

# Lecture Note on Price Liberalization

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## 1. Liberalization

Liberalization is one of the fundamental elements of transition. As the planned economy is one of extensive controls, the first step in the transition to a market economy is to lift these controls; liberalization. There are two aspects of this. Planned economies enacted controls both domestically and internationally. Domestic liberalization involves lifting price controls and providing economic agents freedom of enterprise. External liberalization involves the lifting of controls on trade, unifying the exchange rate, and allowing the exchange rate to achieve its proper level, either through devaluation or by gradual adjustment. We shall consider these types in turn.

### 1.1. Price Liberalization

One of the fundamental actions in transition is price liberalization. Transition economies inherit a system of arbitrary prices, and the lack of information signals in these prices is a (the) key source of inefficiency in the economy. Moreover, with the abolition of central planning decentralized decision making is enhanced, *even before privatization takes place*. Therefore it may be crucial to liberalize prices.

There are, however, two problems associated with price liberalization. First, if the economy is still dominated by state-owned enterprises it is not clear that liberalized prices will be market prices. A key question is whether the state-owned enterprises will be subject to soft or hard budget constraints. But it also is related to the objectives of the first; are they primarily government agencies or independent entities worried about their own profits. Related to this issue is the question of competition: does it make sense to liberalize prices when most

companies have monopoly positions in their industries?<sup>1</sup> Presumably the answer is yes, because monopoly prices are the best means of attracting entry into those activities. Prior to transition, the lack of competition is due to control from above. It is also the case that opening foreign trade will greatly reduce the monopoly problem, at least in small open economies like in Eastern Europe.

The second problem with price liberalization is the price shock. As socialism collapsed the loss of control by the center led to wage explosions and a monetary overhang. A monetary overhang refers to the excess of money assets held by the population compared to the nominal value of goods available. In practice, economists often compared the ratio of the monetary aggregate to income in a particular socialist economy to that in market economies. If the former is larger then it is said to suffer from a monetary overhang.

The problem with this comparison is that there are good reasons for these ratios to be higher in socialist countries. When goods are scarce agents have a *precautionary* demand for cash balances. Not as a precaution against uncertainty as in a market economy, but rather as a precaution against the *availability* of a good. If goods are available you do not want to lose the opportunity to purchase because of a lack of cash. People also hold higher money balances in socialist economies because of the lack of other means of holding wealth (durables, financial assets).

The very concept of monetary overhang is somewhat problematical. With prices flexible in parallel markets money always has value on the margin. Moreover, as long as the level of shortage is expected to be constant there is no reason to save for tomorrow. It is only when liberalization is expected that people would want to build up balances. But if they expect that prices will rise, they will try to spend *before* liberalization, so there will still be no overhang but big pressure on prices. This could lead to expectations of future price increases.

In the course of the demise of planning, however, the collapse of the state budget was so great, and hence money growth so excessive, that even the parallel market could not clear. Moreover, the costs of shopping were further reducing real output. Hence, excess money balances were a problem.

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<sup>1</sup>An even more important, but related question, is whether it makes sense to *privatize* enterprises that have monopoly positions.

### 1.1.1. Price Liberalization and Welfare

The conventional view is that living standards have fallen dramatically, owing to price liberalization. Since nominal wages have risen much less than prices, the claim is made that living standards of the population have fallen, by as much as 50%. This claim is almost certainly wrong. Let us examine why.

The first thing to note is that during the period 1985 to December 1991, Soviet, officially measured, real wages increased by 51% (Lipton and Sachs 1992). Yet we would not consider that a period of rising living standards. The supply of consumer goods available to the public did not rise. Rather shortages intensified and queues lengthened. The statistical real wage and the actual real wage were disconnected.

Why did real wages rise under Gorbachev? As we have discussed already, the reason was the loss of control by the center. The increased autonomy of enterprises led to wage increases, while prices remained fixed. The balance between the money incomes of the population and the supply of consumer goods deteriorated, especially in official markets.

Notice that if one considers queue time as coming from leisure (or more simply as decreasing utility, then one can see an inverse relationship between the real wage and welfare under the command system. As the statistical real wage increases queues lengthen, but consumer goods are not increased. Therefore utility falls.

*Remark 1. In this simple model we analyze the impact of price liberalization without any supply effect.<sup>2</sup>*

To see this more clearly, we take a simple model with an aggregate good,  $S$ , in fixed supply. National income is given exogenously by  $Y$ . Let the level of excess demand in the economy be given by

$$x = \frac{Y - PS}{Y} \quad (1.1)$$

If  $x > 0$  it means there is excess demand in the economy. Prices cannot rise. Instead queues get longer. We let  $q = q(x)$ , with  $q' > 0, q'' > 0$ . Notice that  $q$  is endogenous in the model. If  $x < 0$ , there is no queuing.

Utility (welfare) depends on consumption and leisure. Let it be written as:

$$U = C + wL \quad (1.2)$$

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<sup>2</sup>This example is due to Lipton and Sachs.

here  $w$ , is the marginal utility of leisure,<sup>3</sup>  $L$ , which is given by total hours minus those spent queuing:

$$L = N - qS \quad (1.3)$$

where  $N$  is total nonworking hours. Notice that queuing time is proportional to the length of the line,  $q$ .

Now we can substitute for leisure from expression (1.3) into expression (1.2):

$$U = C + w[N - qS] \quad (1.4)$$

But what is total consumption? Clearly, this must be equal to the supply of goods,  $S$ , so we have:

$$U = S + w[N - qS] \quad (1.5)$$

$$= S + w[N - q(x)S] \quad (1.6)$$

so we can clearly see that *the relation between welfare and excess demand is negative when  $x > 0$* . But this means that in the regime when  $x > 0$ , increases in real income,  $\frac{Y}{P}$  are inversely related to welfare. A fall in real income can lead to a rise in welfare and vice versa.

The relationships between utility and measured real income is given in figure 1.1. As long as  $Y/P < S$ , there is no excess demand, and utility increases linearly with real income. But when  $Y/P > S$ ,  $x > 0$ , and utility is a decreasing function of excess demand. The key point is that the relationship between real income and welfare differs in the excess demand and excess supply regimes.

Liberalization involves a movement from an excess demand regime to an excess supply regime. The reduction in real income that occurred simultaneously does not imply a similar reduction in welfare. The reason is that the reduction in excess demand eliminates welfare-reducing activities, such as queuing, that are not included in real income, but are directly related to it.

Now if one accepts that the rise in real wages under Gorbachev was not an indicator of improved living conditions, then one must similarly conclude that the statistical fall in real wages does not indicated a real deterioration in living standards.

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<sup>3</sup>One way to think of this is that  $w$  is the wage, so that the marginal disutility of labor (the marginal utility of leisure) is equal to this. The problem with this interpretation, however, is that time spent queuing was not taken from work time; workers queued on the job ("stolen hours").

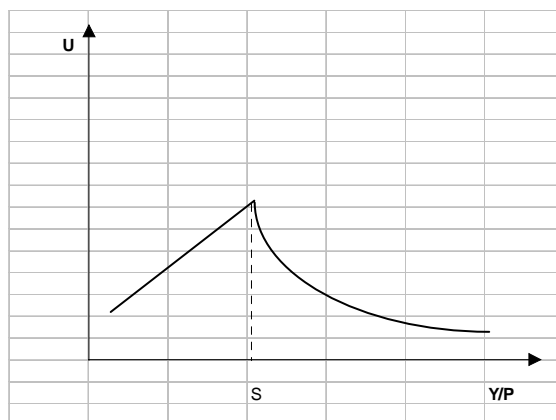


Figure 1.1: Relationship between real income and welfare

The real change in living standards has occurred on the extremes of the economy. There are greater opportunities to be rich, and there is more hardship for those on fixed incomes. Since pensions did not keep up with prices, those that were dependent on this source of income were the most hurt. This is, however, a transfer, not an aggregate impoverishment.

Notice that the impact effects of price liberalization may have important distributional consequences. With controlled prices excess demand leads to rationing. When prices are freed queues are eliminated. This results in a transfer from those endowed with time to those who have higher incomes. The elderly, for example, have a low opportunity cost of time, so queue-rationing results in their collection of rents. These are lost when prices are liberalized, and the biggest beneficiaries of this are those who have a higher opportunity cost of time, typically those who are highly paid.

It is important to note, however, that while there may be distributional consequences, the overall gains from price liberalization are positive. Removing distortions leads to more efficient allocation of resources. This leads to net gains for society, as subsidies and/or queuing is reduced. Notice that the gains that the elderly obtain from queue rents is just a transfer from others in society, but queuing is not costless to the elderly either.

Suppose, for example, that some of the queuing comes at the expense of work. Then the supply of goods may be a negative function of excess demand. If  $x$  falls, then  $S$  goes up. Then there are two beneficial effects of price liberalization – lower

queues and more output. So consumption rises and utility rises not just due to the direct effect of less queuing..

