When Trade Hurts: Consumption Indivisibilities and Labor Market Distortions[1]

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Abstract

This paper argues that labor market distortions coupled with indivisibilities in consumption can make losses from trade large and likely. It suggests that trade liberalization without structural reform can have serious adverse effects in transition and developing economies: there can even be mutual losses from trade.

1 Introduction

Countries in transition to a capitalist economy, such as those in the in the former Soviet Union, have industrial enterprises which remain under state control. Such enterprises offer wages that are, at best, only loosely tied to productivity, and hence attract less able workers.[1] In these economies, not only did GDP fall significantly during transition and opening up to trade but the share of industry in GDP fell as well. For example, during the 90's real GDP fell by about 40 percent for countries in the former Soviet Union while the share of industry fell by about 22 percent.[2]

There have been a number of interesting hypotheses put forward to explain this phenomenon. These include slow adjustment resulting in unemployment, see Gomulka (1992), investment delays caused by the unwillingness to invest till a good match is found since investment is relation specific, see Roland and Verdier (1999), and the disorganization hypothesis of Blanchard and Kremer (1997), where strong complementarities between inputs allows suppliers to exercise their bargaining power and disrupt production chains.

We offer an alternative explanation which relies on labor market distortions which can be interpreted as institutional differences. Our model has two goods, and labor which differs in its productivity. One of the goods,

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[1] Jefferson (1999) finds that "the inability of state enterprises to monitor and reward high quality labor is likely to create an adverse selection problem in which the most skilled and motivated workers exit from the state sector...".

[2] See the World Development Report (2001) for details.

which can be thought of as a lumpy consumer good like a refrigerator or car, has an indivisibility associated with it: either zero or one unit of it can be consumed.[3] In this sector, all workers are paid the same independent of their productivity. This factor market distortion results in adverse selection: only less productive workers are attracted to this sector.[4] It also raises cost in the affected sector.

Our model suggests that there is good reason to expect high output prior to trade of the distorted sector, as well as a fall in the output of these sectors due to trade. Moreover, trade can have significant adverse effects: for a large economy it may even result in a Pareto inferior outcome.

The argument relies on the complementarity between wages and demand due to adverse selection in the labor market. It goes as follows: prior to trade, a virtuous circle prevailed. High wages supported a high demand for indivisible industrial goods, which in turn supported the high wages. Opening up to trade resulted in the import of these goods from the more competitive West, reducing manufacturing wages in these economies and breaking this virtuous circle.[5] As usual, trade also has the usual beneficial effect through the fall in price. If the transition economy importing indivisibles is large,

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[3] Although goods can be made divisible by renting or sharing, to the extent that it is more costly to rent than buy, and because of moral hazard problems involved in sharing, an essential indivisibility remains.

[4] This wage structure may arise because of a social commitment to income equality, as in Scandinavia, or an inability to identify the productivity. The latter is likely if the production process is relatively complicated.

[5] Such complementarities are the focus of Murphy, Shleifer and Vishny (1989) and Matsuyama (1995), among others.

there is no price effect and trade is, in fact, weakly Pareto inferior to autarky! Consequently, trade liberalization without structural reform can have serious adverse effects in a transition economy.

It is well understood that in the presence of existing distortions, trade liberalization may have adverse effects. While there has been a large literature in the area of trade with factor market distortions, much of it focuses on minimum wages in manufacturing: see for example Brecher (1974a,b) and Davis (1998), and also Magee (1973) for a survey of this work.[6] In contrast, we focus on features of the organizational structure of labor markets in the economy which lead to the distortion. Furthermore, the literature on factor market distortions in a general equilibrium trade setting assumes identical homothetic preferences. As a result, the effects of trade through their effects on the distribution of income are assumed away. Our focus is precisely this channel and consumption indivisiblities are a reasonable and tractable way of incorporating non homotheticity.

Our model could be also applied to the experience of developing economies. In developing economies, workers in the divisible good sector, interpreted as agriculture, work in family farms and obtain the average product of labor in the farm. With diminishing marginal product in agriculture, too many workers remain in agriculture as the average product exceeds the marginal product. In the development literature this has been linked with the concept

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[6]Grossman (2004) looks at how differences in the distribution of talent can be an independent source of comparative advantage when labor market contracts are imperfect.

of "disguised unemployment", see Sen (1960). When labor is of differential productivity, as in our model, the above result is reversed! Too few workers remain in agriculture rather than too many. Since lower quality labor remains in agriculture,[7] the marginal worker produces more than labor does on average, rather than the other way around, and too few workers remain in agriculture rather than too many!

