INTERMEDIATE MACROECONOMICS-II

B.A.(H) Economics, Semester-IV

Topic: TRANSACTIONS DEMAND FOR MONEY
(Ref: Branson, Macroeconomic Theory & Policy (3rd *ed.*), Chapter-14)

Department of Economics,
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- Bonds yield a given rate of interest r, if held for a month and less than r if held for a shorter period.
- Exchange of bonds for money incurs transaction costs that prevents individuals from transacting continously.

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- Therefore, lower the number of transactions from bond to money, longer will be the average bond holdings.
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- Therefore, the number of transactions depends on the interaction of transaction costs and rate of interest offered on bond holdings.

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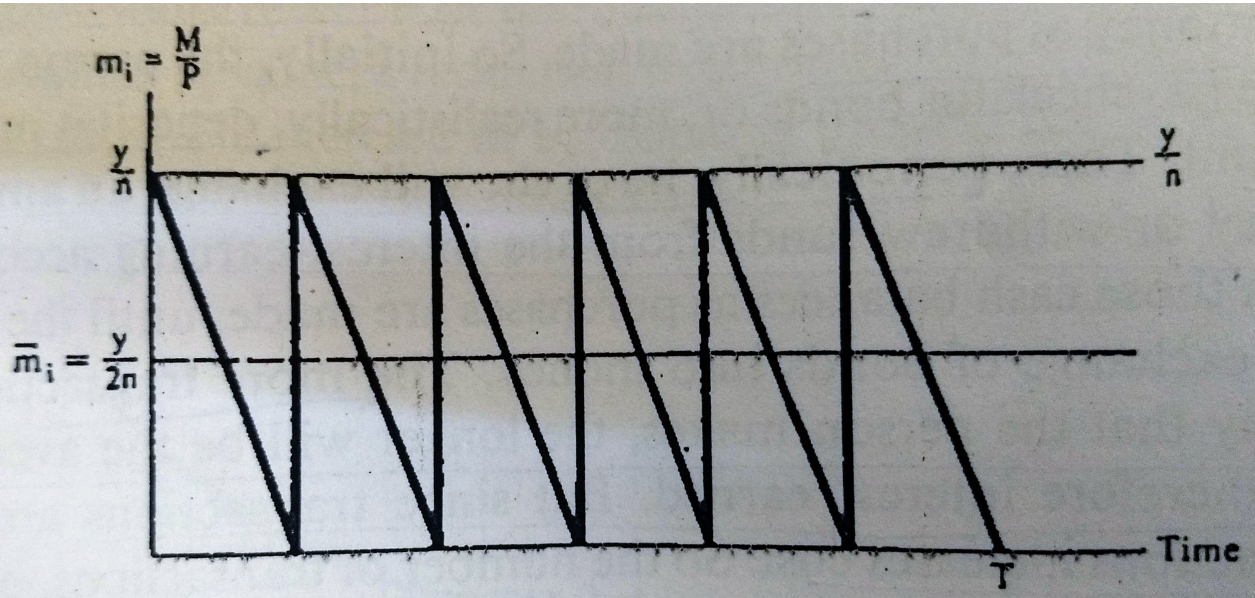
- Leaving $\frac{1}{n}$ percent of y in money for the first transaction.
- Rest $(n-1)$ transactions will be covered by exchanging $\frac{y}{n}$ amount of bonds in to money.

- This breaks the month in $\frac{T}{n}$ intervals with each individual beginning each interval with $\frac{y}{n}$ amount of money in cash and ending with zero cash.