So by removing controls society overall gains. It should be possible, in principle, to compensate the elderly through higher pensions and still make everyone better off.

## 1.2. Inflation Shocks

When prices were liberalized in EE-FSU prices exploded. In almost all cases this price explosion was greater than what was expected. Notice that predicting the size of the price jump depends mainly on the forecast of what will happen to velocity (money demand). From the equation of exchange we have  $P = \frac{VM}{Q}$ , where  $V$  is velocity,  $Q$  is output, and  $M$  is the stock of money. Now the jump in prices from period  $t$  to period  $t+1$  is given by:

$$\frac{P_{t+1}}{P_t} = \frac{\frac{V_{t+1}}{V_t} \frac{M_{t+1}}{M_t}}{\frac{Q_{t+1}}{Q_t}} \quad (1.7)$$

Now in the short period of time in which liberalization takes place, we can take the money stock as unchanged. Hence the numerator is just the ratios of velocity. To some extent we can also take the output levels to be unchanged. It is true that output falls rather quickly with liberalization, but the percentage fall is still very small compared to the price jump. Clearly what is driving the price explosion is the change in velocity. It is this which people underpredicted, especially in Russia.

Why does velocity explode? One answer is the absence of inflation-proof assets. Prior to liberalization people held large money balances. They could not save in alternative forms. When prices are liberalized their choices were to spend or hold dollars. The latter drives down the demand for rubles and enhances the price shock. This is why some suggested first selling off apartments.

We can see the relative size of price explosions, and events, from the following table:

Table 1: Cross-Country Comparison of Inflation: monthly inflation rates

	Beginning Date	1st month	6th month	12th month
Poland	1 January 1990	79.6%	3.4%	5.9%
Czechoslovakia	1 January 1991	25.8	1.8	1.2
Russia	2 January 1992	296	13.9	25.1

source: Granville 1995:21.

It is clear from the table that prices exploded in each country (these are monthly inflation rates), but that the magnitude was larger in Russia, and that inflation was also more persistent in Russia. Of course in Poland prices had been somewhat liberalized before the explosion, so there was less pressure.

### 1.3. Liberalization and Inflation

In all countries the immediate effect of liberalization was an acceleration of prices. The sequel was high inflation. What is the link between price liberalization and inflation? A lot more confusion than light has been poured on this issue.

We can distinguish four sources of the inflation explosion at the onset of transition:

- Removal of price controls, constraints and administered price setting
  - notice this only causes inflation because some prices do not fall (related to maintenance of soft-budget constraints)
- Seignorage financing of government
- Credit expansion to support government enterprises
  - note that this is often hidden fiscal deficits and off-budget
- Spending of forced saving, i.e. monetary overhang.

Notice that inflation is costly. This early outburst is especially costly for three reasons:

1. the value of financial savings erodes.
2. the support of inefficient enterprises continues.
3. hyperinflation inhibits the effective operation of the payments system.

But there is also one possible way in which inflation, even at relatively high levels can be beneficial. The inflationary environment allows and encourages the adjustment of relative prices.

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Central eastern													
<b>Europe and the Baltic states</b>													
Croatia	123	685.5	1,517.5	97.6	2	3.5	3.8	5.7	4.2	6.2	4.9	2.4	2.4
Czech Republic	52	11.1	20.8	9.9	9.1	8.8	8.5	10.7	2.1	3.9	4.7	1.8	0.2
Estonia	210.5	1,076.0	89.8	47.7	29	23.1	11.2	8.1	3.3	4	5.8	3.6	1.4
Hungary	35	23	22.5	18.8	28.2	23.6	18.3	14.3	10	9.8	9.2	4.8	4.7
Latvia	172.2	951.2	109.2	35.9	25	17.6	8.4	4.7	2.4	2.6	2.5	1.9	3.3
Lithuania	224.7	1,020.5	410.4	72.1	39.6	24.6	8.9	5.1	0.8	1	1.3	0.3	-0.8
Poland	70.3	43	35.3	32.2	27.8	19.9	14.9	11.8	7.3	10.1	5.5	1.7	0.5
Slovak Republic	61.2	10	23.2	13.4	9.9	5.8	6.1	8.7	10.6	12	7.1	3.3	8.5
Slovenia	117.7	207.3	32.9	21	13.5	9.9	8.4	7.9	6.1	6.9	8.4	7.5	6.1
Median	117.7	207.3	35.3	32.2	25	17.6	8.5	7.9	4.2	6.2	5.5	2.4	2.4
<b>South-eastern Europe</b>													
Albania	35.5	226	85	22.6	7.8	12.7	33.2	20.6	0.4	0.1	3.1	5.4	3.5
Bulgaria	333.5	62	73	96.3	62	123	1,062.0	22.2	0.7	9.9	7.4	5.9	2
FYR Macedonia	114.9	1,684.4	338.4	126.5	16.4	2.5	0.8	2.3	-1.3	6.5	5.3	2.4	1.5
Romania	170.2	210.4	256.1	136.7	32.3	38.8	154.8	59.1	45.8	45.7	34.5	22.5	14.5
Serbia and Montenegro	121	9,237.0	16.5 × 10 <sup>10</sup>	3.3	78.8	94.3	21.3	29.5	37.1	60.4	91.3	21.4	12
Median	121	226	170.6 <sup>†</sup>	96.3	32.3	38.8	33.2	22.2	0.7	9.9	7.4	5.9	3.5

Figure 1.2: Inflation in CEE and Baltics

- Another important fact is that disinflation was less costly in these countries than in others. E.G., Latin America, why?
- In the early 1990s more than half of the transition countries experienced at least one year with annual inflation rates in excess of 1000 per cent or close to it. However, stabilization policies were in place in virtually every transition country by 1995 and the policies were remarkably successful. Since 1997 only three countries have experienced annual inflation rates in excess of 100 percent. By 2002, annual inflation rates were below 15 percent in all but five countries and below 5 percent in just half. See figures 1.2 and 1.3.
- Russia, was one of the country's that had the toughest time with inflation, the decline in the mid 90's being artificial and leading to the August 1998 crisis and renewed inflation. But since then it too has fallen.

The fundamental issue is whether inflation is due to monetary or structural factors. The structural argument about inflation is that the fall in production



Commonwealth of Independent States													
Armenia	274	1,346.0	1,822.0	4,962.0	175.8	18.7	14	8.7	0.7	-0.8	3.2	1.2	8.1
Azerbaijan	107	912	1,129.0	1,664.0	412	19.7	3.5	-0.8	-8.5	1.8	1.5	2.8	2.1
Belarus	94.1	970.8	1,190.2	2,221.0	709.3	52.7	63.8	73.2	293.8	188.9	61.4	42.8	29
Georgia	79	867.4	3,125.4	15,606.5	162.7	39.4	7.1	3.6	19.2	4.1	4.6	5.6	5
Kazakhstan	78.8	1,381.0	1,662.3	1,892.0	176.3	39.1	17.4	7.1	8.3	13.2	8.4	5.8	6.1
Kyrgyz Republic	85	855	772.4	180.7	43.5	31.9	23.4	10.5	35.9	18.7	6.9	2.1	2.4
Moldova	96	1,276.4	1,184.0	467	30.2	23.5	11.8	7.7	39.3	31.1	9.6	5.2	10
Russia	92.7	1,526.0	875	311.4	197.7	47.8	14.7	27.6	86.1	20.8	21.8	15.7	13.9
Tajikistan	112	1,157.0	2,195.0	350	609	418	88	43.2	27.6	32.9	38.6	12.2	16
Turkmenistan	103	493	3,102.0	1,748.0	1,005.3	992.4	83.7	16.8	24.2	8.3	11.6	10.6	9.6
Ukraine	91	1,210.0	4,734.0	891	377	80	15.9	10.6	22.7	28.2	12	0.8	5.1
Uzbekistan	105.7	645.2	534.2	1,568.3	304.6	54	70.9	29	28.1	25	27.2	27.6	12.4
Median	96.1	1,063.9	1426.3	1,616.2	251.2	43.6	16.6	10.5	25.9	19.8	10.8	5.7	7.9
2004 and 2007 EU Accession countries													
Median	144	62.5	54.2	34.1	28	21.5	8.9	9.4	4.7	9.4	6.5	3.4	2.7

Figure 1.3: Inflation in CIS Countries

is the primary cause of inflation.<sup>4</sup> According to this view the decline in output that follows liberalization is the cause of inflation. This is, in effect, the result of unreformed Marxist economics, and its emphasis on production. In this tradition monetary factors are of secondary importance. The role of credit is to support production.

Related to this view is the argument that energy-price liberalization is an important factor in inflation. This is the cost-push theory of inflation. The problem here is the failure to distinguish between changes in the *price level* and changes in *relative prices*. Inflation is sustained increases in the level of prices. Liberalization necessarily involves changes in relative prices because of the distortions inherited from planning. Energy prices must rise *relative* to the prices of many final goods. But there is no reason why liberalization should lead to a rise in the level of prices.