Moreover, as expected, the distortion raises the cost of production of the distorted sector. Since divisibles are the numeriare, this reduces the cost of indivisibles in general equilibrium. Also, higher incomes earned by less able workers increase the potential market size for indivisibles. Trade can reduce social welfare in such an economy when it involves importing the divisible good. Increased output of the indivisible good reduces the labor force and average quality of labor in agriculture, thereby reducing the earnings of those in agriculture, and hence the ability to afford the indivisible good. There could even be mutual losses from trade when a developing country exports the indivisible good to a transition economy.

In the standard setting with identical homothetic preferences,[8] the factor market distortion we model would reduce the output of the distorted sector

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[7]This is consistent with Lipton (1977) who points out that per capita income tends to be significantly lower in rural areas, especially in developing countries.

[8]With the standard assumption of identical homothetic preferences, demand depends on aggregate income and is independent of its distribution. If preferences are not identical and homothetic, then excess demand functions have few restrictions on them in general equilibrium so that this approach is not tractable. On the other hand, quasi linear utility, adopted in the industrial organization and strategic trade literature, removes all income effects.

in a closed economy for two reasons. First, it would raise its relative costs and hence price, thereby reducing its relative demand. Second, as the distortion would reduce national income, it would reduce absolute demand.

In contrast, non homothetic preferences allow demand complementarities to come into play, so that the factor market distortion could raise the output of the distorted sector in autarky! Consumption indivisibilities result in such non homothetic preferences. They also provide a setting where the location of the factor market distortion, in divisibles or indivisibles, matters.

Of course, the fact that trade can make things worse in the presence of such a distortion does not depend on having indivisibilities.[9] What is new here is that trade could destroy the equilibrium with a high wage and output level in indivisibles, resulting in large losses from trade for the masses.

We proceed as follows. In Section 2 we develop the supply and demand side of the model for an undistorted (market) economy and a distorted (transition) one. In Section 3 we solve for equilibrium under autarky and trade. We do so first assuming costs are constant and then show what happens when they are not. Section 4 looks at what happens when the factor market distortion is in the divisible good sector. Section 5 contains some concluding remarks and directions for future work.

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[9]See Krishna, Mukhopadhyay and Yavas (2002) who analyze the effects of trade when preferences are homothetic.

2 The Model

There is a continuum of individuals differentiated by their productivity, $\gamma \in [0, 1]$. Let $F(.)$ represent the cumulative density function of γ. There are two goods in the economy, indivisible and divisible, and both goods are produced under competitive conditions. Consumers obtain utility V if they purchase the indivisible good, and obtain $U(n)$ if they buy n units of the divisible good which is taken as the numeraire. Let P denote the price of the indivisible good.

2.1 Supply

A worker with productivity γ can make γ units of the divisible good, or $\alpha\gamma$ units of the indivisible good. The worker chooses where to work so as to maximize his earnings. In the absence of factor market distortions, a worker of type γ chooses between making $P\alpha\gamma$ in indivisibles and γ in divisibles. Consequently, for both goods to be produced, P must equal $\frac{1}{\alpha}$. Of course, this also equals cost, denoted by c.

Suppose workers are paid a wage, w, independent of their ability in the indivisible good sector, but earn the value of marginal product, in the divisible good sector. Then, workers with $\gamma < w$ choose to work in indivisibles, while the others choose to work in divisibles. Let $w(Q)$ denote the wage needed to attract enough workers to produce Q units of the indivisible. Clearly, $w(Q)$ is an increasing function. The unit labor requirement, denoted by $z(w(Q))$,

is decreasing in output. An increase in output, and hence the wage, raises the average quality of labor, which reduces the unit labor requirement. Let $c(w(Q))$ denote the unit cost of producing Q units. Since unit costs are the unit labor requirement times the wage, they could rise or fall in response to an increase in the wage rate.

