Chapter 14

Economic Performance and Environmental Quality at the Regional Level:
An Approach to Modeling Depletion Adjusted Macro Aggregates for the Czech Coal Mining Regions

Egor Sidorov
Jan Evangelista Purkyně University, Czech Republic

Iva Ritschelová
Jan Evangelista Purkyně University, Czech Republic

ABSTRACT

The chapter describes an approach for the calculation of coal depletion adjusted regional macroeconomic aggregates for the coal mining regions of the Czech Republic. In the first part of the chapter, the concept of depletion adjusted macroeconomic aggregates is discussed. The next two parts provide a description of the coal mining regions as well as the position of the coal mining industry in the Czech economic structure. The final part of the chapter describes the methodological approach to resource rent and depletion modeling. After that, the coal depletion adjusted macroeconomic aggregates are presented, followed by our conclusions.

INTRODUCTION

The System of National Accounting (SNA) is primarily focused on measuring economic performance and the activity of economic entities at national and regional, as well as sector and industry, levels. Being formal measures of economic activity, conventional economic performance indicators may be quite misleading, since they don't give a comprehensive image of the quality parameters of growth. One of the issues is the

relationship between economic activity and the environment.

Similarly to conventional produced economic assets accounted for in the conventional SNA, natural assets generate a flow of services to human society, and therefore in many respects act as economic capital. In this way environmental depletion and degradation processes are very similar to fixed capital consumption since they reduce the future service generating capacity of natural assets. Conventional economic performance indicators, however, include income generated by non-produced natural assets while at the same time almost totally omitting the economic costs of their depletion and degradation.

The System of Integrated Environmental and Economic Accounting (SEEA), among others, represents an attempt to overcome the above mentioned inconsistencies and provide a framework for the elaboration and measurement of environmentally adjusted economic performance indicators. The SEEA framework is capable of accounting for costs of environmental depletion and changes in environmental quality (i.e. degradation), and therefore eliminating factors that inflate the income measure.

With regard to the environmental issues of the specific territory, Gross Domestic Product (GDP) is a more suitable indicator for environmental adjustment purposes than Gross National Income (GNI), since the former refers to the geographic location while the latter refers to the residential status. Furthermore, economic activities causing depletion and degradation of natural assets are not distributed evenly: with a view to the geography of these activities, it's usually the case that several regions of the country indicate levels of the environmental issue above the national average. This is the case in the Czech Republic (CR), where the traditional heavy industries are situated in regions that are relatively rich in natural resources. On one hand, heavy industry stimulates depletion of economic natural assets. On the other hand, these regions are significant polluters with outstanding

levels of CO, NO_x, SO_2 emissions contributing to degradation of both economic and environmental natural assets.

Under these circumstances the concept of depletion adjustment of conventional macroeconomic performance indicators is also applicable at the regional level. National statistical offices prepare a number of regional economic performance indicators such as regional Gross Domestic Product statistics, as well as respective environmental data. With a view to all above mentioned facts, our present study will be focused on modeling the depletion adjusted economic performance macro aggregates at the regional level. One should also mention that concerning the complete environmental adjustments, including natural capital damage estimations, the regional perspective, however, is less feasible, since pollution can migrate, and therefore territorial limits are not as explicit as in the case of depletion.

BACKGROUND

The generally recognized definition of sustainable development was published by the World Commission in 1987, and is formulated as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). Paraphrasing the Hicksian dynamic approach to income (see Hicks, 1939), one can say that (sustainable) income is the maximum value that it is possible to consume during a period and still expect to be as well off at the end of the period as at the beginning. According to utilitarian theory, the capital stock available to a nation generates income (or a flow of utility that actually "meets the needs" of the society). In this respect sustaining the capital stock per capita would maintain the same per-capita utility flow for the present and future generations, or in other words, would lead to sustainable income.

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