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# An econometric model of the Russian Federation<sup>☆</sup>

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## Abstract

This article presents a new model of the Russian Federation and applies it to the recent crisis. It examines a range of policy options designed to improve the current economic situation. The objective is to show that the decline in output can mainly be explained by a fall in the potential output that has rendered the economy supply-side constrained. More precisely the Russian crisis may be explained by capital stock obsolescence that has rendered enterprises unable to face international competition. Hence, the optimal policy should not focus on fiscal consolidation alone, but, rather, to achieve this while undertaking supply side reforms aimed at rebuilding the capital stock. © 2000 Elsevier Science B.V. All rights reserved.

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## 1. Introduction

This article presents a new model of the Russian Federation, which has been developed at the Economic Expert Group of the Russian Ministry of Finance as part of a Tacis programme from the European Expertise Service. Structural change

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is the key to recent economic developments in Russia, as in other Eastern countries. In this article the objective is to provide a macro-model for the Russian economy that fully integrates this structural change. The most important feature of the Russian economy is the sharp declining of output, e.g. GDP growth was  $-4.3\%$  in 1995,  $-3.6\%$  in 1996,  $0.83\%$  in 1997, and  $-4.5\%$  in 1998.<sup>1</sup> Its level is now only 57% of its pretransitional level. This is a larger fall than was experienced in the other transitional economies where the average fall was approximately 20% of pretransitional levels.<sup>2</sup> Following this fall, public debt is now approximately 125% of GDP, and has become unsustainable. We argue that output has declined mainly because of a sharp decline in potential output. Investment has fallen by 34%.<sup>3</sup> The capital stock has become older: compared with 1970 the average age of capital equipment rose from 8.4 to 12 years in 1992 and 14 years in 1995. Only in the energy and ferrous metallurgy sectors did investment exceed depreciation, in contrast to manufacturing as a whole where the capital stock has become increasingly obsolete. The condition of the capital stock has rendered firms unable to face international competition. Moreover, with operations with GKO and OFZ (short-term government bonds) the Russian banks have provided little investment into industry. This decline of investment and capital stock obsolescence has led to the economy facing a supply-side constraint as the effective capital stock has fallen.<sup>4</sup>

The recent crisis was a direct result of this structural deficiency. The collapse of the ruble has led to a decline in imports of more than 50%. Exports have remained constant, but the net effect has been largely trade surpluses. Export have failed to grow, as we might have expected, due to the inability of domestic supply to face international competition. This emphasizes the importance of investment, both to expand the amount of capital stock and also to improve its quality. As an example, Gavrilentov et al. (1999) forecast that devaluation could lead to a sharp increase of exports. They recognize that this may be too optimistic as it depends on the capacity of the capital stock to expand output to meet the potential new demand. In our model such an increase appears in the very short-term (mainly because of reallocation of resources towards exports), but in the long-term the low level of potential output actually reduces exports.

The policy conclusion of his paper is that to expand output we must first expand the capital stock. Basically this policy advice emphasizes the role of increasing public intervention, either to promote investment, or to invest directly, when the private sector cannot invest itself, or when it is helpful to private investment. In fact, due to the supply-side constraint, this model shows that contrary to a standard

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<sup>1</sup>Source: Goskomstat.

<sup>2</sup>Moreover most of the eastern countries have also encountered an increase of output after a sharp recession, while Russia still faces a decline (see Blanchard, 1997).

<sup>3</sup>Source: Goskomstat.

<sup>4</sup>It is also worth noting that this approach is rather close to the one of Blanchard (1997), which explains the transition period with a two-sector model, where the economy has to move from a structure with a dominant sector with low-productivity towards one with high-productivity. Here we consider a simple aggregate sector, where the low-productivity is reflected with capital stock obsolescence. In both cases the convenient economic policy has to focus on how to implement newer equipment.

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