Lemma 1: *Unit costs in a transition economy, $c(Q)$, must exceed those of a similar market economy. Moreover, $c(Q)$ can intersect $w(Q)$ at most once and such an intersection must be from below.*

Proof: *In a market economy, all workers are paid what they would earn in divisibles. In a transition economy, all workers, except the marginal one, are paid above this level which makes the cost of producing indivisibles higher than that in a market economy with the same technology.*

As Q rises, the percentage increase in $w(Q)$ must exceed that of $c(Q)$ since $c(Q) = w(Q)z(Q)$ and $z(Q)$ falls with output. Thus, if the two intersect, $w(Q)$ must be rising faster than $c(Q)$. If there is one intersection, then there cannot be another one: since both are continuous, such an intersection would have to be from above which is impossible.

2.2 Demand

We assume that $V > U(P) - U(0)$. In other words, indivisibles are highly valued.[10] An inessential by-product is that any change which raises the

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[10]Our results do not depend on this as shown in Krishna and Yavas (2002).

consumption of indivisibles increases utilitarian social welfare.[11]

Consequently, all consumers with income exceeding the price of the indivisible good, purchase it.[12] In this manner, demand for the indivisible good depends on the level and distribution of income. The income distribution tracks that of productivity in a market economy. The presence of a productivity-independent wage in indivisibles in a transition economy makes demand for indivisibles depend also on this wage. On the other hand, the equilibrium wage in indivisibles depends on the labor needed to produce what is demanded, and hence on demand. This circular causation is at the heart of the model.

If there are no factor market distortions and ability is uniformly distributed over the unit interval, the demand curve, $Q(P) = 1 - P$, is given by AB in Figure 1. The wage distortion in a transition economy affects demand through its effect on incomes. If there is a wage of w in indivisibles, then all workers with $\gamma < w$ earn w. This causes demand to jump to the right at $P = w$, as depicted by the curve $ADEB$ in Figure 1.
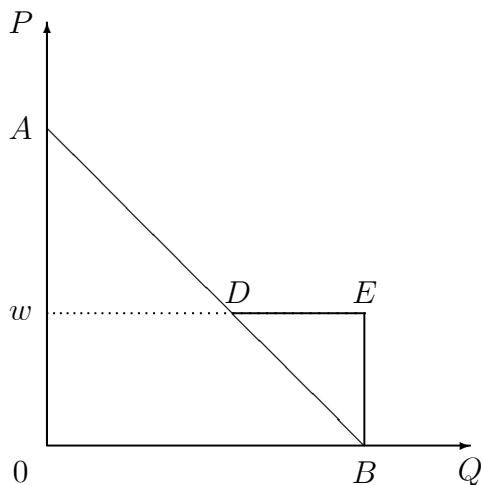
3 Equilibrium

We now put demand and cost together to derive equilibrium.

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[11]Indirect utility is not concave in income because both the indirect utility and the marginal utility of income jump up at $I = P$ making individuals risk lovers in this region as pointed out quite some time ago by Ng (1965).

[12]One of the most successful projects undertaken by the World Bank involved subsidizing purchases of wood stoves. The initial cost of such stoves, around 10 to 25 dollars, prohibited their widespread usage although they are more efficient than native stoves made of mud.

Figure 1: Demand for Indivisibles

Lemma 2: *In a market economy, the equilibrium autarky output of indivisibles, Q^M, rises with α.*

Proof: *As argued, costs are $\frac{1}{\alpha}$ and demand is $Q(P) = 1 - F(P)$. Since firms price at cost equilibrium output is $Q^M = 1 - F(\frac{1}{\alpha})$ which is increasing in α.[13]*

3.1 The Transition Economy Under Constant Costs

We first characterize equilibrium when the cost increase due to the increase in wage is exactly compensated for by the increase in work force quality. In other words, unit costs are independent of the wage offered, and hence, of output. Let c^T denote this constant cost.[14]

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[13]For indivisible goods to be produced, it must be the case that $\alpha > 1$. Otherwise, even the most productive worker would not be able to afford the good when it is priced at cost.

[14]As shown below, costs are constant when $F(\gamma) = \gamma^\theta$.

3.1.1 Autarky

Recall that $w(Q)$ is the wage that elicits the labor force required to produce output Q. Let $\bar{w} = w(1)$. Let $Q^* = 1 - F(c^T) < 1$ and let $w^* = w(Q^*)$.

In equilibrium, price must equal cost due to competition. However, demand at c^T can be either Q^* or unity depending on whether the prevailing wage lies below or above c^T. If the prevailing wage lies below cost, then only part of the potential market is able to afford the indivisible, output is Q^* and wage is w^*. This is the part served outcome. If the prevailing wage lies above cost, then all agents can afford the indivisible good, output is unity and wage is $\bar{w}$. This is the all served served outcome.

