

# Core Limit Theorem for Economies with Production\*

HIROMI MURAKAMI<sup>†</sup>

KEN URAI<sup>‡</sup>

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## Abstract

In this paper, we treat a general core limit argument for economies with *production*. We base our settings on the traditional *coalition production* (CP) approach (e.g., Boehm 1974, Hildenbrand 1974, Greenberg 1979) and integrate the *general equilibrium* (GE) approach (Aliprantis et al. 1987, Haller 1991, Xiong and Zheng 2007). Even though the latter approach enables us to get a core equivalence result incorporating *shareholding* structure and *control rights* of existing firms, it uses a deviation principle having the *interdependency problem* that is not compatible with the standard core theoretic framework. By considering an *admissible* class of *production-decision groups* for existing firms, we show a general kind of core equivalence result under the structure of firms and their control rights. Our deviation principle is compatible with the traditional CP approach, and brings about a core convergence result of the weakest type, in the sense that for full control rights, we take all stakeholders into consideration. Since our approach do not specify agents' shareholding rates, the core convergence argument is, in general, to the dividend equilibrium which is almost equivalent to the competitive equilibrium (the sum of dividends do not exceed the sum of profits for all *self-sufficient groups* for their status quo allocations as long as there are no satiated agents). We also study how the GE approach (and the result of Xiong and Zheng 2007) can thoroughly be integrated in a compatible way with the CP approach.

KEYWORDS: Production Core, Core Equivalence Theorem, Satiation, Dividend Equilibrium, Control Rights of Firms

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<sup>†</sup>School of Business Administration, Kwansei Gakuin University, E-mail: hmurakami@kwansei.ac.jp

<sup>‡</sup>Graduate School of Economics, Osaka University, E-mail: urai@econ.osaka-u.ac.jp