Price reform and welfare: a transition model with queuing

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Abstract. We develop a general equilibrium model of an exchange economy with relative price distortions, where markets for consumption goods are cleared by resource-wasting queues. In general, greater distortions in relative prices lead to lower social welfare. We show, however, that in some cases a free market equilibrium may not exist if subsistence needs for commodities such as food are sufficiently high. In such an instance, removing price distortions will actually lower aggregate welfare.

1. Introduction

The relative price distortions common in the Soviet-type economies of Eastern Europe led to widespread misallocation of resources and shortages of consumer goods. Queuing for shortage goods was a part of economic life in all of the pre-reform countries of Eastern Europe, but had not successfully been addressed by government efforts. Despite prevalent price reforms, these countries have continued with selected wage and price controls. Consider that in Bulgaria the "big bang" price reforms in early 1991 covered only about 70% of retail prices, and the Czech liberalization near the same time retained wage controls (Borensztein et al. [1], pp. 6, 9).

Economic research has led to many very general treatments of price distortions — such as those by Nguyen and Whalley [7, 8], Deacon and Sonstelie [4], Stahl and Alexeev [11], Dreze [5], and Polterovich [9] — but it would be difficult to extend them to other distortions prevalent in Eastern Europe.

Recent studies have often taken a broader approach to the problem of transition and have included more of the relevant institutional details. For

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example, a partial-equilibrium analysis of incomplete price reform is presented in Murphy, Shleifer, and Vishny [6]. In their model, firms are required to sell output of intermediate goods to the government at state prices, but may sell additional output on the free market. This partial reform leads to diversion of inputs from certain sectors of the economy, and to lower social welfare.

Boycko's [2] general equilibrium model is also used to argue for a "big bang" approach to reforms. He shows that increasing real wages may cause more queuing when pervasive shortages have not been dealt with. The time required for additional queuing leads to lower labor supply and further exacerbates the shortages, leading to lower social welfare.

A further interesting result presented by Boycko is that certain parameter choices may lead to non-existence of equilibrium. In that case, the extreme shortages can no longer be mitigated by consumer queuing, leading to continued excess demand and failure of equilibrium. In the model presented below, we find that with sufficiently high subsistence requirements, queuing will not ensure the existence of equilibrium. As in Boycko, we find that "minimum claims on consumption are greater than the minimum level of [supply]" (p. 917).

Subsistence issues remain important in the transition economies since they have experienced sharp economic contractions during the reform process. In Poland, for example, measured output dropped by nearly 30% shortly after the "big bang" of reforms took place on 1 January 1990 (Williamson [12]). While consumption certainly dropped by a smaller percentage, many people found themselves worse off (Williamson [12]). The adjustment has been made more difficult by the fact that many of the most severe relative price distortions in the centrally planned economies were those affecting necessities.

We propose a general equilibrium model of an economy with price distortions. The model describes an economy with two goods, allowing us to look at distortions in relative prices – a more difficult and interesting problem than a distortion in the absolute price of a single good. In the simple exchange model below, the price distortions lead to excess demands for goods, resulting in resource-wasting queues. We find that in the exchange model subsistence requirements may lead to non-existence of equilibrium similar to that presented in Boycko.

2. The model

We consider consumers who must satisfy their demands for consumption goods and leisure by participating in government controlled markets. A large number of heterogenous consumers exist in this economy. These consumers are differentiated by endowments of goods, with the total number of households of each type normalized to unity. The first type of consumer is endowed with the entire supply of composite good \( x \), while the second type is endowed with the entire supply of composite good \( z \). All endowments are inelastically supplied to the government, and then consumption goods are purchased at government-set prices. We consider good \( z \) to be some bundle of goods such as "food and housing", while good \( x \) is

\[1\] Stahl and Alexeev [11] provided general equilibrium existence proofs for a centrally planned economy with fixed prices where output is rationed by queuing. They further consider the introduction of black markets, and conditions for the black market economy to be a Pareto improvement over the economy without illegal markets.