**Lemma 3:** *There are only three possibilities. Either*

$$(a)\ c^T > \bar{w} > w^*, (b)\ \bar{w} \geq c^T > w^*,\ or\ (c)\ \bar{w} > w^* \geq c^T \qquad (1)$$

In case (a), the unique equilibrium is the part served one, output is Q^* while the wage is w^*. In case (b), there are two equilibria. In one equilibrium the outcome is as in case (a). In the other, output is unity and the wage is $\bar{w}$. In case (c), the unique equilibrium has an output of unity and a wage of $\bar{w}$. The three case thus correspond to the part served, both part served and all served, and only all served outcomes.

Proof: *$\bar{w}$ must exceed w^* since attracting more labor requires a higher wage. As result, these are only three possibilities.*

Figure 2: Equilibria in a Transition Economy

(a)

(b)

(c)
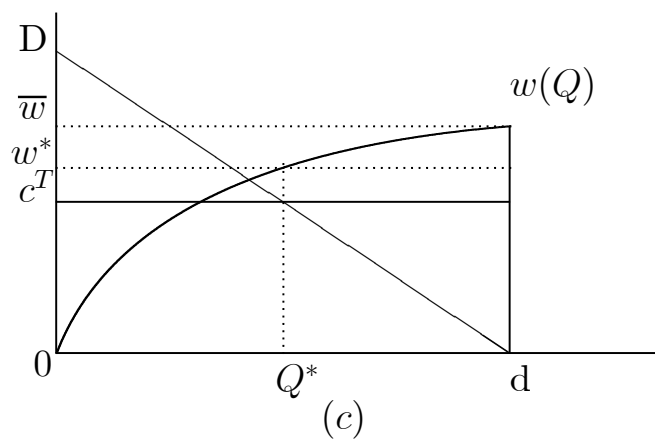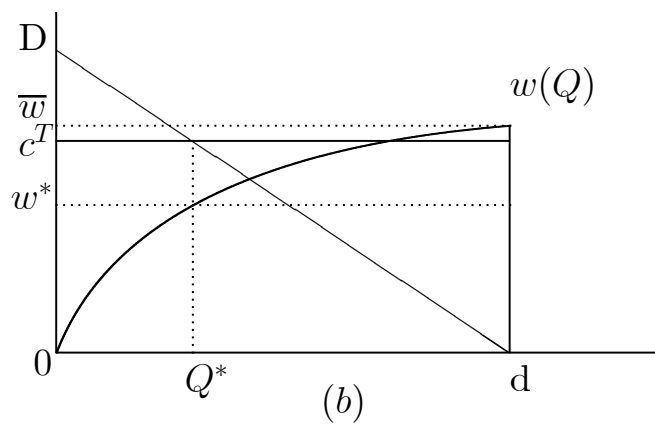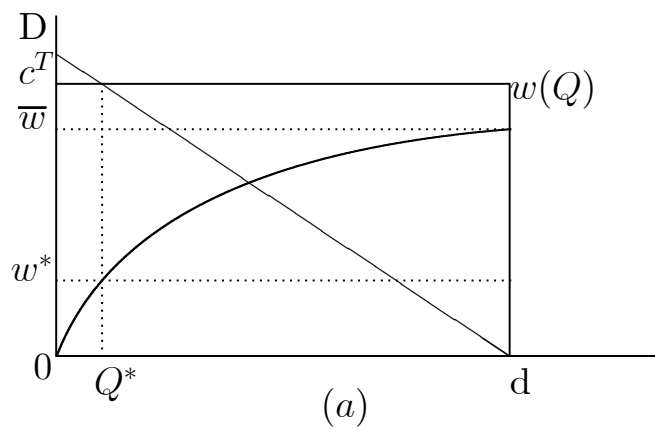
In case (a), even when everyone is served wages are too low to allow everyone to demand the good when it is priced at cost. Thus, serving part of the market by producing Q^* with the wage w^* is the unique equilibrium. In case (c), demand is unity even at a wage of w^*. Hence serving the entire market is the unique equilibrium. In case (b), if the entire market is served than wages are above cost so that this is an equilibrium. If only part of the market is served, then wages are below cost so that this is also an equilibrium.[15]

Since there is full employment in our model, output lies on the production possibility frontier in both the market and transition economies. What can we say about the output of indivisibles in the two economies? One might guess that since the distortion raises the relative cost, and hence price, of indivisibles, it would reduce their output. However, this is not so.