- but it is important to note that inflation may make relative price changes easier to implement.

The real question is when in the liberalization process will hard-budget constraints take effect? With hard-budget constraints the fall in the relative effective

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<sup>4</sup>A subsidiary argument is that of monopoly power. The idea is that these firms exploit their monopoly power to raise prices. But this is not inflation!

demand for manufactured goods should lead to a decline in prices. If not, then firms will not be able to cover their costs. But if budget constraints are soft, then firms can keep prices high due to subsidies provided by the government. In this case the price level does, in fact, increase. Notice, however, that this is due to credit creation by the government in the form of subsidies.

In the immediate aftermath of liberalization budget constraints were in fact soft. To an important extent this is a question of *expectations*. It matters what directors expect the government's policy will be towards loss-making enterprises.<sup>5</sup> Enterprise directors believed that the regime had not changed, so they did not alter their behavior. This is evident in the fact that retail prices rose less than wholesale prices during the early phase of transition. Consumers always have hard-budget constraints, but enterprises that receive government subsidies do not. As a result, enterprises produced goods and kept their prices high. This led to mountains of unsold goods, and the phenomenon of inter-enterprise arrears.

The notion here is that although money growth always is the cause of inflation, there are factors that can cause the growth of money, and the fear of output decline could be one.

With price liberalization the problems with the inherited price structure become evident. We think especially of the underpricing of energy. This means that many enterprises cannot cover costs. This can lead to falling output and higher prices. Also, to inter-enterprise indebtedness. Fear of this can lead to money growth.

**Energy Price Liberalization** Liberalization of energy prices is an especially important issue in transition because of the characteristic under-pricing of energy in planned economies. In a country like Russia, which is a large producer of energy, under-pricing leads to higher domestic consumption. Liberalization means lower domestic consumption and higher exports of energy. Consumers lose and producers gain, but the overall effect is positive.

To see this, consider the simple case where the domestic supply is fixed, and where the price is controlled, at  $P'$ , below the world market price,  $P^*$ . Suppose further that the excess demand at the controlled prices is financed by imports at the higher world price. The government is thus subsidizing domestic consumption.<sup>6</sup> When prices are liberalized consumers lose the area  $P'P^*ab$  plus the area

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<sup>5</sup>We will return to this issue when we examine inter-enterprise arrears.

<sup>6</sup>In effect this is the case because the extra consumption could be exported at the higher price, so this does represent lost resources.

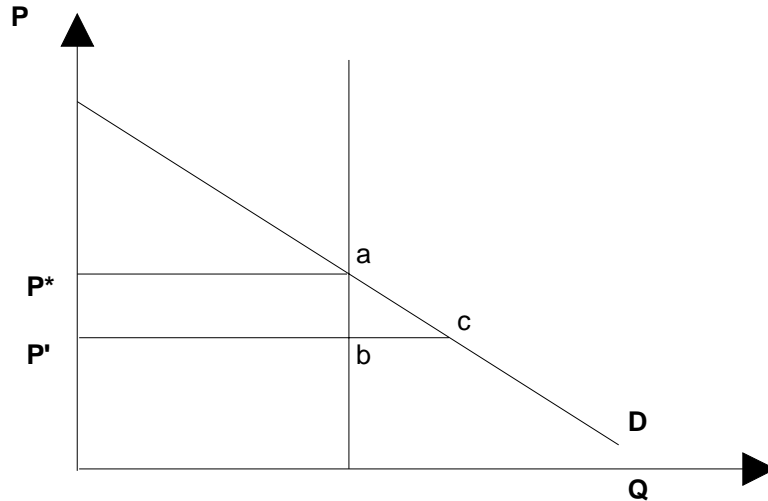


Figure 1.4:

$abc$  in figure 1.4. But the elimination of subsidies means that the government gains the area  $P'P^*ab$  plus 2 times the area  $abc$ . So the net welfare gain to society is the area  $abc$ .

How large is this gain likely to be? In most market economies these welfare gains, Harberger triangles, are typically estimated to be rather small. That is because price distortions are typically due to imperfect competition in generally competitive environments. But in planned economies prices are arbitrary, so the deviation from market-clearing prices can be large.

To pursue the energy example, suppose that world energy prices are about 150% of domestic FSU prices. This gives the distance  $ab$ . To obtain the base of the triangle we assume that the elasticity of demand for energy is .5, roughly what econometric estimates give for market economies. Then a rise in prices of 150% will lead to a fall in consumption of 75%. Using the world market price we can value total energy use in the FSU at \$240 billion.

Now the welfare gain, we have seen is equal to the triangle  $abc$  in figure 1.4. This area is equal to one-half of the product of the absolute change in price and the absolute change in demand. Since we only know the elasticity of demand, we have to translate these proportional changes into absolute changes. This means

that the welfare gain is equal to 0.5 times 1.5 (the change in price) times 0.75 (the change in quantity) times \$240 billion = \$135 billion. Notice that even with "only" 100% under-pricing the welfare gain is \$60 billion.

How large are these numbers. A very generous estimate of FSU per-capita income in 1992 would be \$3000. This would give a welfare loss of about 14% of GDP.<sup>7</sup> Notice that in 1992 Russian per-capita income, valued at market exchange rates, was considerably less than this, so the welfare loss was considerably higher. And recall that this estimate excludes any increased producers surplus. These gains are large because energy was used so inefficiently in STE's. Equipment was energy intensive, and production facilities and homes were not insulated. Some estimates put the value of energy used in domestic manufacturing to have been greater than the market value of domestic manufacturing in 1992.

One needs to note, however, that the ability to conserve on energy is greater in the long run than in the short run. The short run elasticity is probably closer to 0.1. This would reduce the welfare gain from liberalization by 80%. This is still a tidy sum. Moreover, it is no argument for delaying liberalization, because the adjustment will only take place if prices are freed. Postponing liberalization postpones adjustment.<sup>8</sup>

The problem with energy price liberalization is the interests arrayed against it. Producers who have capital stocks that are highly energy intensive are unable to adjust rapidly to market prices. Forcing them to pay higher energy prices may make these enterprises unviable. Households, meanwhile, may not be able to afford the true cost of energy, given how energy-inefficient their housing. The political cost of liberalizing energy prices may be very high. Even reformers may be loath to bear these costs, as was true in the case of Yegor Gaidar.

### 1.3.1. Traditional monetary and fiscal policy

Much of macroeconomic policy discussion in western economies focuses on monetary and fiscal policies that governments undertake in the short run to affect minor year-to-year changes in output, employment, inflation, and exchange rates. Most of this framework is irrelevant to the situation in Russia.

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<sup>7</sup>Assuming population of the FSU at 320 million and per-capita income of \$3000.

<sup>8</sup>There is also the argument that liberalization of energy prices can cause inflation (that we shall discuss later). This stems from the view that substitution possibilities with respect to energy are limited. Yaromenko, for example, noted that in 1991 production fell much faster than energy use (cited in Aslund 1996). But this ignores the change in regime that takes place with liberalization.

Few economists think much of the stimulative powers of fiscal policies any more. We all agree that if the government raises taxes and spends the money, there will be no expansionary effect: taking money from us and then giving it back can't help. The idea behind fiscal policy was that if the government *borrow*s money from us and then spends it, we will be fooled into thinking we are richer, ignoring the fact that the government will have to raise taxes later on to pay the money back.

Now, we concentrate on the *distortions* induced by taxes—the fact that people avoid activities like working and saving when the government taxes them too much. In this framework, borrowing serves to finance temporary expenditures, so that tax rates can be kept low and steady, rather than having to be high in order to cover a surge in expenditures. In the Russian context, we have a great deal to say about the distortions of the tax system.

Contemporary analysis of monetary policy focuses on the possibility that money creation can also fool the economy into producing more than it would produce otherwise. Some economists think prices are “sticky” so that more money, leading to more demand for products, will result in more products being sold rather than just higher prices for the same products. Other economists dismiss sticky prices, but instead think that *surprise* increases in money and prices can fool companies into thinking the *relative* prices of their goods have risen, and hence into producing more.

There are big arguments over which of the two stories is correct. But one thing is clear. Monetary policy cannot possibly affect output through either channel in Russia today. No economy with inflation whose level is 10-20% per month and is equally variable inflation has any sticky prices left, nor is anyone likely to be fooled by a spurt of inflation into thinking that the *relative* prices for what he has to sell have risen. Empirical research has long documented that real effects of monetary policies disappear in high inflation economies (For example, Lucas 1972.)

In summary, whether monetary and fiscal non-neutralities exist, and if so, whether governments can or should successfully employ them to stabilize fluctuations is a fascinating and ongoing controversy. But it is largely irrelevant to the situation in Russia. The ills that affect the Russian economy are hardly attributable to a lack of monetary or fiscal stimulus!

Conversely, a sudden monetary or fiscal *tightening* cannot produce a further decline in output through these usual channels, familiar from the analysis of western economies. If there is a danger in such tightening, it must come from other

sources.

