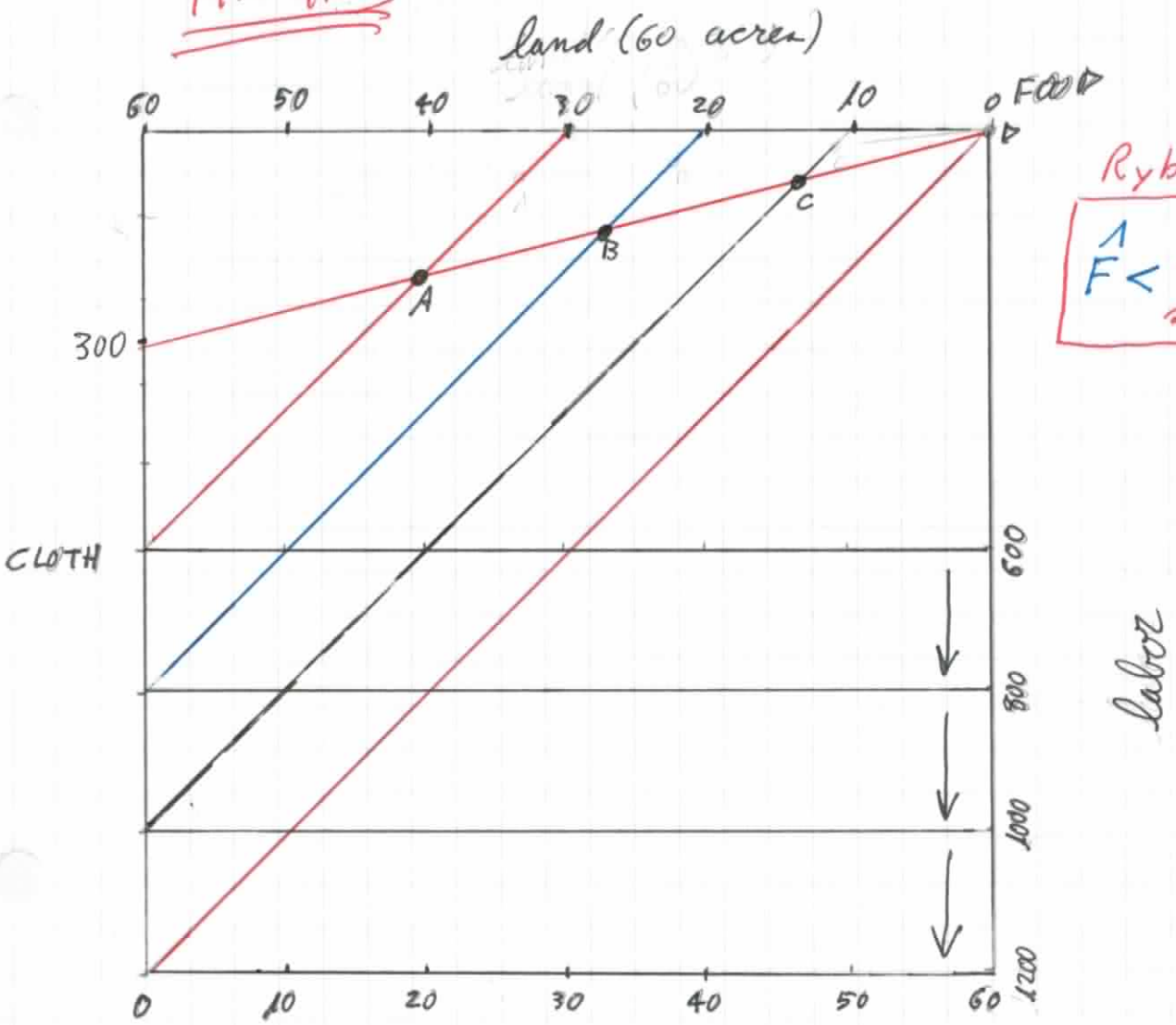
Hw #3



Rybczynski

$\uparrow F < \uparrow T < \uparrow L < \uparrow C$

zero

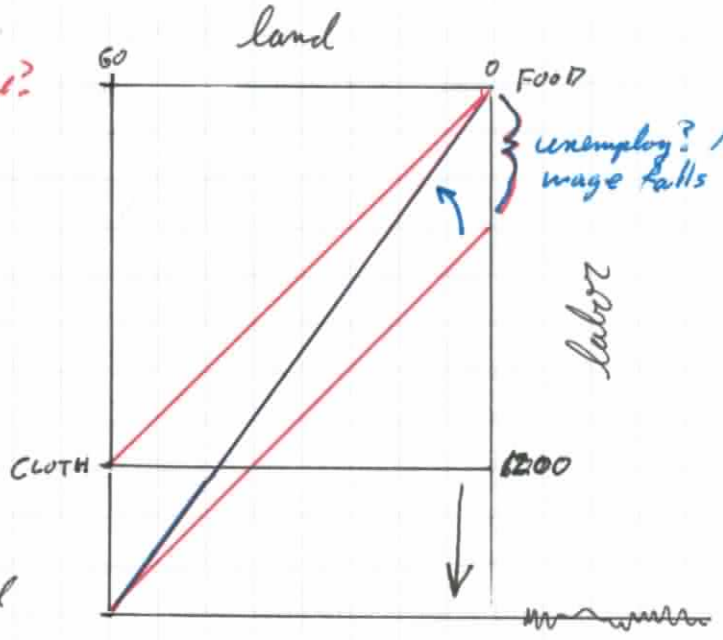
⇒ to draw this note that if all land employed in food sector then (at 5 hrs labor per acre of land) 300 hrs of labor would be employed on 60 acres of land

+ if all labor employed in cloth sector, then (at 20 hrs labor per acre of land)

hrs labor	600	800	1000	1200
acres land	30	40	50	60

⇒ as labor expands, more + more LAND + LABOR employed in the cloth sector until no food produced at all

→ what if we were to expand labor even further? would some labor become unemployed? NO. wage rate would fall which would encourage cloth sector to use a higher labor to land ratio in production still no food produced



4. US labor movement's advocacy of ~~restrictions~~ restrictions on imports from less affluent (i.e. labor abundant, low-wage) countries

- poor policy for capital abundant US
- rational policy from standpoint of US blue-collar workers, who work in labor-intensive, import-competing sectors

Note: Answer assumes HO model

Ricardian → everyone gains

Specific Factors → workers could exit "cloth sector" + enter "computer sector" (so trade has ambiguous effect on labor in Specific Factors Mo

5. $\frac{w_{SE}}{w_{FW}} = 0,8$ failure of Factor Price Equalization due to differences in technology betw/n SE + FW

why? US is like one big free-trade zone
so goods prices must be equal

one would also assume that both SE + FW produce similar set of goods (agri, manuf + services)