Proposition 1 *A transition economy may produce more of the indivisible good under autarky than a market economy even though production costs are higher in a transition economy.*

Proof *There are two opposing forces at work. On the one hand, the factor market distortion raises the cost and hence price of indivisibles, which*

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[15]Notice that there is an additional unstable equilibrium which involves rationing in the market for indivisibles. Let $\hat{Q}$ be defined by $c(\hat{Q}) = w(\hat{Q})$. The equilibrium involves producing $\hat{Q}$ and pricing at cost. However, the equilibrium is unstable: if more was produced wages would rise and it would be demanded at a price that covered cost.

reduces output. On the other hand, the distortion also raises the in-come of the least able, and this can raise the demand and output of indivisibles. Thus, the net effect of the factor market distortion in a transition economy could be an increase or decrease in indivisible good output.

It is worth noting that the market economy equilibrium is Pareto optimal. Though less able agents are better off in a transition economy, the most able ones are worse off as price is higher while their incomes are unchanged.

We now provide a simple concrete example.

Example: *Let $F(\gamma) = \gamma^\theta$. It is easy to verify that indivisible good output at wage w is $Q(w) = \alpha \int_0^w \theta \gamma^\theta d\gamma = \frac{\alpha\theta}{1+\theta} w^{\theta+1}$, while labor costs are $w^{\theta+1}$. Hence the unit cost, which is the ratio of labor cost to output, is just $\frac{1+\theta}{\alpha\theta}$. It is easy to verify that $\bar{w} = \left(c^T\right)^{1/(1+\theta)}$, while $w^* = (c^T)^{1/1+\theta}(1 - \left(c^T\right)^\theta)^{1/1+\theta}$. Hence, the output in a transition economy, $Q^T(\alpha)$, is given by*

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\begin{aligned}
Q^T(\alpha) &= 0 &&\text{for } \alpha < \frac{1+\theta}{\theta} \\
&= \left\{ \begin{array}{c} 1 - \left(\frac{1+\theta}{\alpha\theta}\right)^\theta \\ 1 \end{array} \right. &&\text{for } \frac{1+\theta}{\theta} \leq \alpha \leq \left(\frac{1+\theta}{\theta}\right) 2^{\frac{1}{\theta}} \\
&= 1 &&\text{for } \alpha > \left(\frac{1+\theta}{\theta}\right) 2^{\frac{1}{\theta}}.
\end{aligned}
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Output in the transition and market economy when $\theta = 1$ is depicted in Figure 3. When productivity in indivisibles is high enough, indivisible output in a transition economy must exceed that in a market economy.

Figure 3: Output of Indivisibles in Autarky
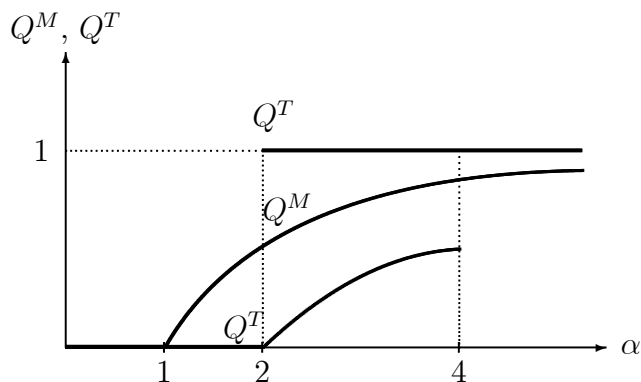
3.1.2 Trade

By Lemma 1, $c^T > c = \frac{1}{\alpha}$. Given constant costs and perfect competition, the country with the lowest cost exports the indivisible. In this manner, differences in institutions may dictate comparative advantage and create a basis for trade.[16] Conversely, better technology need not confer comparative advantage.

In the market economy, trade results in a Pareto improvement as in the standard Ricardian model. For an undistorted economy, trade has only the standard beneficial price effects.[17] In a transition economy, trade affects not

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[16]In a similar vein, Chichilnisky (1994) provides a model where the basis of trade is the differences in environmental standards.