### 1.3.2. Seignorage and the Inflation Tax

Let money demand depend on the nominal interest rate,  $i$ :

$$\frac{M}{P} = m(i) = m(r + \pi^e) \quad (1.8)$$

In times of high inflation changes in the real interest rate are small compared to expected inflation, so we assume

$$\frac{M}{P} = m(\pi^e) = m(\pi) \quad (1.9)$$

where the last equality holds in the steady state only.

The supply of money rises over time because the government borrows from the CB to finance expenditure. Let  $SE$  be the real spending that must be covered by money creation. Then,

$$\begin{aligned} SE &= \frac{\Delta M}{P} \\ &= \frac{\Delta M}{M} \frac{M}{P} \\ &\equiv \mu m \end{aligned} \quad (1.10)$$

which says that seignorage is equal to the rate of money growth times real money balances. The inflation tax, the decline in the value of real money balances caused by inflation is given by

$$IT = \frac{\Delta P}{P} \frac{M}{P}$$

In steady state the rate of inflation is equal to the rate of money growth, so the two are equal.

Notice that there is a *seignorage Laffer curve*, caused by the fact that as money growth accelerates, the tax base,  $\frac{M}{P}$ , declines.

Notice also that to obtain higher than  $SE^{\max}$  it is required to continually fool people.

### 1.3.3. Hyper-inflation is always and everywhere a fiscal problem.

The most obvious symptom of macroeconomic problems in Russia is high or hyper-inflation.<sup>9</sup> Hence, a few basic facts about high inflation are in order.

Governments print money when they are spending more than they can borrow or receive in taxes. (For an extreme example, the Ukraine is estimated to get revenues in the range of 50% of GDP from money creation!) The solution to the inflation only comes when the government either finds other sources of (current or future) revenue, or decreases expenditures. Without resolving the *fiscal* problem, advocating monetary restraint is pointless.

Again, there is a difference between the analysis of inflation in Russia and typical western economies. Seignorage revenue—the fraction of the government budget financed by printing money or expanding cash-equivalent credit—is trivial and inflation is moderate (less than 20% per year) in most western economies. Hence, these governments typically *can* lower inflation by willfully lowering the rate of money growth, and very slightly increasing taxes or borrowing to make up the small loss of seignorage revenue. The source of persistent inflation in western economies is typically the fear on the part of governments that lowering inflation might lead to a recession, through one of the monetary channels described above.

In this context, we are used to treating inflation by moral suasion: persuading governments or central banks that they should risk recessions in order to lower inflation. Much policy advice directed at Russia and the FSU is of this nature. But the situation is different. Money growth cannot be simply lowered by decision of the central bank or other authorities, and the constraint is not fear of a recession, but replacement of the lost revenue due to money creation.

At best, the government can reduce money growth temporarily, financing a part of expenditures by borrowing at home or abroad, by delaying payments, by delaying some expenditures, by getting advance and usually discounted payment of taxes or other revenue, or selling assets sooner. But unless the underlying fiscal situation—tax collections and expenditures—changes, these expedients merely postpone inflation. Eventually, the borrowed money has to be paid back, the delayed payments must be made, etc. Then, the government has to print even more money leading to even higher inflation. In fact, when inflation is quite high, people may understand that the temporary slowdown in money growth must be reversed, and so inflation can perversely increase right away! (Sargent

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<sup>9</sup>Definitions of hyperinflation vary. Our favorite is “that level of inflation at which the government can gain no more revenue from money creation.”

198x presents careful analysis of this situation.)

The bottom line: moral suasion to reduce money or credit creation is pointless. Save the moral suasion for stabilizing the *fiscal* situation and lower money creation must follow.

#### 1.3.4. Inflation isn't so bad.

Many discussions of events in Russia and the FSU presume that inflation is one of the most serious economic problem, and hence needs urgently to be corrected. But inflation *per se* is not that bad.

What's bad about inflation? First, people spend too much time taking trips to the bank or money changer. Since cash depreciates fast, people want to hold as little of it as possible. Hence, instead of (say) receiving pay in cash at the beginning of the month and spending it slowly over the month, they will try to convert their cash wages to foreign currency, bank accounts, durables, or anything else that does not depreciate, and then convert it back to cash as the need arises. Firms will waste time and energy on cash-management activities, avoiding check float, trying to delay payments, etc. rather than on productive activities. too many trips to the bank. In addition, as inflation worsens, people will find ways of arranging transactions without money, by using foreign currency, barter, etc.

There is a second effect, on which economists have speculated, but have even less quantitative evidence. Inflation is seldom steady, but varies from month to month. In this environment, it may be harder for consumers and producers to distinguish *relative* price changes (good or bad deals) from changes in the price *level* (inflation). The economy is obviously less efficient in this circumstance. In response, people in high inflation economies often quote prices in some stable unit of account, such as foreign currency. The transaction then takes place in local currency at whatever the current exchange rate is.

How bad are these two effects? We can get some idea of the first from the value of the money stock. Suppose the money stock in a non-inflating economy is as large as 1/2 years' output (this is a lot—US M1 is more like 1/6, though pre-reform Russia had money stocks more like 1/2). If the interest rate is 5% (high, for a non-inflating economy), then the service flow from the money stock is only 2 1/2% of output. More careful consumer surplus measures (see Lucas (1993)) will not yield answers that are orders of magnitude different. The effect of price confusion is more ephemeral, but since an alternative is available (quote prices in foreign currency, gold, cigarettes, etc.) the effects of price confusion are



unlikely to be worse than the minor inconvenience that switching to one of these alternatives would cause.

People in inflationary economies devise all sorts of methods for avoiding the holding of money, and for sending good quality price signals. Prices can be quoted in dollars, or even paid in dollars. If that is impractical or illegal, prices can be quoted in dollars and then paid in Rubles at that day's exchange rate. People can hold dollars, only converting to Rubles at the last moment. In fact, many stores in Russia now have internal currency exchanges for just this purpose! Brazilians adapted to inflation by the very widespread use of checks that clear in one day (something you can't do in the US!).

Inflation is not a reason why economies stop dead in their tracks. Economies in hyperinflations can function relatively well. In our picture of hyperinflation, workers take home their wages in a wheelbarrow full of money at end of day; and they rush out to shop, bank, or exchange the money so they don't have to hold it overnight. They might be late for dinner, but they *did* spend the day at work. Hyperinflation does not account for the dramatic falls in output experienced by many states in the FSU. The German hyperinflation at the end of the first world war, inflation in Israel in the 70's and 80's and some of the Latin American inflations conform to this picture.

### 1.3.5. The problem: policies designed to combat inflation.

Inflation itself is not that damaging to an economy. Rather, it is a wide range of government policies taken to *combat* inflation, without addressing the underlying deficit, that cause trouble.

While inflation per se isn't that bad for the *economy*, it is very bad for the government's finances. If the government could print money at will and prices did not rise, it could raise any amount of real resources by money creation. Even if money creation resulted in inflation, but people held the same real quantity of money—be it a month's worth of income, a half year's worth or whatever—the government could still raise any amount of real resources by continually raising the rate of money growth and hence of inflation. But as inflation rises, people hold less real money, as explained above. Then, a given percentage increase in the money stock results in an even larger percentage increase in inflation. Eventually, a point is reached at which the government raises *less* real resources if it increases the money growth rate. This is the point of hyperinflation.

The Government naturally responds to this situation by trying to force people

to hold more of its money. Some examples of such policies are limitations on foreign exchange transactions, capital controls, bans on the use of foreign currency for transactions, legal requirements that prices must be quoted in domestic currency, limited or suspended convertibility (if the money was ever convertible in the first place), limitations on the ability to transfer bank accounts to cash, interest rate limitations on bank accounts (so people will be more willing to hold money instead of accounts), and limitations on cash-efficient check, wire, or credit card transactions. Strapped governments also frequently resort to price controls. Price controls hold down the appearance of inflation, which may be useful for political purposes. More directly, when price controls are in place, *money* does not depreciate as fast, and so people are less anxious to hold less of it.

Governments can always reduce inflation, by solving the budgetary process that results in excess money creation. The fact that they frequently take the above measures instead means that they aren't really interested in stopping inflation, they are interested in raising revenue from money creation.

The Soviet Union already maintained most of these policies, and to great effect: Soviet consumers held as much as half a year's income as cash, where cash + checking accounts are less than one sixth of US annual income. A good part of the incredibly cumbersome Soviet financial system can be attributed to the government's desire to raise revenue by printing money, and hence to maintain demand for its currency. Most of these policies are still in effect.

It is *these* policies, rather than inflation per se, that stop economies in their tracks. They not only force people to hold rapidly depreciating money, but they destroy the payments and credit systems. The ultimate sign is when people and companies resort to barter, counter-trade and other deals to avoid using money.

Inflation *per se* can only take away the small advantages of using a national currency rather than some foreign currency.

