

**Appendix to
Koren, Miklós and Silvana Tenreyro, 2007. “Volatility and Development,”
Quarterly Journal of Economics, 122(1):243–287.**

There is a lot of variation in concentration within the sectors we use, and the level of aggregation is somewhat historically determined. This is in principle problematic for the index of concentration, which is indeed sensitive to the classification scheme. As we argued in the paper, the Herfindahl index of concentration is not a particularly relevant measure of exposure to risk. What is relevant is the risk embodied in a given sectoral structure, captured in the Idiosyncratic Sectoral Risk and the Global Sectoral Risk components. In the paper we show analytically that though the Herfindahl index is potentially sensitive to the sectoral classification, the Idiosyncratic and Global Sectoral Risk components are invariant to changes in the sectoral classification.

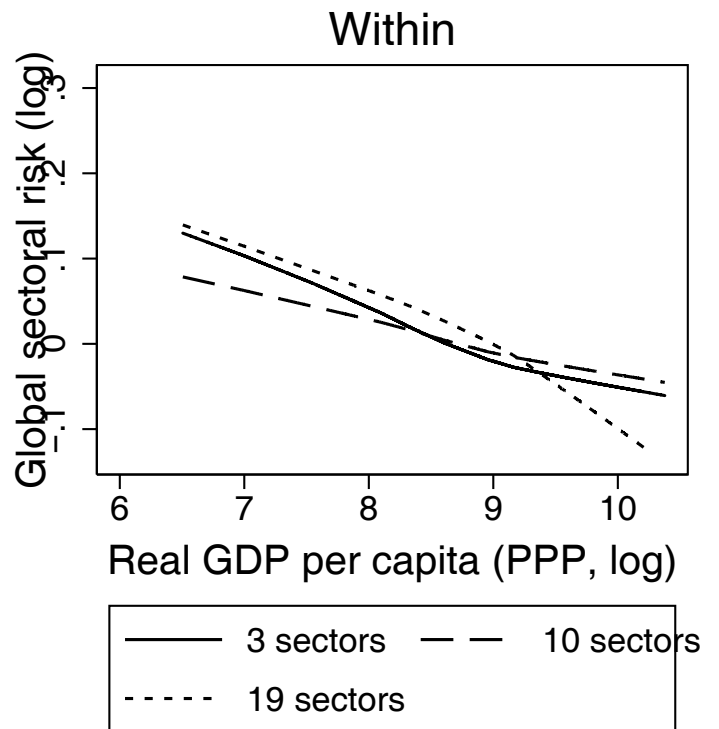
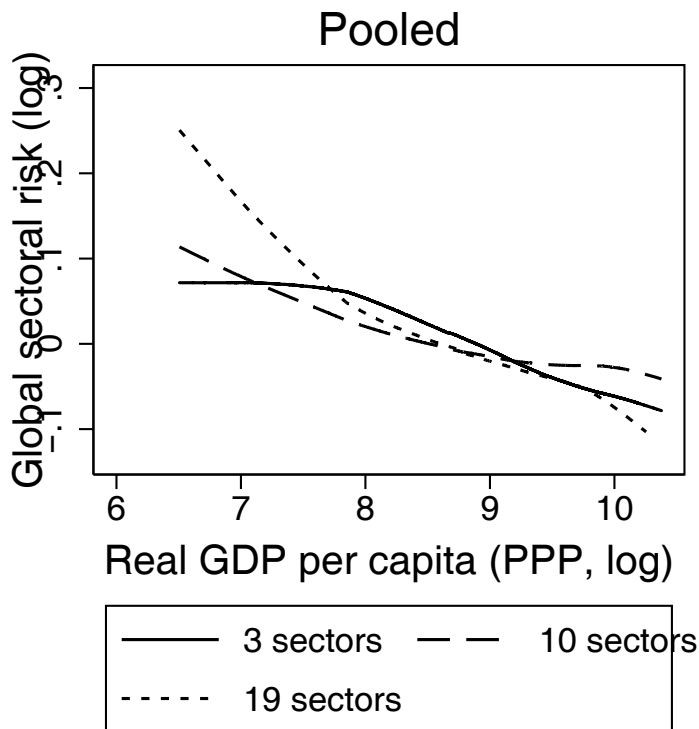
We also note that, while the theoretical measures of sectoral risk are insensitive to re-classification, in finite samples, because the elements of the variance-covariance matrices are estimated, the estimated measures of risk may be affected by classification. As an attempt to assess the importance of differences due to finite samples, we have repeated our analysis on new data sets obtained by aggregating sectors in our original data. In particular, for the UNIDO data set, we looked at the following alternative groupings: 1) all sectors aggregated into 3 broad sectors, and 2) 10 sectors, grouped into what we thought reasonably similar categories in terms of their outcome (e.g., textiles is grouped with apparel, etc.). See Panel A in Table R1 at the end of this Appendix, which lists the original classification along with the two alternatives. Following the same criterion, we aggregated sectors in the STAN-OECD data set into: 1) 3 broad sectors, and 2) 10 sectors. See Panel B of Table R1. We plot in the Figures the LOWESS lines describing the relationship between the various components of risk and development for the UNIDO and STAN-OECD samples using the new breakdowns along with the LOWESS lines based on the original breakdowns.