[17]If trade causes the market price of indivisibles to fall, the economy specializes in divisibles. Since the price falls, while the nominal income of each agent is unchanged, real income rises. In addition, more agents can afford indivisibles. For both reasons, welfare rises. Conversely, if trade causes the price to rise, then the market economy specializes completely in indivisibles. Wages rise in the same proportion as price so real

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only prices, but also the distribution of income through its effect on the wage in indivisibles. Depending on trade patterns, the wage in indivisibles could exceed or fall short of its autarky level.

Proposition 2 *In a transition economy with constant costs trade results in complete specialization for at least one country. However, some agents can lose from trade. When technology is identical across countries, and the transition economy is large, trade must result in a Pareto inferior outcome.*

Proof: *When autarky prices differ, the trade price must lie between them. With constant costs, at least one country must specialize. If the transition economy specializes in indivisibles, all labor will be drawn there. This requires a wage of at least unity. There is complete equality in incomes and all agents can afford indivisibles! The most able may lose due to the price increase, but others gain. If the transition economy specializes in divisibles, then the wage in indivisibles is zero. The least able lose as their real income falls, while the more able gain due to the fall in price which raises their real income.*

If the transition economy is large so that the rest of the world cannot supply all its demand, the price of indivisibles is unchanged. Then importing the indivisible reduces the wage in indivisibles with no beneficial

income in terms of both goods cannot fall. Indivisible good consumption is unchanged, but consumers can afford more of the divisible. Hence, all agents, other than the marginal consumer, strictly gain.

price effects, and yields a Pareto inferior outcome.

3.2 Transition Economy with Non Constant Costs

So far we have restricted attention to the constant cost scenario where an increase in wage offered resulted in a proportionate improvement in the productivity of workers attracted to the sector. As a result, firms had no reason to offer higher wages. We now show that the spirit of our results carries over when costs are not constant.

Proposition 3a: *If costs are increasing, then the autarky equilibrium is similar to that in Proposition 2.*

Proof: *With incresasing costs there is no incentive for firms to offer higher wages to attract a better quality work force. Thus we have the same cases as depicted in Figure 2 except that $c(Q)$ is upward sloping. As shown in Lemma 1, $c(Q)$ can intersect $w(Q)$ at most once and such an intersection must be from below. Hence, there are three mutually exclusive and exhaustive cases which correspond to the three cases in Lemma 3. (a) $c(Q)$ and $w(Q)$ do not intersect in the interval $[0,1]$. (b) They intersect in the interval $(Q^*, 1]$. (c) They intersect in the interval $(0, Q^*]$. In case (a), $w(1) < c(1)$ so that the only equilibrium is the part served one. In case (c), $c(1) < w(1)$ and $c(Q^*) \leq w(Q^*)$ so the only equilibrium is the all served one. In case (b), $c(1) \leq w(1)$ and $c(Q^*) > w(Q^*)$ so that both all served and part served are equilibria.*

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If costs are decreasing in output, then firms have an incentive to raise wages above the level required to attract the labor needed for production. If costs fall monotonically with output, costs will be minimized by offering a wage of unity. At this wage, all workers will prefer to be employed in indivisibles, and firms will have to ration employment. We assume that if there is rationing in the labor market, all workers have an equal probability of employment and that rationed workers work in divisibles so that there is full employment. Although the rationing outcome resembles the work by Stiglitz and Weiss (1981) on credit rationing due to moral hazard, and Shapiro and Stiglitz (1984) on efficiency wages due to moral hazard, labor market rationing arises from adverse selection in our setting.

Proposition 3b: *If costs are decreasing, then equilibrium is unique though there may be rationing in the labor market.*

Proof: *With rationing in the labor market, demand is slightly different. All workers in indivisibles will earn a wage of unity. This creates a horizontal segment at unity for market demand. The length of this segment depends on the labor force used in indivisibles. Since rationed workers are employed in divisibles and all agents have an equal probability of employment, the end of this segment connects to the point $(1, 0)$. This procedure gives market demand for any given level of employment in indivisibles. The equilibrium output in indivisibles is given by demand at the minimum cost achieved by offering the wage of unity. Finally,*

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consistency requires that the labor needed to make this output equal the labor employed in indivisibles.[18]

Trade has the same kind of effects as before. Whether costs are increasing or decreasing, the same forces, via price and the distribution of income, come into play. The only additional feature is that if costs are decreasing, exporting indivisibles may also serve to reduce rationing in the labor market.