## 2. External Liberalization

Under planning foreign trade was insulated from the domestic economy. This was an imperative of the system. The FTM was very effective at this; it kept the domestic producer and the foreign customer completely separated. This does not mean, however, that STE's were autarchic.<sup>10</sup> Trade was important. The share of imports in Soviet GDP was around 12% in the late 1980's; not dissimilar from the

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<sup>10</sup>Though some, like North Korea, were and still are.

US.

The import share actually understates the importance of trade in STE's. It can be argued that trade in STE's was more important than in market economies because planners typically relied on trade for entire specific lines of production. In the west trade is often viewed (certainly by politicians) as a means of generating employment. STE planners had a more sensible view of trade; they viewed it as a means of acquiring output that would be too expensive to produce domestically.<sup>11</sup> Competitive imports were viewed as wasteful (no benefits of competition were recognized) so if a certain line of production was produced in one country it need not be produced in another. This made CMEA countries rather dependent on their mutual trade, so that when the CMEA collapsed the shock was extremely disruptive. The direction of CMEA trade is evident in the following table:

The pattern of production and trade that developed within the CMEA is important to understand so that we can appreciate the effects of the collapse of this trading block. First, note that the SGM viewed agriculture as the sector from which to extract resources. So agriculture was taxed heavily, and what used to be agricultural exporting regions became agricultural importing regions, both in EE and especially Russia. Second, the emphasis on heavy industry. One might think that this should lead to a comparative advantage in metalworking, machine building and the like. This did not occur, of course, and the reason is the lack of incentives for quality. Hence, during the existence of the CMEA, countries traded these heavy goods among themselves. This was the advantage to the EE of the CMEA; they could trade their manufactured goods to the SU for raw materials priced below the world market price. Even as energy prices rose in the 1980's, the terms of trade still favored the EE countries, because their manufactured goods, quality adjusted, were still over-priced in CMEA trade. Because intra-CMEA trade took on the character of "taking in each other's wash," there was little pressure for quality improvement.

The implications of the CMEA-trade regime for transition are critical. With liberalization CMEA countries are trading the wrong goods, based on plan preferences, not comparative advantage. The trade diversion of the CMEA period must be replaced by trade based on economic advantage. In many Latin American countries trade liberalization was a necessary step in reform, and these countries had to pay the price for their import substitution policies. But in STE's the industrial structure was much larger, and the costs of insulation, as opposed to protection,

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<sup>11</sup>The problem in STE's was that the absence of price made it hard to *determine* comparative advantage.

much greater.

## 2.1. Convertibility and Inconvertibility

A key reform is convertibility. Notice that in STE's inconvertibility is different than in normal economies. It is not just a question of an incorrect exchange rate. Rather, it is the *irrelevance* of the exchange rate in STE's due to the FTM.

It is common to think of external liberalization as simply the lifting of tariffs, but this is a serious misconception. We should distinguish between two elements of liberalization in the external sector. First, there are institutional changes that are necessary to create a setting where trade can take place. These involve: elimination of the FTM; unifying the exchange rate; and allowing current account convertibility. These steps are necessary so that competition between domestic and foreign producers can be made effective. This can be thought of as the conversion of *implicit* protection into *explicit* protection. The second element is the appropriate level of protection, which may or may not be zero. Let us begin with the institutional factors.

Elimination of the FTM is a rather obvious reform. As long as this exists producers are insulated from external influence. Unification of the exchange rate is also an obvious reform. Under planning there were many different implicit export taxes and subsidies. Export taxes were levied on energy and other raw materials that were underpriced. Import subsidies were provided for essential imports. With a unified exchange rate producers can compare domestic and world relative prices. Unification would have the effect, of course, of raising the domestic currency price of these goods to world market levels. This will have important effects on manufacturing, which we shall discuss below.

Exchange-rate unification will not have its effects on production without current account convertibility. This is the requirement that exporters and importers have access to foreign exchange. If foreign exchange is rationed then world market prices are not the effective prices. The key point here is convertibility of the current account. This means that foreign exchange can be obtained for current, as opposed to capital, transactions.<sup>12</sup>

There are two reasons why transition economies may wish to maintain some level of protection. First, there is a fiscal dimension. Some countries obtain a

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<sup>12</sup>Of course, under planning there was a different kind of inconvertibility; commodity inconvertibility. Even if you had domestic currency you could not convert this into goods if it was not part of the plan.

rather large share of revenue from customs duties.<sup>13</sup> The numbers are easy to calculate. If a country has a ratio of imports to GDP of 30%, a 25% tariff on imports would obtain around 7.5% of GDP.<sup>14</sup> Suppose government revenue is 50% of GDP. Then import taxes would be producing some 15% of government revenue, which is a lot.

A related issue has to do with the cost of collecting taxes. In the early stages of transition there are not many good revenue sources. The key principle of public finance is to use taxes so that at the margin the level of distortion is equalized. The problem for these economies, however, is collection costs. Taxes that are easy to collect administratively should be relied on, and external tariffs are among the very easiest.

### 2.1.1. Negative value added<sup>15</sup>

The second argument for protection arises from considerations about negative value added at world prices. To think about this, assume that gross output in finished good industry  $i$  is given by:

$$z_i = z_i(L_1, L_2, \dots, L_N, M_1, M_2, \dots, M_r) \quad (2.1)$$

where  $L_i$  are primary (e.g., labor) inputs and  $M_i$  are material inputs. Value added in domestic prices is given by:

$$V_i = P_i z_i - P_m M \quad (2.2)$$

where for convenience we have assumed that there is a single material input. For most countries we would expect  $V_i > 0$ , although in STE's this need not be the case.<sup>16</sup>

Now let us suppose that there was protection. Let the explicit tariff on good  $i$  be  $t_i$ . Then

$$P_i = (1 + t_i)P_i^* \quad (2.3)$$

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<sup>13</sup>In 1990 Argentina obtained 25.5% of central government revenue from external taxes, Thailand obtained 19.1%. In the US the share is about 1.5% (IMF, Government Finance Statistics Yearbook, 1992).

<sup>14</sup>Ignoring the adjustment due to the tariff. But most transition economies are trading at this level with at least this high a rate of effective protection.

<sup>15</sup>This section follows McKinnon.

<sup>16</sup>Thus if the price of materials is lower than the social opportunity cost of their use (perhaps due to the exclusion of rent), it is clearly possible that  $V_i > 0$ , even though the activity actually destroys value.

where  $P_i^*$  is the world price of good  $i$ .

In addition to tariffs on imports, the price of material inputs may be distorted. Let  $t_m$  be the implicit export tax on material inputs. Then we can write:

$$P_m(1 + t_m) = P_m^*. \quad (2.4)$$

Now if we divide goods prices by material prices we get:

$$\frac{P_i}{P_m} = (1 + t_i)(1 + t_m) \frac{P_i^*}{P_m^*} \equiv (1 + \tau) \frac{P_i^*}{P_m^*} \quad (2.5)$$

where  $\tau$  is the coefficient of protection.

We can now compute value added at world prices:

$$V_i^* = P_i^* z_i - P_m^* M \quad (2.6)$$

and if we substitute from (2.3) and (2.4):

$$\begin{aligned} V_i^* &= \frac{P_i z_i - (1 + t_i)(1 + t_m) P_m M}{1 + t_i} \\ &= \frac{P_i z_i - (1 + \tau) P_m M}{1 + t_i}. \end{aligned} \quad (2.7)$$

It is clear from (2.7) that even if  $V_i > 0$ ,  $V_i^*$  can be negative if  $\tau$  is large enough. A condition for this would be that the implicit tariff on materials is too large. This is not farfetched for STE's.

The key point is that expression (2.7) is irrelevant until external liberalization takes place. Prior to that the FTM separates domestic and world prices. With liberalization, it may turn out that given current levels of efficiency there is no profitable way to produce the good  $i$  given world prices. That is, it may simply pay to export the material. This can be seen with the aid of a figure.

Obviously the good is produced in the rest of the world. That means that for *some other country*,  $P_i^* \mathfrak{b}_i(\mathfrak{b}_1, \dots, \mathfrak{b}_n; \mathfrak{M}_1, \dots, \mathfrak{M}_r) - P_m^* \mathfrak{M} > 0$ , where the hats refer to the other country choices. That is, for the other countries, using the input choices they make, and the production process they have, value added is positive. Since these are world prices the differences must be in the organization of production or the efficiency of production.

## 2.2. Graphical Representation

Consider figure 2.1. We have two inputs, materials ( $M$ ) and labor ( $L$ ). World prices are given by the price line  $AC$ , and domestic prices by  $HD$ . The isoquant labeled  $Z_i = 1$  give combinations of  $M$  and  $L$  such that the output of the final good is equal to one. We also normalize the world price of  $M$  at one, so that the cost of production of one unit of output is equal to one unit of  $M$ . Hence the world price line intersects the vertical axis at one unit. Because of protection the cost of production at domestic prices uses more materials, hence the domestic price line intersects the vertical axis at  $H$ . This implies that  $1 + \tau_i > 1$  units of  $M$  is utilized.