only remaining assumptn is technology

US-Mex wage differential may be due to combination of factors:

- techno differences
- NAFTA may not have completely equalized goods prices (i.e. farm subsidies)

I'd be hesitant to say that US or Mex doesn't produce one of the goods in question

Maybe there are a few specific items that Mex produces + US doesn't but primary set of industries should be similar

Ex. Maybe US doesn't produce tacos
but does US produce food? YES

6. Leontief Paradox - see notes from lecture

7. international differences in the efficiency of factors of production make the model a bit more "Ricardian"

- Ricardian model → Bill & Colleen were compensated acc to their productivity
- countries w/ higher productivity (& more efficient factors of prod) have higher wages

~~X~~

Questions for Grad Students

Magnification Effects

1. in the absence of joint production each price change is a positive weighted average of all factor price changes

ex. $a_{LM} w + a_{TM} r = p_M$

RICARDIAN-STYLE

but when there's joint production each factor price change is a positive weighted average of all output price changes

ex. $a_{LM} w + \cancel{a_{TM}} r = b_{AM} p_{AM} + b_{BM} p_{BM}$

↑ zero in Ricardian Model

which would reverse the Stolper-Samuelson results

2. "natural friend" + "natural enemy"

"natural enemy"

- Stolper - Samuelson → for a change in the price of each good there will exist some factor that loses in real terms
- Rybczynski → for an increase in the endowment of each factor, there must be a good whose output falls

"natural friend"