4 Distortion in the Divisibles Sector

When the factor market distortion is in divisibles, complementarities exist between the production of divisibles and the demand for indivisibles, rather than between the production and demand for indivisibles as in a transition economy. Such an economy can be interpreted as a traditional developing economy where divisibles are the traditional sector, agriculture, which is organized on the basis of family farms where workers share output equally.[19]

Workers in divisibles earn the average product there. As a result, more able workers work in indivisibles while the less able remain in divisibles and earn the average product there.[20] As in the transition economy the marginal

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[18]Non monotonicity of costs can add further complications. It may be that rationing occurs in the product market as well as the labor market, and that there are two kinds of firms: one kind offers a low wage and hires all workers who come to it, while the other kind rations employment at a higher wage.

[19]We assume that the agricultural sector is one big family farm that produces the divisible good. This allows us to abstract from asymmetries and integer problems in family size, farm size, and member ability. An alternative interpretation would involve identical family farms, each with a continuum of members.

[20]Unlike the usual assumption in the disguised unemployment literature, the average

worker in divisibles is determined by the demand side. Let $a(Q)$ denote the average product of labor in divisibles as a function of the output in *indivisibles*. Clearly, $a(Q)$ is decreasing: as the output of indivisibles rises so does its demand for labor, which reduces the average product in the divisible good sector. In essence, $a(Q)$ plays the same role as $w(Q)$ in a transition economy: there is a horizontal segment in demand for indivisibles at the equilibrium value of $a(Q)$. In this economy, an increase in the output of indivisibles affects its demand adversely and as a result multiple equilibria are absent.

It is worth pointing out that the factor market distortion in divisibles reduces the cost of indivisibles! This is a general equilibrium insight. Workers in divisibles are paid more than their marginal product in indivisibles, which raises the cost of divisibles relative to indivisibles. Since divisibles are the numeraire, this reduces the cost of producing *indivisibles* relative to a market economy with the same technology. Thus, ceteris paribus, a factor market distortion in divisibles creates a comparative advantage in indivisibles. Since an increase in the output of indivisibles reduces the income of the least able and their ability to afford indivisibles, trade can easily reduce welfare.

In fact, it is easy to construct examples of trade between a transition economy and one where the factor market distortion is in divisibles which result in mutual losses from trade: all one has to do is ensure technologies

product of labor in agriculture *falls* as less people work on it. This does not need to be the case with a land constraint in agriculture as explained below.

differ so that the transition economy has a slightly higher cost per unit of output. Since the developing economy has a comparative advantage in indivisibles and exports them, the income effects for both countries are adverse. Since price effects are negligible by construction, both countries will lose from trade.

So far we have assumed that productivity does not depend on the size of the labor force employed. This is equivalent to assuming that labor is the only scarce factor.[21] Land constraints can be incorporated in a rough and ready manner by assuming that there are external diseconomies of scale in the divisible good sector: as labor used in divisibles rises, productivity of labor in divisibles falls. This reduces the opportunity cost of labor and hence the unit cost of indivisibles.

With this modification, producing more of the indivisible good absorbs labor from the divisible good sector raising productivity there, and hence labor earnings. If land constraints are severe enough, exporting indivisibles raises social welfare even when the factor market distortion is in divisibles.[22] A developing economy would gain from importing the indivisible good in the absence of land constraints. On the other hand, a very land constrained one may lose from doing so due to crowding in agriculture reducing the average product there. This casts some light on why some developing economies gain

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[21]This may not be such an unrealistic assumption in land rich countries such as the U.S. or Australia in the past century. However, especially in land poor developing countries, having fewer people in agriculture (divisibles) raises the average productivity of labor.

[22]For details see Krishna and Yavas (2002).

through trade while others do not.[23]

Proposition 4 *A factor market distortion in divisibles reduces the cost of producing indivisibles. Exporting indivisibles may reduce welfare due to adverse income effects. Tight land constraints can outweigh the adverse income effects of exporting indivisibles.*

Proof: *See Krishna and Yavas (2002).*

5   Conclusion

We argued that labor market distortions coupled with indivisibilities in consumption can make losses from trade large and likely. Trade without structural reform can have serious adverse effects

Our setup can be used elsewhere. In Krishna and Yavas (2004), we argue that technical change in a closed transition economy with product market power may be immiserizing. We are currently working in several other applications including factor mobility in a world with institutional differences.

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[23]For other explanations of such differences, see Krueger (1984) and Ray (1998).

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