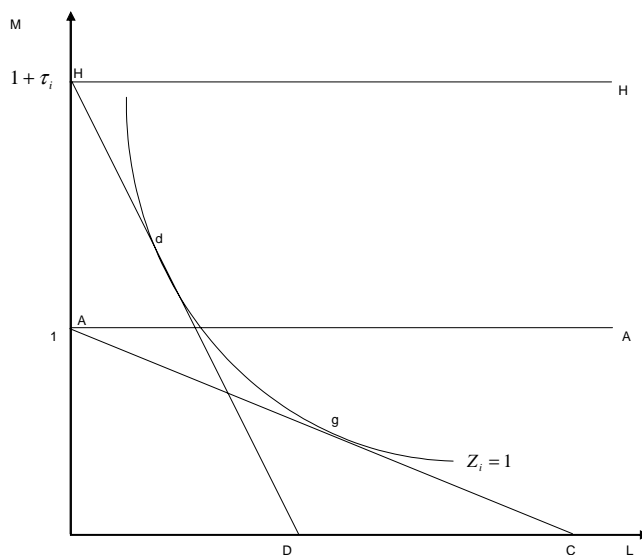


Figure 2.1: Negative Value Added at World Prices

Production before external liberalization is at point  $d$ . At domestic prices this is below the line  $HH$  so value added is positive at domestic prices. This just means that at domestic prices the cost of producing at point  $d$  is non-negative. With external liberalization the price of materials rises. Production at point  $d$  is now negative value added as it lays above the line  $AA$ .

At world prices efficient production is at point  $g$ . The problem is how to

induce adjustment from  $d$  to  $g$ , and how long it will take.<sup>17</sup> Notice that as long as production stays at point  $d$  value is being destroyed and enterprises cannot cover costs. If protection is maintained this may postpone adjustment (think of what happens under the current US steel tariffs) and corruption may increase.

Adjustment occurs in two ways:

- Increased efficiency shifts the isoquant inward, implying less of both inputs to produce a unit of output. This could occur if privatization is successful. But given how materials intensive production was this is insufficient. Of course privatization may make substitution more likely, especially if there are hard-budget constraints.
- Substitution of labor for materials. This depends on how rigid is the production process.

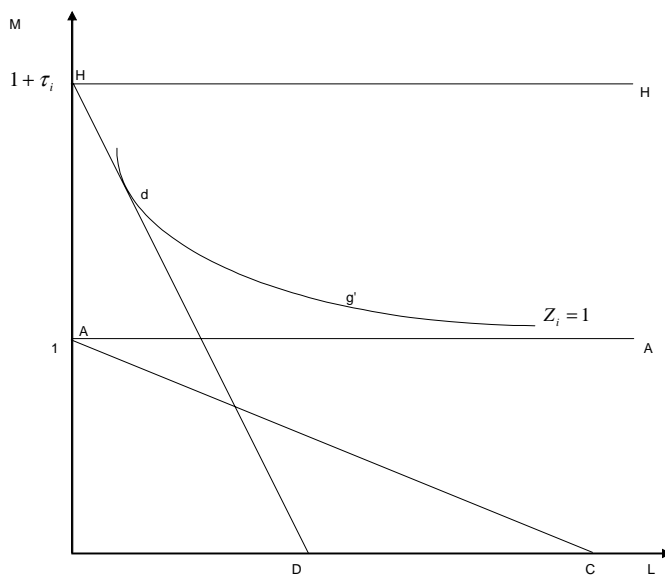


Figure 2.2: The Pessimistic Case

<sup>17</sup>Moreover, if the economy adjusts away from materials and towards labor the real wage may rise, causing the price ratio to rotate clockwise, making it steeper, and rendering even point  $g$  inefficient.



There is an even more pessimistic case. Suppose the isoquant actually looks like that in figure 2.2. In this case the production process for this good is such that production is never efficient at world prices.

A useful way to think about this is to think about a firm that is a price taker. AC for this firm exceeds the world price,  $P^*$ , at every output level. There are two reasons why:

- input combinations are wrong; at world prices too much of the expensive input is used, substitution towards an efficient bundle would shift down AC.
- internal organization is poor; even with the correct input bundles, the AC is too high. Privatization and other factors are needed to restore competitiveness.

How can production be value producing at domestic prices and value destroying at world prices. There are two basic ways to think about it. First, inputs may be used incorrectly. Domestic production may use too much energy and too little labor because the pre-transition prices subsidized energy. To correct this requires changes in input combinations. This may take time. Moreover, it requires the correct incentives. And it may be costly. It could be that given the opportunity cost of the funds required to restructure it is not worth it.

The second cause of NVA could be that even with the correct input bundles the efficiency of production is low (technology is poor or organization deficient). Transition economies produce low-quality manufacturing goods, so that once the country must face world competition it is no longer viable. In this case restructuring is needed to shift the isoquant towards the origin (shift the production function out). This type of change may also require proper incentives. Privatization may be a first step, but even that may not be sufficient. This suggests that some time may be needed to alleviate the problem.

Given the inherited production structure it could be the case that many (most) industries are not producing value added at world prices. This may call for temporary protection, especially if the industries do produce value at domestic prices.<sup>18</sup> But there are two problems with this. First, temporary tariffs reduce the incentives to restructure, unless their removal can be credibly committed to. This is hard to do. Second, temporary tariffs may induce an increase in corruption, especially as domestic prices for materials are, by assumption, below the world price.

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<sup>18</sup>Of course many industries in transition economies produce negative value added at both sets of prices.

Why bother then to produce? Just export the materials.<sup>19</sup> This is ironically made feasible by the very policy of domestic and external liberalization, which weaken controls.

Normally, one might think that a sufficient devaluation of the domestic currency would solve the problem of protected domestic sectors, because with a depreciated currency domestic manufacturing will be more competitive because of the increased cost of imports.<sup>20</sup> But if technologies are rigid and energy dependent (ala McKinnon's substitution model), then both material prices and manufacturing prices will rise in tandem; relative prices and hence (negative) profitability will be unaffected. This problem is exacerbated when a large share of the economy is in heavy industry and manufacturing. This may suggest a role for temporary protection until the viability of different sectors can be assessed.<sup>21</sup>

### 2.3. Exchange Rates

There are two questions to ask here. First, what type of exchange rate regime to have. Second, what should we expect to happen to the real exchange rate during transition.

#### 2.3.1. Regimes

Should transition economies have fixed or flexible exchange rates? Should they have a currency board. All have been utilized by different transition economies. There is no perfect choice.

- what matters is the whole range of policies. A monetary anchor with bad fiscal policy or subsidized credits will not be an effective regime

One of the arguments for a fixed exchange rate is to serve as a nominal anchor. We have seen that inflation is often a problem in the early period of transition. One

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<sup>19</sup>Many fortunes in transition economies were made this way, most notably in Russia where materials are abundant.

<sup>20</sup>This problem is made worse by the lack of effective financial markets. Transition imposes hard-budget constraints. Without financial markets these become cash-flow constraints. If liberalization causes negative cash flow for companies that are viable in the long run, then these firms may not survive.

<sup>21</sup>Hughes and Hare (1992) estimate the share of output in industries with negative value added (at quality adjusted world prices) at Bulgaria (50.8%), Czech Republic (34.8%), Hungary (34.6%), Poland (8.4%), and Soviet Union (22.3%).

reason why it is so hard to curtail inflation is that once prices start to accelerate expectations of future price increases reduce the nominal demand for money; in other words velocity increases. This means that inflation will rise even if the money supply does not grow any faster. To stabilize the price level it is important to change expectations. A fixed exchange rate may help change expectations, if the peg is *credible*. The question, of course, is how to make the peg credible?

One factor is that the peg be set at a level that is sustainable. What does that mean? At most basic it means that the economy will be competitive at that rate so that reserves will not decrease. If people feel that the central bank will run out of reserves at the current peg, they will expect future devaluation, and this will cause people to shift to other assets. A related issue is the initial level of reserves. Are these large enough to make investor believe that the peg is sustainable. But perhaps most important is the fiscal regime – if this is out of control a peg may be unsustainable.

If the peg can be sustained, and if inflationary expectations stabilize then inflation will also stabilize and growth can start. Many fast reforming economies, such as Poland, chose this path.

One may then ask why not always start with a fixed peg? One problem is that with capital mobility a pegged rate is a very risky business. Especially, if the underlying fundamentals are bad a fixed rate can lead to a currency crisis. And it is hard to exit – see Russia.

A second problem with a fixed rate is that if inflation is higher than in the rest of the world a fixed rate will become over-valued over time. This will reduce competitiveness, and it will require a devaluation. But this becomes a political issue.<sup>22</sup> A flexible rate eliminates this problem. The rate adjusts to market conditions. The problem with this type of regime is the lack of a nominal anchor. In Russia a flexible rate in the early period of transition was accompanied by high inflation. But given the fiscal situation could Russia have succeeded at pegging the rate, especially given capital mobility? Hardly likely.

