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TITLE

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Conclusions

Towards a new resource economics

Raimund Bleischwitz, Paul J.J. Welfens and ZhongXiang Zhang

Drawing conclusions from the diverse topics addressed in this book is not an easy task. One straightforward conclusion is that resources are back on the agenda—partly because of their function for economic fundamentals such as technological progress and long-term prosperity, partly because deficits of raw material markets are intertwined with deficits of financial markets, and partly, combined with a more sustainable management of natural resources, because the effectiveness of response options to new challenges such as climate change increases.

This all goes beyond the traditional scope of resource economics, which has focused on extraction and the supply side. It leads to many fascinating branches of contemporary economics such as international economics, environmental economics and innovation economics, to mention but a few. Our book has been written to collect a few pieces of what can be labelled ‘new resource economics’: an emerging sub-discipline that has resources at its centre of gravity, clearly aligns with other fields of economics, and transcends the borderlines of geology, geography, material science, recycling and waste, as well as other parts of social sciences.

The first part of this book sheds new light on the issue of scarcity: less of a problem for the supply of resources in general (as Chapter 1 reveals), but relevant in the dimension of global demand forecasting (Chapter 2) when relative shortages match with regional constraints and environmental consequences. A particular and new problem is likely to arise from critical metals (Chapter 5), where a critical supply situation coincides with political instabilities in key locations of the value chain and vulnerability of key industries. These issues

culminate in the reliance of sustainable technologies on some critical metals: energy-efficient appliances, solar collectors, fuel cells and ICT depend on the ability of raw material markets to provide a rapid growth of copper, platinum and other metals. Thus, the prevailing distinction between non-renewable versus renewable resources (see Introduction) becomes increasingly blurred: analysis on scarcity and substitutability needs to go beyond geological supply and consider the industrial options downstream, i.e. the life-cycle perspective of production and consumption; furthermore, research also needs to assess the environmental dimension, regional patterns and innovation pathways.

Chapters 3 and 4 highlight the regional patterns of growth and trade in relation to natural resources in the first part of our book. A key conclusion here is that practices of good governance and social capital development outweigh the relative advantage of endowments in natural resources, which again favours a strategy of de-linking the use of those assets over time from further growth of human and social capital. Physical trade balances, introduced in Chapter 4, may be a helpful device for international economic analysis on this topic, including an analysis on a possible shifting of environmental burden between countries.

Part II contributes new findings to capital market analysis and growth, theory of capital markets and business operations. The findings in Chapter 6 give a theoretical basis for some of the empirical literature, with a focus on the links between stock market pricing and innovation dynamics. Despite clear signals to lower demand for natural resources because of the current financial crisis, Paul Welfens's analysis concludes in a more sceptical manner: if expectations diminish with regard to a long-term price increase for oil and other resources, the innovation dynamic may slow down and call for better coordination of decentralised efforts, which can be considered as a pledge for macroeconomic policies. This business behaviour analysis mirrored in Chapter 9 is that, as long as enhanced material efficiency is far from being acknowledged as a key driver for improving competitiveness, more awareness building and, possibly, policies are needed to exploit the potential savings and stabilise expectations towards long-term innovation options. Theories of capital and growth accounting obviously should consider related findings, as Chapters 7 and 8 indicate.

Chapter 7 demonstrates that technological catch-up across countries can be attributed to large natural resource rent fluctuations during the 1970–1990 period while the absence of natural resource rents in the last part of that period explains the decline of productivity improvements and calls for exploration of such factors as social capital and institutional quality. In that regard, Chapter 8 can be seen as a milestone towards a more complete understanding of productivity and capital that incorporates natural resources in favour of capital augmentation.

While these contributions will enrich the theory of a new resource economics,

Part III adds the empirical dimension on resource use across countries over time. The two country studies, on Finland (Chapter 11) and Greece (Chapter 12), highlight two very different countries: Finland tends to be seen as champion in competitiveness and productivity, while Greece is more at the bottom of European economic development. Both countries, however, are resource-dependent economies, with a strong mineral industry in Finland and a strong lignite mining industry in Greece. The two papers reveal the impact of different drivers on the long-term performance in resource productivity: policy and public awareness in Finland, service industry and food in Greece. It is worth noting that both methodologies employed have their merits. A combination of econometric and historical analysis, as in the case of Finland, may be a good combination to figure out complex actor-oriented developments, while input–output analysis, as in the case of Greece, has proved to be a useful tool for structural change across industrial sectors and goods of final demand.

Europe as a whole can do better, as the conclusions in Chapter 10 suggest. Steger and Bleischwitz's comparison across 27 EU countries (or the EU-15) identifies a few top performers as well as the overall positive correlation between direct material productivity and competitiveness. The EU, however, is not yet on track towards the aim of improving resource productivity at a minimum rate of 3% annually. Even worse, many current public expenditure programmes to combat the financial crisis—investments in new roads and highways as well as incentives to purchase new cars—will probably reduce the dynamics of increasing resource productivity in the near future. Clearly, in-depth research on drivers for resource productivity will need to support such analysis. This task is designated to be ready for the next international colloquium in September 2009.

The last part of this book underlines the overwhelming importance of emerging economies in the world economy as well as for raw material markets. Chapters 13 and 14 not only add insights on the actual trends and policies in major countries such as China and India, but also help us to formulate key questions on their development paths: will emerging economies act as lead markets for technologies that enhance resource productivity (as parts of Chapter 14 suggest), or will they continue to have a strong supply-side bias and shape international markets (as parts of Chapter 13 conclude). Can these countries leapfrog towards a low carbon economy with decentralised energy systems and resource-efficient technologies, or do they follow prevailing trajectories based on energy-intensive industrialisation? Seen from an innovation perspective this also points to the potential for system innovation versus incremental innovation. In fact, however, both development paths are likely to be pursued. Hence, any new resource economics will have to analyse the driving forces for using resources in emerging economies as well as the new geography of trade and sustainability pathways. A resource policy (as designed in Chapter 15) thus goes far beyond any tradi-

tional raw material supply policy; it aims at sustainable resource management over the whole life-cycle, addresses negative externalities and market barriers, and develops suitable visions with ensuing incentives on how economies can innovate towards dematerialisation. In such a perspective, savings in material purchasing costs are a first pillar in a comprehensive economic strategy focusing on system innovation for increasing resource productivity.

Open issues remain on the agenda. The alignment of any new resource economics with innovation patterns (national and sectoral innovation systems, leapfrogging and possible rebound effects), international economics, visions and policies will be addressed in the next Wuppertal international colloquium in September 2009.

