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### Aggregation in Large Dynamic Panels

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**Abstract:**

This paper considers the problem of aggregation in the case of large linear dynamic panels, where each micro unit is potentially related to all other micro units, and where micro innovations are allowed to be cross sectionally dependent. Following Pesaran (2003), an optimal aggregate function is derived, and the limiting behavior of the aggregation error is investigated as  $N$  (the number of cross section units) increases. Certain distributional features of micro parameters are also identified from the aggregate function. The paper then establishes Granger's (1980) conjecture regarding the long memory properties of aggregated variables from 'a very large scale dynamic, econometric model', and considers the time profiles of the effects of macro and micro shocks on the aggregate and disaggregate variables. Some of these findings are illustrated in Monte Carlo experiments where we also study the estimation of the aggregate effects of micro and macro shocks. The paper concludes with an empirical application to consumer price inflation in Germany, France and Italy, and re-examines the extent to which 'observed' inflation persistence at the aggregate level is due to aggregation and/or common unobserved factors. Our findings suggest that dynamic heterogeneity as well as persistent common factors are needed for explaining the observed persistence of the aggregate inflation.

**Text:** See [Discussion Paper No. 5478](#)



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