A currency board is often a solution that adds credibility to a fixed rate. One of the problems, however, is that with a currency board there is no lender of last resort, and this can be a problem with underdeveloped financial markets. In Estonia a currency board has been a great success. Foreign-owned banks can provide the liquidity that is needed in such crises. But it is not clear that this could work for very large countries. And how do you exit a currency board?

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<sup>22</sup>And in some countries, such as Russia, it can become a criminal issue as well.

### 2.3.2. Real Exchange Rate and Real Appreciation

All ex-STE's enter transition with highly depreciated currencies, and very high real exchange rates. The real exchange rate is a measure of relative price levels, and is defined as:

$$q = \frac{P^*e}{P} \quad (2.8)$$

where  $P^*$  is the foreign price level (say the US),  $e$  is the nominal exchange rate (say the number of rubles per dollar), and  $P$  is the domestic price level. If trade were the only reason why people held national currencies, and if all goods were tradeable, then the exchange rate would adjust so that  $q = 1$ ; in other, words the real exchange rate would equate the domestic and foreign prices of goods. This is the notion of *purchasing power parity*. Of course, there are other reasons to hold national currencies besides the need to trade. Most notably, there is an asset demand for currencies, and this can cause the real exchange rate to deviate from its purchasing power parity.

The higher the real exchange rate, the more competitive are domestic products with respect to foreign products. The legacy of the past is that domestic production is not very competitive with foreign production. Notice that the real exchange rate depends on movements in their price levels, and on the exchange rate. If the ruble depreciates at a faster rate than Russian inflation then the real exchange rate will appreciate. When citizens flock to foreign currency as a hedge against domestic inflation the ruble depreciates and  $q$  rises rapidly.

Prior to liberalization transition economies typically have over-valued currencies. An over-valued currency implies that imports are cheaper than what is consistent with purchasing power parity. Such an exchange rate allows for imports to be rationed to favored customers, but it is a tax on exports. It is also a means of extracting rents from tourists (and favoring officials who can travel). The cost of an overvalued exchange rate is the loss of reserves that this implies; in a market economy an over-valued exchange rate leads to greater demands for foreign exchange and reduced supplies. In a market economy an overvalued exchange rate cannot be preserved; eventually there must be an adjustment.

In a planned economy an overvalued currency is much less consequential. Since exports and imports are planned, the exchange rate is fundamentally irrelevant. There is no problem of loss of reserves because trade is not made on the basis of prices. The overvalued exchange rate is primarily a tax on tourists, and a means of rationing foreign exchange.

With external liberalization the overvaluation of the currency must cease. Several forces work to cause nominal exchange rates to appreciate.<sup>23</sup>

- *monetary overhang*: residents hold excessive stocks of domestic currency, so when the national currency becomes convertible, they flock to foreign currencies; this causes the domestic currency to depreciate.
- *pent up demand for foreign assets*: under planning agents were constrained in their asset holdings, forced to hold only domestic currency; after liberalization they may wish to diversify; the previously repressed demand for foreign currency is now satisfied.
- *inflationary expectations*: if agents believe that the domestic currency is likely to depreciate due to lax monetary policy, then agents will try to hold domestic currency. This explanation is essentially one of lack of credibility of the monetary authorities.
- *abrupt trade liberalization*: since this is a shock, exporters may find it very hard to adjust to the new environment rapidly, while consumers may flock to imports; this will cause an excess demand for foreign exchange.

Notice, however, that in the long run the tendency should be for movement in the opposite way. For example, if transition is successful we would expect to see capital inflows. This is natural, as the rate of return to capital in transition economies ought to be high compared to developed economies. This should relax foreign exchange constraints and cause appreciation of the currency. This is not a mixed blessing, however, because it causes either unwanted appreciation (with flexible exchange rates) or increases in the money stock (under fixed exchange rates) which can cause inflation. More on this later.

Given the overvaluation of currencies prior to liberalization one of the first steps in external liberalization is a huge depreciation of the currency. This is needed to prevent a run on reserves. As Sachs (1993: 51) relates, many in Poland believed that the currency could not be made convertible because Poland had nothing to sell. This is nonsense, of course; every country has a comparative advantage at something. The real question is how much must the domestic currency depreciate so that reserves will stabilize. That is why an initial depreciation is necessary. All transition economies did this, but often the initial depreciation was

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<sup>23</sup>And appreciate at a faster rate than the price level increases.

insufficient.<sup>24</sup> The reason is that in the early stages of transition there are few assets to hold, and with fear of inflation there is an asset demand for foreign currency that causes the domestic currency to depreciate even faster.<sup>25</sup> The extent to which real exchange rates depreciated in transition economies is evidenced in the low value of dollar wages in these economies.

Continued depreciation, due to asset demand, is clearly what happened in Russia, especially in the first half of 1992. Fear of inflation led to a flight from the ruble, as did capital flight, and this caused rapid further depreciation. As a consequence the real exchange rate rose dramatically, and by the summer of 1992 the ruble was tremendously under-valued compared with purchasing power parity.

- The ruble appreciated further as inflation was stabilized via a managed exchange rate regime: the corridor. The problem for Russia is that there was no exit strategy from this policy. Debt grew until it was no longer affordable.
- Eventually the real exchange rate appreciates in all transition economies because the rate of depreciation of the national currency falls below that of inflation.
- As long as inflation is higher in transition economies than in western economies there is a push to nominal depreciation.
- But as citizens become more confident of the future, and as they grow more willing to hold domestic currency, this depreciation rate is slowed down. Hence real appreciation occurs. This has been common in all transition economies, as is evident in the table. Notice, however, that the real appreciation is greater in the economies that stabilized more rapidly.

Along with depreciated real exchange rates transition economies have rather low wage costs at the start of transition. This can be seen in dollar comparisons of

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<sup>24</sup>In Poland the initial depreciation was extensive; the devaluation overshot the black-market rate. This meant that the inflation effect was greater than perhaps necessary, but the added competitive advantage gave greater credibility to the peg. The zloty maintained its value until May 18 of the following year. There is some reason to believe that the timing had to do with the wait for debt relief from the US.

<sup>25</sup>If there were no asset demand for currency, and if all goods were tradable, then PPP would require  $q = 1$ . But these conditions do not hold, so there are two effects on the exchange rate; one from the goods market and one from asset markets.

wages, as in table 2.3. It is important to note, however, that in former STE's wage costs exclude non-wage benefits workers receive, that are typically larger than in western economies. Moreover, differences in wages reflect productivity, so that not all of the difference is a competitive advantage.<sup>26</sup> Nonetheless, it is the case that undervalued currencies have allowed transition economies room for restructuring and protection against imports. If imports have nonetheless come to dominate markets it is due to a lack of restructuring. And the undervalued currencies have enabled various countries to maintain their pegs, and in the Russian case for the stability of the corridor.

Country	Increase from trough or first available data	Year of Trough or first available data
Bulgaria	65.1	1991
Czech Republic	90.4	1993
Estonia	225.2	1993
Hungary	42.7	1990
Latvia	75.5	1994
Lithuania	558.3	1992
Poland	175.5	1990
Romania	124.8	1990
Russia	201.1	1992
Slovak Republic	61.1	1993
Slovenia	64.0	1991
Ukraine	173.0	1992

Source: Halpern and Wyplosz 1998a

Figure 2.3: Real Appreciation (Percent Increase in the Dollar Wage)

- What is apparent in figure 2.3 is the extent of real appreciation that followed some stabilization (see figure 3.1 as well). This is despite a wide variety of exchange rate regimes.
- This is to be expected: the initial real depreciation is due to flight from currently and availability of alternative assets. Economic reform makes in-

<sup>26</sup>Moreover, in Russia wages are becoming increasingly smaller shares of national income, due primarily to taxation. Between 1992 and 1996 the share of wages in money income of the population fell from over 70% to under 40%.

vestment in the domestic economy more profitable, hence it should raise the foreign currency price of domestic assets.

- The decline in inflation only adds to this process.

Of course the real problem for liberalizing economies is *access* to foreign markets.

**Dutch Disease** Notice that comparative advantage is also an issue when it comes to competitiveness of domestic manufacturing. An economy will always have a comparative advantage in the production of something, of course. In Central Europe, which is primarily a resource importer, the comparative advantage is in manufactured goods. Of course, as we have seen, the quality of these goods is low. But with sufficient depreciation of the exchange rate the economy will nonetheless be able to compete. The depreciated exchange rate, and hence the increased cost of imports reflects the low level of productivity of the country at the onset of liberalization. Some evidence of this is seen in the low level of dollar wages.

The story is different, however, for an economy with abundant natural resources. It could be that a country like Russia, which is a low cost producer of natural resources and a high cost producer of refined products simply cannot produce the latter competitively, or at least not at the initial point of liberalization.<sup>27</sup> Exports of energy and other resources could crowd out other exports at any reasonable exchange rate. These exports provide the country with foreign exchange which helps keep consumption from falling too rapidly. But the cost is the threat to domestic manufacturing which is non-viable in the now open economy.

