm{ML}}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}+\left[(1-k)\cdot\frac{\mathrm{ML}}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}\cdot X}{\left[X\cdot\exp\left[\theta\cdot\psi\cdot\ln\left[\frac{\left[(1-k)\cdot\frac{\mathrm{MH}(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}{\left[(1-k)\cdot\frac{\mathrm{ML}}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}\right]\right]+1-X\right]}\Bigg]-\psi\cdot\ln\Bigg[\cdots}{-1-\psi+\theta\cdot\psi}$$

$$\left[\frac{\left[\frac{\left[(1-k)\cdot\frac{MH(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}{\left[(1-k)\cdot\frac{ML}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}\right]+\theta\cdot\psi\cdot\ln\left[\frac{\left[(1-k)\cdot\frac{MH(X)}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}{\left[(1-k)\cdot\frac{ML}{W^{(\theta\cdot\psi)}}\right]^{\frac{1}{(1-\theta\cdot\psi)}}}\right]}{}\right]\cdot\left[(1-k)\cdot\frac{ML}{W^{(\theta\cdot\psi)}}\right]$$

$$\frac{1}{(1-\theta\cdot\psi)}$$