Overall, our findings are very robust to these experiments. The relationship between the various components of risk and income per capita are very close to our baseline results. We observe, as expected, some differences in the Herfindahl index of concentration. In the UNIDO sample, when we aggregate the data into 3 broad sectors, the concentration index appears to decline with development, without displaying an increase at later stages of development (though the relationship becomes flatter at later stages). Similarly, when we aggregate sectors in the STAN-OECD sample, the Herfindahl-development relationship becomes less clearly U-shaped: the relationship is considerably flatter at early stages.

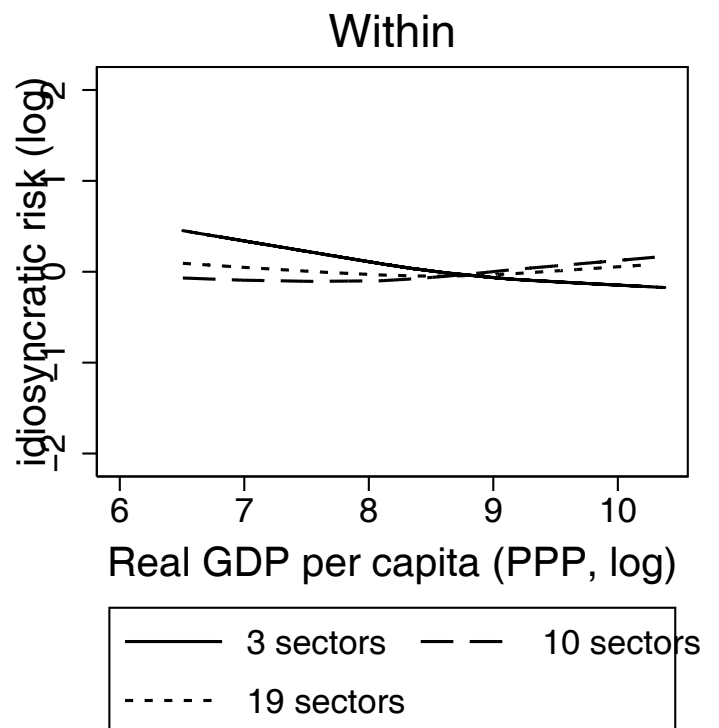
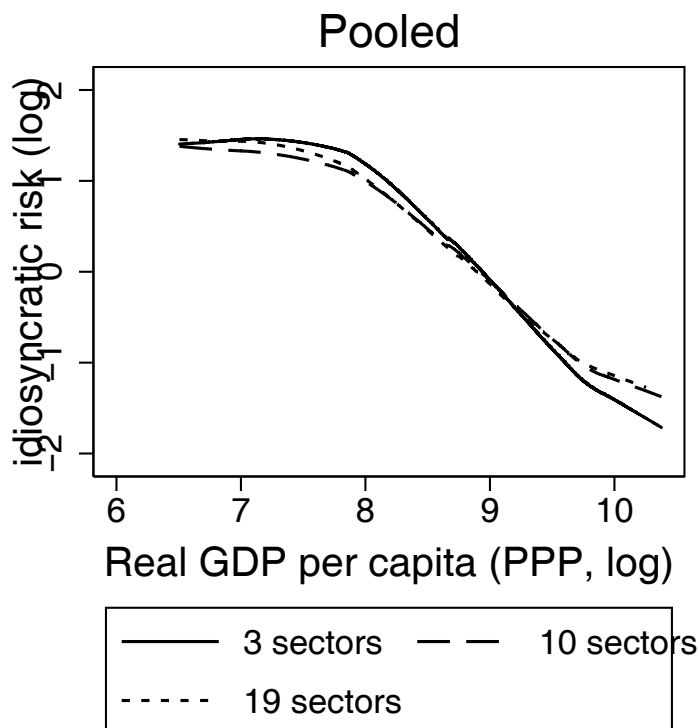
The findings for the Herfindahl index of concentration using different degrees of aggregation in the UNIDO sample (which covers a broader range of development levels) still suggest that poor countries tend to display relatively high levels of concentration. One might nevertheless argue that this is because some activities are more coarsely registered. Anecdotal evidence however suggests that poor countries indeed tend to depend heavily on a few economic activities. At any rate, the point of our paper is to precisely downplay the results on concentration patterns emphasized in the literature.