In effect, Russia suffers from a "Dutch Disease" problem. This occurs when a country suddenly experiences a resource boom. The increase in present and future exports increases the real value of the domestic currency. This means that the price of imported manufacturing goods decreases relative to domestic prices. Unless domestic costs fall commensurate with the real appreciation, the manufacturing sector becomes less, or completely un-, competitive. The key issue is whether wages can adjust downward sufficient to offset the real exchange rate appreciation.

In Russia the standard Dutch Disease problem did not manifest initially for two reasons. First, inflation was so rapid in 1992 that real wages could decrease

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<sup>27</sup>In Central European economies, which lack the capacity for large resource exports, the currency must depreciate sufficiently to allow the economy to balance its trade.



quite rapidly. Second, the lack of any assets *except foreign currency* to hold in the inflationary conditions led to a sharp real depreciation of the currency, affording Russian industry a good deal of protection.

This is rather a mixed sort of grace. The protection afforded by a depreciated real exchange rate arises precisely because of macroeconomic instability. Once, inflation is brought under control the real value of the currency will start to appreciate. This effect will be exacerbated, as was the case in Russia, if inflation stabilization is achieved through the use of a fixed exchange rate; a so-called *nominal anchor*. With the exchange rate fixed the higher domestic rate of inflation (albeit declining) causes further real appreciation. This means that the competitive position of industry is likely to be jeopardized.<sup>28</sup>

### 2.3.3. Counter-Arguments to Protection

Against the protection argument it should be noted that foreign trade is the best source of competition for domestic producers. If imperfect markets are a problem then opening up the external market is very important. In practice transition economies have imposed relatively low tariff levels, that are surprisingly uniform. Average tariff rates in the EE-six are between 10 and 20%, with a small tendency to rise to offset Balance of Payments pressures.<sup>29</sup>

Protection also raises the cost of importing equipment. It may be that the best way to modernize is to import technologically advanced capital equipment. With high tariffs, however, this avenue is weakened. First, domestic producers have less incentive to upgrade because with their domestic markets protected they are under less competitive pressure. Second, the cost of imports is increased.

This points to a trade-off. Competitive pressure, enhanced by foreign competition may be a necessary step for inducing adjustment of domestic manufacturing. But if this pressure is too great in the early stages of transition it could drive manufacturing out of the economy, or require large subsidies to keep production viable. If there is a strong possibility that this inheritance can be made viable, it may be worth some temporary protection to save it.

This is a slippery slope, however. Notice that the real question is not whether with sufficient investment an enterprise can be made competitive. In effect, this is

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<sup>28</sup>One could further add the effect of successful privatization. If this creates assets that domestic residents prefer to hold, this will increase the exchange value of the currency. If privatization increases foreign investment, the effect on the exchange rate will be further enhanced.

<sup>29</sup>One reason why the tariff rates can remain low is that the depreciated currencies of EEFSU afford some protection.

always true. With sufficient investment you can always upgrade a plant enough. That level may require bulldozing the plant and building an entire new one. The real question is whether the benefits of such investment exceed the costs. Those resources could go to alternative uses. The question is then whether the country has a long-term comparative advantage in the production of those goods. *How long is the transition to competitiveness?*

#### 2.3.4. Monetary Regime

All transition economies experience depreciation. The question for policy is whether to adopt a new peg with a depreciated nominal currency or to allow the market to determine its value in a flexible exchange rate system. Transition countries have followed both paths. There are a multitude of arguments on this issue. The key advantage of a peg in the case of transition is to create a *nominal anchor*. When countries try to stabilize from a period of high inflation there is a need to create something to which expectations can be anchored. In a high-inflation country domestic residents flee from the domestic currency, which further exacerbates inflation. By creating a nominal anchor, the government may cause agents to switch back to domestic currency, thereby speeding the stabilization process.

Notice, however, that a nominal anchor is only effective if the conditions which cause the nominal exchange rate to decline are arrested. The primary cause of exchange rate depreciation in transition economies is rapid domestic inflation, due to excessive money creation. If this is not curtailed, an exchange rate peg will become unsustainable.

### 3. Disinflation and Accession

Transition has been associated with hyperinflation, disinflation and moderate inflation. Was hyperinflation inevitable?

- flight from money due to collapse of governments
- liberalization and relative price adjustment

Now the question is are inflation rates in CEE's converging to Euro levels? This is important for accession economies, since they must adopt the euro. The reason this is interesting is that inflation might be inevitable in transition due to structural adjustments, income convergence and Balassa-Samuelson effects.

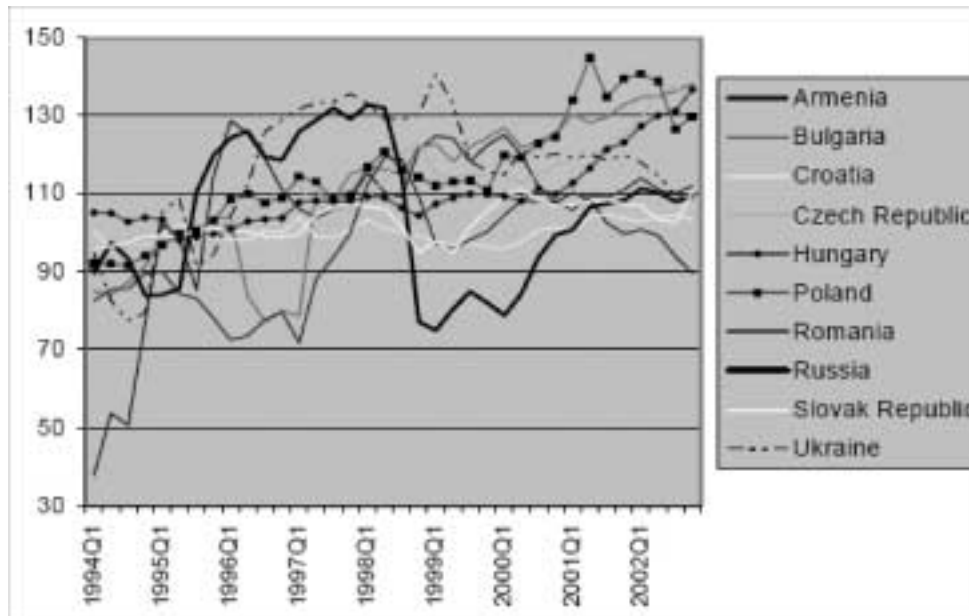


Figure 3.1: Real Exchange Rates in Transition

### 3.1. Balassa-Samuelson

The Balassa-Samuelson effect offers as an explanation the differences in productivity growth between the traded and non-traded sectors.

- Starting point for the analysis is the observation that productivity growth in the traded goods sector is usually faster than in the non-traded goods sector. The reasons for this in the transition countries are straightforward. With the freeing up of market controls and the opening of the economies, the sectors that were most quickly exposed to competitive pressures were the traded goods sectors. That is, it is assumed that the law of one price holds for traded goods (but not for non-traded goods).
- As productivity in the traded goods sector increases, wages in that sector go up as well. It is assumed that labor is to some extent mobile across sectors, and therefore wages rise in the non-traded goods sector (such as the service sector and government) as well. Higher wages in the non-traded sector are possible only if the relative price of non-traded goods increases. As wages

increase throughout the economy more rapidly than average productivity, the overall price level increases as well.<sup>13</sup> The resulting inflation leads to an increase in the real exchange rate.

I have already showed you that currencies have appreciated in real terms since the early transition. Is this due to Balassa-Samuelson? If so, does this mean that further convergence means that inflation will be higher in the accession countries than in Europe as a whole? If so, does this mean that adopting the euro too soon will mean recession in these countries? Adopting the euro means fixing the exchange rate, so faster inflation cannot be the response to real appreciation. If prices are sticky downward this could cause a recession.

- Because income gaps remain and the accession countries are growing faster than Europe as they catch up this could be a possibility.
- The empirical evidence, however, seems to indicate that only about 1-2% of inflation in the accession countries can be assigned to Balassa-Samuelson, the rest is due to monetary and fiscal policy
- Another important aspect of convergence is the reduction of the wage gap, where the scope for catch-up exceeds the income levels. Gross monthly wages calculated on nominal exchange rates vary between 14,3% and 28,3% of the EU average, and only in Slovenia exceed half of it (50,7% in 2000).
- Real purchasing power of wages is higher than indicated by the pure relationship between dollar wages due to the lower non-tradable prices and price level. Calculated on PPP in 2000 average gross monthly wages in manufacturing in the six pre-accession economies were by 27,5% higher compared with 1996, and the average of monthly gross wages of these economies compared to EU average increased by 7 percentage.
  - Why is the wage gap closing so slowly? Currency crises and macroeconomic slowdowns have led to sizeable real wage adjustments
  - The big future question is whether the closing of the wage gap mirrors productivity growth or exceeds it.