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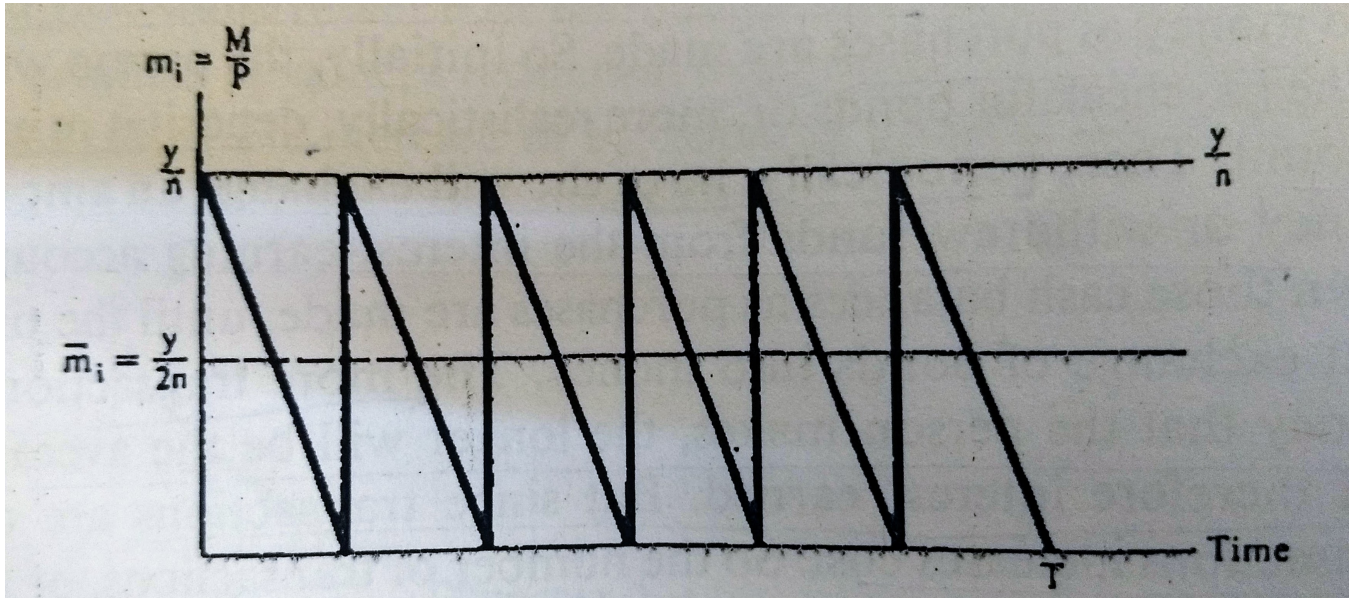
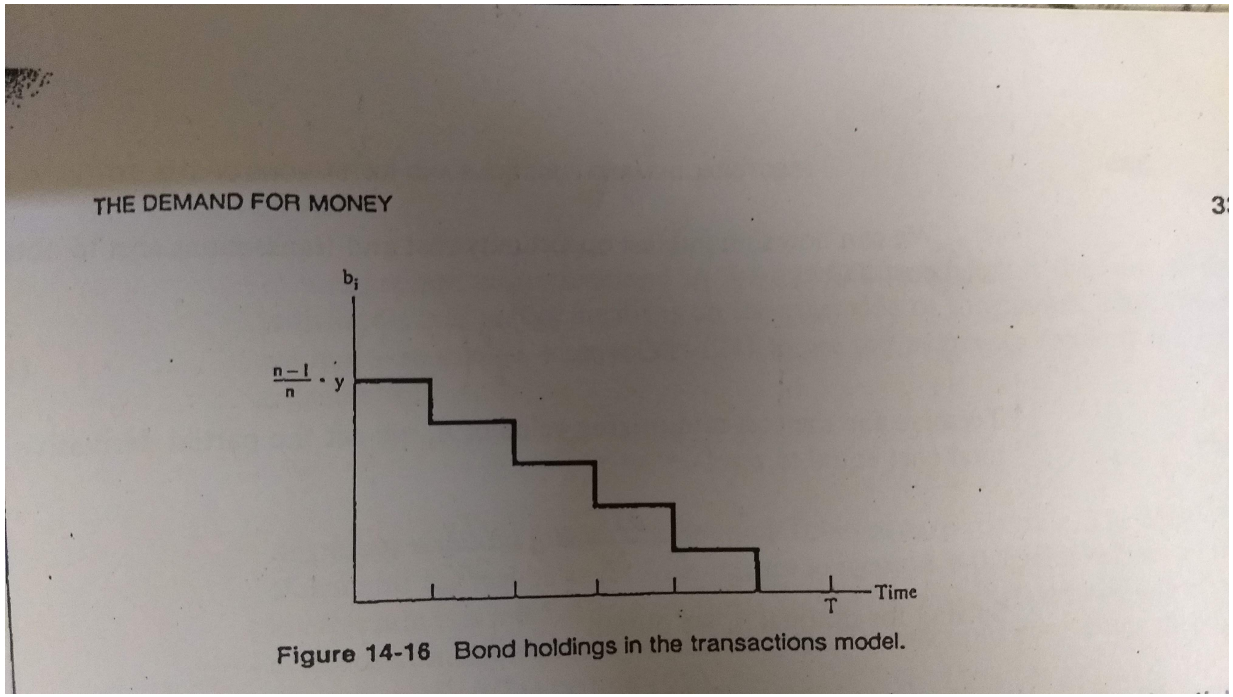