Robustness to aggregation (UNIDO sample)

Global sectoral risk

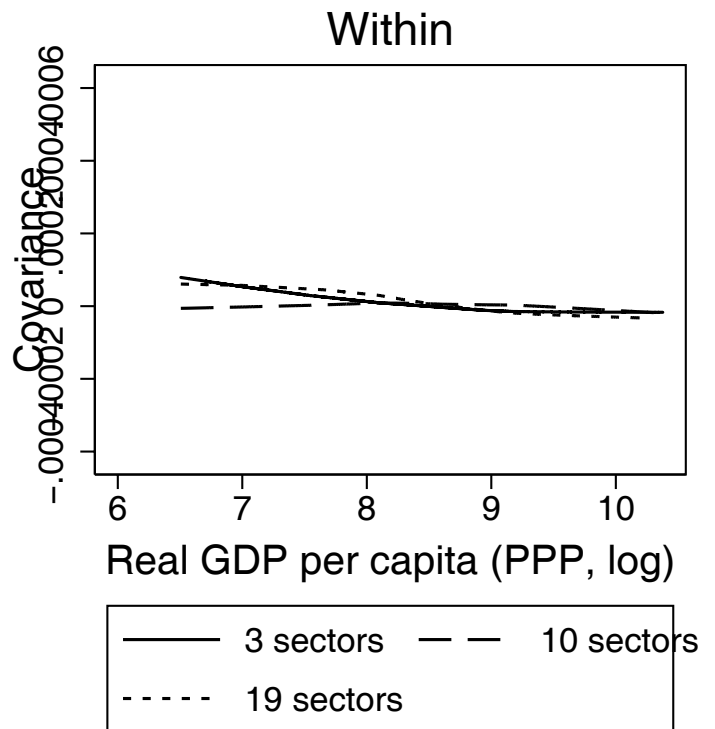
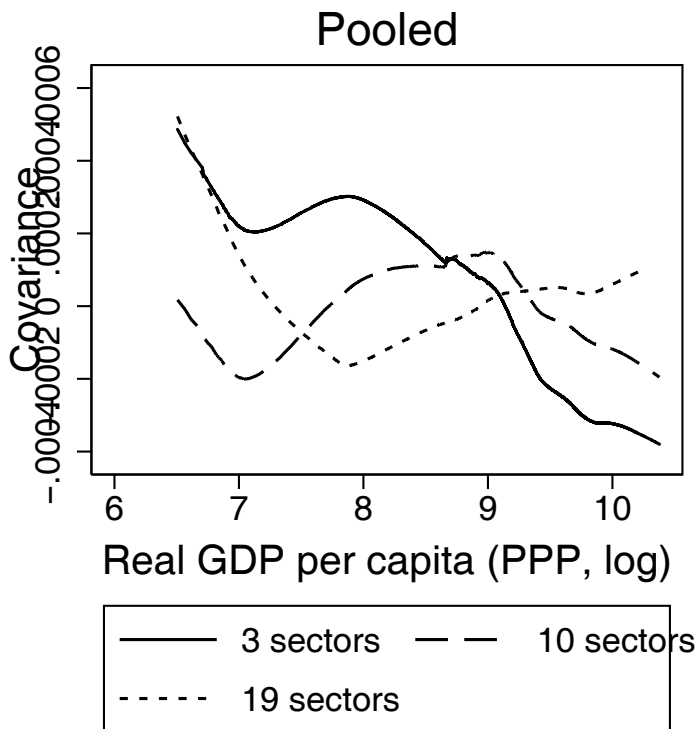


