

# **The Brother in Law Effect**

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## ***The X-Inefficiency of Monopoly***

- per worker output increases, number of workers decreases after monopolies, either private or public, are ended
- suggests that monopolies employ less than competent workers and employ too many of them
- puzzling for a private firm, as it implies that the hiring decisions are not profit maximizing
- puzzling in the public sector, for it implies that more services and transfers could be provided with the same budget, or that taxes could be cut without affecting the current level of services and transfers, whereby the ruling party could attract more support

## ***Examples***

Codelco – a public Chilean copper company – when privately-owned copper mine La Escondida started operation in the late 80s.

Shleifer and Vishny (1994) and Galiani, Gertler, Schargrotsky and Sturzenegger (2005) provide other examples

best documented case is iron ore production in the U.S. midwest found in Galdon-Sanchez and Schmitz Jr. (2002).

## ***Nepotism***

We have a more restricted goal

- Can less than competent workers and overemployment be explained by nepotism?
- Nepotism meaning managers or public officials favoring family members, political party comrades, friends or any person to whom they might feel a personal attachment

## ***Labor Market***

- For nepotism product market competition not so important
- Key is the labor market – which may or may not be correlated with product market monopoly
- Our finding: whenever there is a gap between the wage paid to the marginal worker and his reservation wage incentives for nepotism are in place regardless of the cause of that gap
- This may or may not be efficient

## *The Model*

One firm employs two types of worker

normal workers ( $L_1$ )

brothers-in-law ( $L_2$ )

both sets of would-be workers are large enough so that it is always possible to hire more workers of each kind

all workers have the same reservation wage  $w$

## *The brother-in-law*

a person whose income figures positively into his employer's utility  
each dollar that a brother-in-law gets increases the utility of the  
employer by  $\beta \in (0,1)$

assume  $\beta < 1$ : the employer will never transfer money on a 1-1 basis  
to the brother-in-law

large literature on altruism – see for example Andreoni and Miller  
(2002)

suggests that while 1-1 transfers not common, many people will give up  
a dollar so that the recipient will receive more than a dollar

here employer willing to give up a dollar provided the brother-in-law  
receives at least  $1/\beta$  dollars

the benefit to the employer comes at no cost to the brother-in-law – we  
do not consider “kickbacks”

## ***The Production Function***

certainty model use

$$q = f(L_1 + \eta L_2)$$

where  $f$  is either linear or exhibits decreasing returns

moral hazard model choice to employ a single worker: output of the worker a stochastic function of effort

$$q = \begin{cases} q_1 & \text{with probability } \eta_i \pi(e) \\ q_0 & \text{with probability } 1 - \eta_i \pi(e) \end{cases}$$

$e \in \{e_L, e_H\}$  level of effort exerted

$\eta_1 = 1$  for normal employee;  $\eta_2 = \eta$  for brother-in-law

high effort costs  $\psi$ , and low effort of zero

## ***The Market***

$p$  output price

$W$  wage

price is a non-increasing function of output  $p = p(q)$

consider various models of the determination of  $W$

## ***Certainty Model with Unions***

$$q = f(L_1 + \eta L_2)$$

union contract specifies wage  $W > w$

hiring is left to the firm

objective function for the firm

$$\Pi = \max_{\{L_1, L_2, q\}} (pq - W(L_1 + L_2)) + \beta(W - w)L_2.$$

revenue function  $p(f(L))f(L)$  assumed concave in the aggregate labor employed  $L$  plus interiority

**Theorem 3.1:** Set

$$\eta^* = 1 - \beta \frac{W - w}{W}.$$

If  $\eta > \eta^*$  the firm prefers to hire brothers-in-law; that is, the optimum is  $L_1 = 0, L_2 > 0$ , and conversely if  $\eta < \eta^*$  the firm prefer not to hire brothers-in-law; that is the optimum is  $L_1 > 0, L_2 = 0$ .

wage-gap is positive,  $W - w > 0$  then sufficiently productive brothers-in-law will be exclusively employed, despite the fact they are less productive than normal workers

a necessary condition for brothers-in-law to be employed is  $\eta \geq 1 - \beta$ .

**Theorem 3.2:** Output is higher when the firm hires brothers-in-law.

## Overemployment

Suppose  $\eta > \eta^*$

$L_2^*$  be the optimal number of brothers-in-law employed

let  $L_1^C$  be the optimal number of normal workers employed when there is no wage gap  $W = w$

overemployment means  $L_2^* > L_1^C$

if the wage gap is eliminated the number of workers employed declines

for example, the union is busted

without the brothers-in-law effect elimination of a wage gap will increase employment

## *example with linear demand*

$p = a - bq$ , constant returns to scale so  $f(L) = L$

define

$$\eta^+ = \frac{a + \sqrt{a^2 - 4(a-w)[W - \beta(W-w)]}}{2(a-w)}$$

$$\eta^- = \frac{a - \sqrt{a^2 - 4(a-w)[W - \beta(W-w)]}}{2(a-w)}.$$

$a - 2w > 0$  implies the larger root is smaller than one

the condition for overemployment is that  $\eta$  is between both roots and large enough that firm wishes to hire brothers-in-law  $\eta > \eta^*$

Not vacuous:  $w = 0, \beta = 1$ , then  $\eta^+ = 1, \eta^- = 0, \eta^* = 0$

## ***Worker Heterogeneity***

effect of worker heterogeneity is that normal workers are *gradually* replaced as the union wage increases or the productivity gap decreases

political consequences for union

$\eta \geq 1 - \beta$  so possible for brothers-in-law to be hired

first: homogeneous workers

if  $W \geq \frac{\beta w}{\eta + \beta - 1}$  normal workers replaced with brothers-in-law

(employer may also prefer “moderate” union of normal workers rather than unrestrained brothers-in-law)

generally: union subject to majority rule push the wage until half the work force brothers-in-law

## *Efficiency*

eliminating union and paying off brothers-in-law is Pareto improvement  
– but true without brother-in-law effect

next: compare welfare under unionization when nepotism not allowed,  
with welfare under unionization where brothers-in-law can be hired

only interesting if firm chooses to hire brothers-in-law, restrict attention  
to that case.

employer and brothers-in-law worse off, normal workers better off and  
transfer payments are not neutral

## ***Welfare with Nepotism***

use welfare weights such that the firm does wish to transfer money to the brother-in-law

a dollar employer to brother-in-law generates  $1 + \beta$  dollars of benefits

take weight on the brother-in-law to be  $1 - \beta$ , everyone else one

with these weights perfectly competitive benchmark is efficient

## *two effects of anti-nepotism*

effective cost of labor to employer smaller with brothers-in-law, output increased if nepotism – partially counteracts output-reducing effect of union (in other words – the extra labor force is good, not bad)

brothers-in-law less productive and have same opportunity cost as normal workers, so social cost of production higher when they are employed

if brothers-in-law quite productive  $\eta$  near one, welfare goes up with nepotism

if brothers-in-law sufficiently unproductive that employer nearly indifferent to hiring them, welfare goes down with nepotism

## ***Competition and Informational Rents***

Wage gap due to moral hazard and informational rents

firm would never want to hire a brother-in-law to have him exert low effort

may employ him to exert high effort – and brothers-in-law with high effort must produce more than normal workers with low effort

with transfer neutral welfare weights there is no output effect, so effect of allowing nepotism is always welfare reducing

efficiency wage model yields similar results of brothers-in-law.