Figure 14-15 Money-holdings in the transactions model.

- Average money holdings in the above figure is $\bar{m}_i = \frac{\bar{y}}{2n}$.

- Diagram below represents bond holdings in the transactions model. Individual invests $\frac{(n-1)}{n}y$ amount of income in bonds in the beginning of first period and convert from bond to money in each successive periods, which leads to fall in bond holdings.



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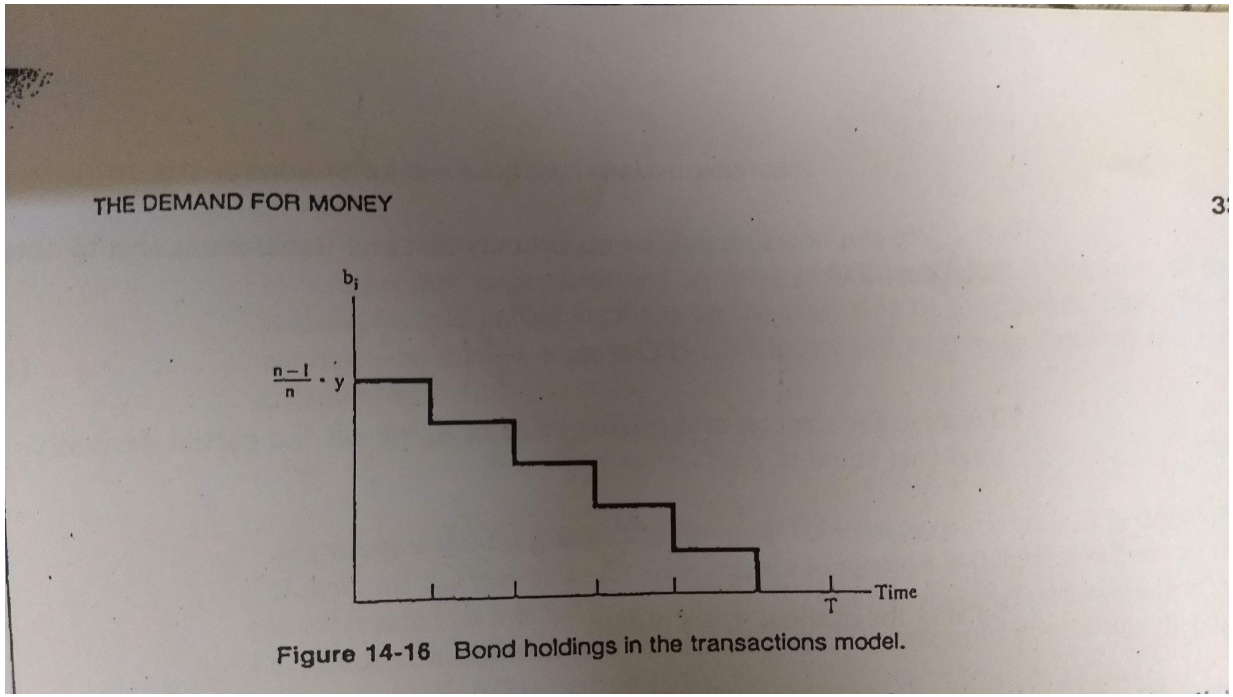

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- Consumer's choice decision then becomes to determine the optimal number of transactions n.