Idiosyncratic risk

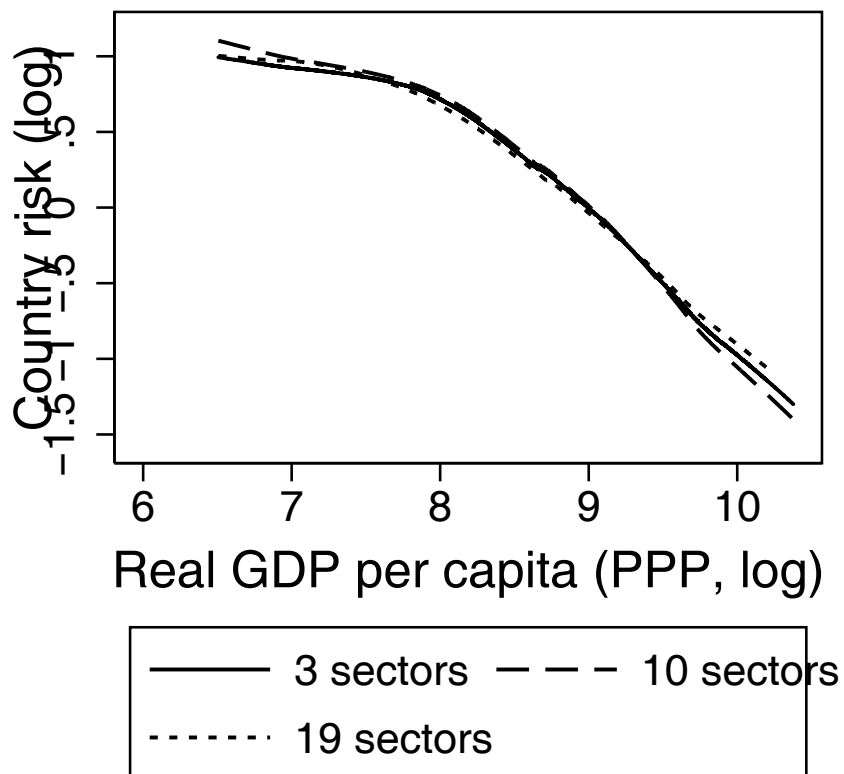


Robustness to aggregation (UNIDO sample)

