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Brian Wixted

# Innovation System Frontiers

Cluster Networks and Global Value

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*To Bonnie  
For her love and encouragement.*

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Brian Wixted

# Preface

The concept of *innovation systems* has come to dominate the discourse on technological innovation over the last two decades of research. This book is devoted to pushing at the *frontiers* of this area of knowledge both metaphorically by contributing new theoretical and empirical insights, and also through its content focus on the geographic frontiers that have been fixed within the literature to delineate one ‘system’ from another.

Thus, my interest here is in *frontier* as boundary, border, and jurisdiction: politically, industrially and geographically. The overarching theme behind the research reported here is the basic concept that at least one sub-field of the study of innovation systems should focus on a multi-spatial framework which facilitates analysis of how places are connected to one another.

A strong finding on innovation is that it is a systemic property of groups of businesses, not lone inventors. However, it is common to restrict systems to nation states, sub-national regional political jurisdictions or intra-country industrial clusters. These *clusters* of activities are not just conceived as national, but are often analysed as enclaves with little reference to their relationships with the rest of the world.

This book attempts to push at these frontiers and by using large inter-country input-output datasets to show the extent of international networks of production. Results presented here indicate that some technologically complex products involve a high degree of component transfer across borders. When these production systems are further examined (auto in chapter seven, civil aerospace in chapter eight and ICT in chapter nine) it can be shown that international cluster to cluster relations remain fairly stable across time with new nodes (clusters) often being included into existing networks rather than displacing existing ones. However, the degree of dependence on imports is growing.

The findings on the patterns and characteristics of these external networks (or cluster complexes as they have been called here) bear a striking similarity to the findings of within-cluster dynamics.

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