- Stolper - Samuelson → $\frac{\hat{w}_i}{\hat{p}_j} > 1$

an increase in p_j increases w_i

ie $\hat{w}_i > \hat{p}_j$ then good j is natural friend of factor i i.e. increase in p_j raises real return to factor j

- Rybczynski →

3. In even case each factor has a natural enemy, but does not ~~necessarily~~ necessarily have a natural friend

4. Uneven case ⇒ Specific Factors

$$\hat{r}_T < \hat{p}_{I=} < \hat{w} < \hat{p}_M < \hat{r}_K$$

labor has neither natural enemy nor natural friend

5. Empirical Tests of HO Model

a. Leontief had input-output accts for US econ, which enabled him to compute amts of capital + labor in each industry for 1947

He also had trade data for 1947

	Exports	Imports
Capital	$2,5 mln	$3,1 mln
Labor	182 person yrs	170 person yrs
K/L	$13,700 per person yr	$18,200 per person yr

<

→ His calculation measured both direct + indirect use of K+L

- direct use – by exporting/importing industry
- indirect use – by intermediate goods producing industries

→ If assume US was kapital abundant in 1947, US should have had higher K/L ratio in exports

HOV Model

$$\begin{pmatrix} a_{1L} & a_{2L} \\ a_{1K} & a_{2K} \end{pmatrix} \begin{pmatrix} Y_1^i - D_1^i \\ Y_2^i - D_2^i \end{pmatrix} \equiv \begin{pmatrix} F_L^i \\ F_K^i \end{pmatrix}$$

FACTOR CONTENT of TRADE

techno matrix

vector of industry output

vector of industry demands

demand for factors:

$$\begin{pmatrix} a_{1L} & a_{2L} \\ a_{1K} & a_{2K} \end{pmatrix} \begin{pmatrix} Y_1^i \\ Y_2^i \end{pmatrix} = \begin{pmatrix} L^i \\ K^i \end{pmatrix} \equiv V^i$$

endowments

3 Assumptions

1. trade equalizes product prices
2. countries have identical & homothetic preferences $\pi_x = \pi_y = 1$
3. if trade balanced

then: $$AD^i = s^i AD^w = s^i AY^w = s^i V^w$$

($AD^i = s^i AD^w = s^i AY^w$: balanced trade)

HOV Thm

$$\underbrace{A(Y^i - D^i)}_{\text{defined as } F^i} = V^i - s^i V^w$$

$$\begin{pmatrix} a_{1L} & a_{2L} \\ a_{1K} & a_{2K} \end{pmatrix} \begin{pmatrix} Y_1^i - D_1^i \\ Y_2^i - D_2^i \end{pmatrix} = \begin{pmatrix} K^i \\ L^i \end{pmatrix} - s^i \begin{pmatrix} K^w \\ L^w \end{pmatrix}$$

$$\begin{pmatrix} F_K^i \\ F_L^i \end{pmatrix} = \begin{pmatrix} K^i \\ L^i \end{pmatrix} - s^i \begin{pmatrix} K^w \\ L^w \end{pmatrix}$$

Learner's Thm

$$F^i_k = K^i - s^i K^w \qquad F^i_l = L^i - s^i L^w$$

$$K^w = \frac{1}{s^i}\left(K^i - F^i_k\right) \qquad L^w =$$

$$\frac{K^i}{K^w} = \frac{s^i K^i}{K^i - F^i_k} \qquad \frac{L^i}{L^w}$$

if $\frac{K^i}{K^w} > \frac{L^i}{L^w}$ then $\frac{K^i}{K^i - F^i_k} > \frac{L^i}{L^i - F^i_l}$