Sector-country covariance



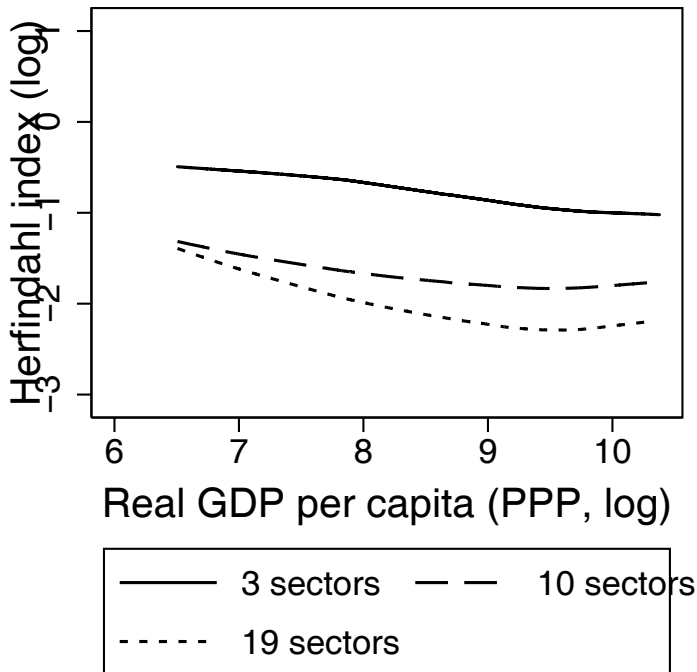
Country risk



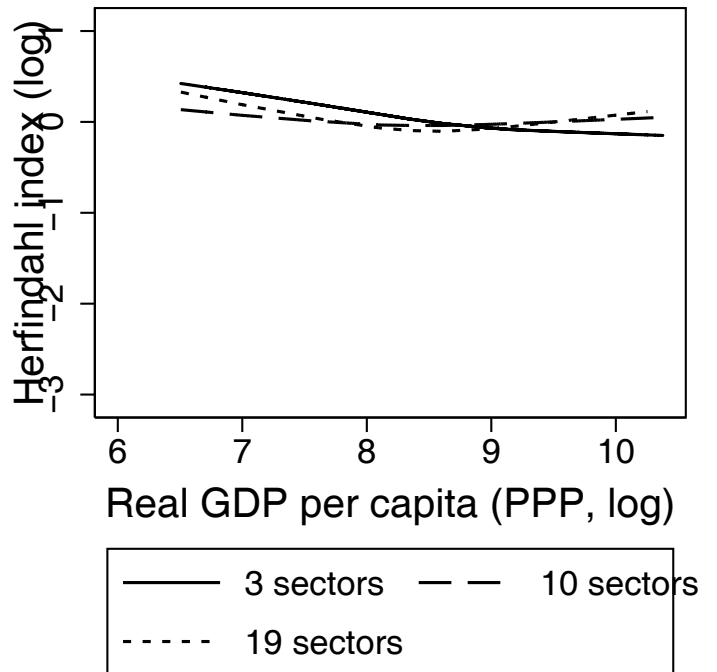
Robustness to aggregation (UNIDO sample)