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  - Consumer begins with $\frac{(n-1)y}{n}$ amount of money invested in bonds and $\frac{y}{n}$ amount in cash.
  - Interest lost on $\frac{y}{n}$ money for the entire period T at rate r will be $\frac{rTy}{n}$

- After one subperiod, another $\frac{y}{n}$ amount of bond holdings will be converted into money and interest lost on is for $\frac{(n-1)}{n}$ percent of T, adding a loss of $\frac{rTy(n-1)}{n}$.

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- The next conversion loses $\frac{rTy(n-2)}{n}$, and so forth.
- Total interest lost will be:

$$\text{Interest Cost} = \frac{rTy}{n} + \frac{rTy(n-1)}{n} + \frac{rTy(n-2)}{n} + \cdots$$

$$= \frac{rTy}{n}\left[1 + \frac{n-1}{n} + \frac{n-2}{n} + \cdots + \frac{1}{n}\right]$$

$$= \frac{rTy}{n^2}[n + (n-1) + (n-2) + \cdots + 1] = \frac{rTy}{2}\left[1 + \frac{1}{n}\right]$$

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- Solving for optimal n, we obtain

$$n = \left(\frac{rTy}{2a}\right)^{1/2}$$

Individual & Aggregate Money Demand

- Individual's demand for money:

$$\bar{m}_i = \frac{\bar{y}}{2n} = \frac{y}{2}\left(\frac{2a}{rTy}\right)^{1/2} = \left(\frac{ay}{2rT}\right)^{1/2}$$

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- For each representative consumer i, whose money demand is given by above expression, there must be someone on the other side of money market whose pattern of bond & money holdings would then mirror that of the consumer (as conusmer demand for money, market firms demand bonds and vice-versa).

- Therefore, aggregate money demand in transactions model is the sum of individuals demand & that of firm on other side of market, so we must double $\bar{m}_i$ to get the aggregate demand for real balances m:

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- Elasticity of demand for money $\frac{M}{P}$ with respect to income, y:

$$\frac{\partial \frac{M}{P}}{\partial y} \cdot \frac{y}{\frac{M}{P}} = \frac{1}{2}$$

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- We know demand function for money,

$$\frac{M}{P} = m(r, y)$$

and from above elasticities we know,

$$\frac{\partial m}{\partial r} < 0, \ \frac{\partial m}{\partial y} > 0$$

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- Transactions demand for money responds to a change in interest rate through change in number of bonds-to-money exchanges. Therefore, money demand is interest sensitive even if all demands is for transaction.

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- Now Friedman suggests consumers hold money because it yields utility. Their demand for money should be a demand for real balances and not for what it's worth.
- Their demand for real balances should depend on the level of real income.
- Demand for real balances also depend on returns to other ways of holding assets such as bonds or consumer durables, similar to how demand of one type of good depends on prices of other goods.

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- Demand function for real balances,

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- Friedman's quantity theory version of demand for money:

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- A onetime increase in price level will cause an increase in Nominal demand for money to keep $\frac{M}{P}$ constant with y and all the $r's$ in the k function unchanged.
- But an increase in expected continuing rate of inflation will reduce the demand for real balances m.

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- This suggests,

$$\frac{\partial k}{\partial r} < 0 \text{ and } \frac{\partial k}{\partial \dot{P}} < 0.$$

Velocity of Money

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- As $\dfrac{\partial k}{\partial r} < 0$ and $\dfrac{\partial k}{\partial \dot{P}} < 0$, this leads to $\dfrac{\partial v}{\partial r} > 0$ and $\dfrac{\partial v}{\partial \dot{P}} > 0$.
- The above relation suggests that an increase in either r or $\dot{P}$ should cause people to economize on money holdings since these are the rates of return on alternative assets, which leads to increase in velocity as money demand falls.