& $\frac{K^i}{L^i} > \frac{K^i - F^i_k}{L^i - F^i_l}$

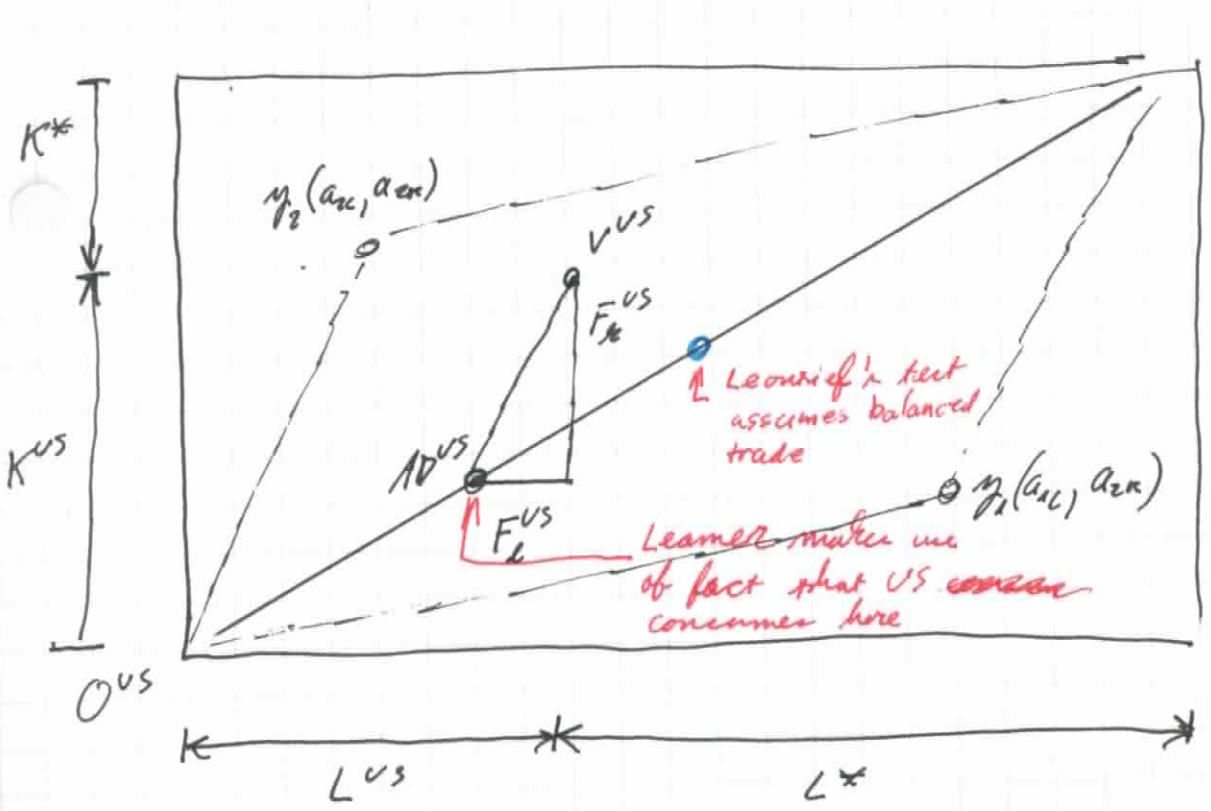
if country capital abundant relative to world $\frac{K^i}{L^i} > \frac{K^w}{L^w}$

then capital labor ratio embodied in prod K^i/L^i should be greater than capital labor ratio embodied in cons $\frac{K^i - F^i_k}{L^i - F^i_l}$

Leamer used Leontief's data to show

	Prod	Cons
Capital	$327 bln	$305 bln
Labor	47 mln person yrs	45 mln person yrs
K/L	$6950/person yr	> $6740/person yr

$$\frac{K^i}{L^i} > \frac{K^i - F_k^i}{L^i - F_\ell^i}$$



1947

$F_k^{US} > 0$

$F_\ell^{US} > 0$

US exported both capital + labor services

6a Treffler's incorporation of factor prod into HOV model

if factor price equalization holds in terms of effective endowments then productivity parameters should [redacted] be positively correlated with factor prices

Ricardian model → more prod country has higher income

6b Mystery of Missing Trade

$$F_k^i = K^i - s^i K^w$$

$$F_l^i = L^i - s^i L^w$$

if these eqns hold then:

$$var\left(F_k^i\right) = var\left(V_k^i - s^i V_k^w\right)$$

but $\dfrac{var(F_k^i)}{var(V_k - s^i V_k^w)} =$ [redacted] 0,032

[redacted] uniform techno difference bcuz

6c theo ratio up to 0,486

6d improved sign test: slight improvement in rank te