Concentration

Pooled

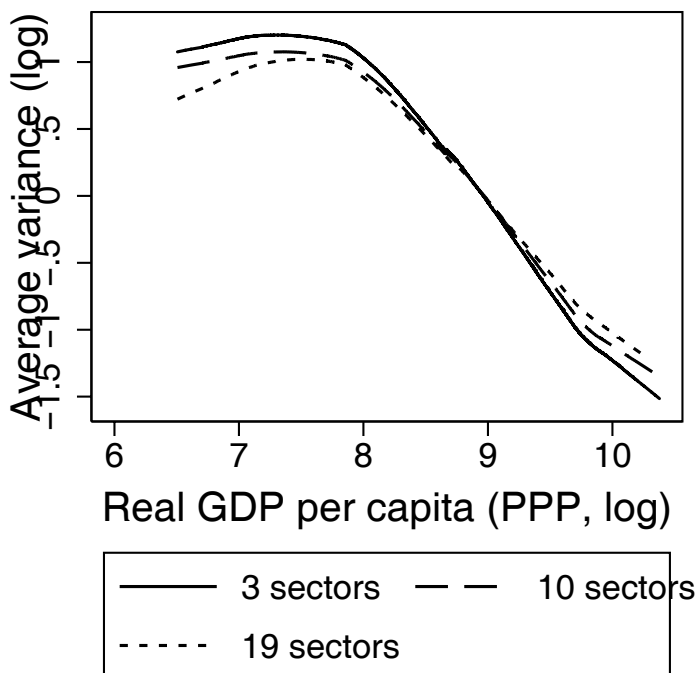


Within

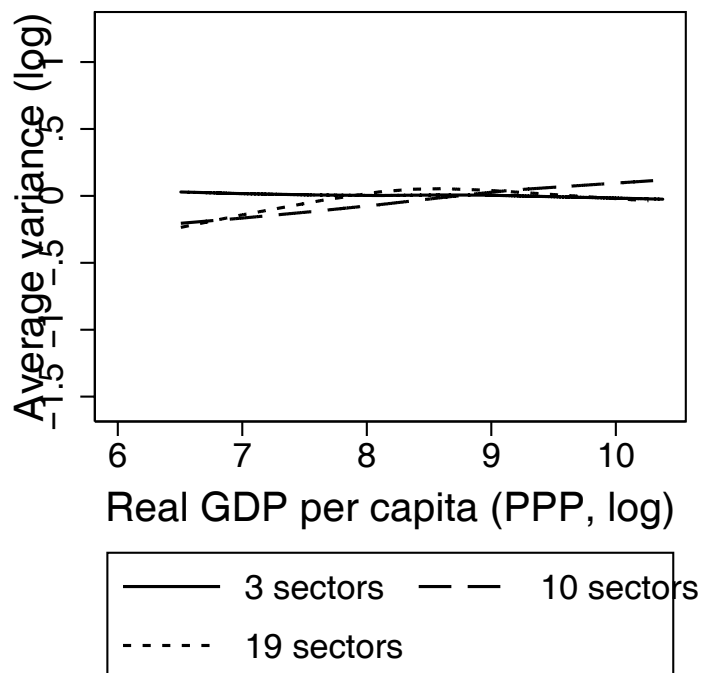


Average idiosyncratic variance

Pooled



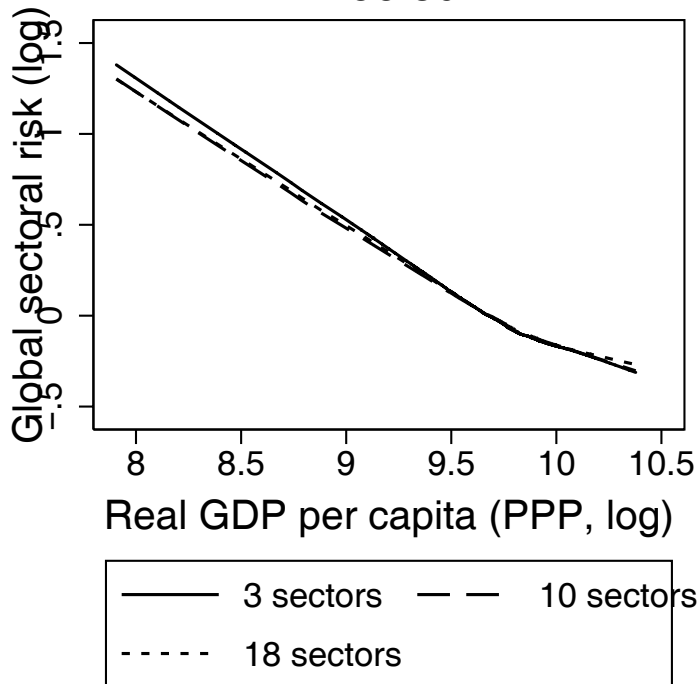
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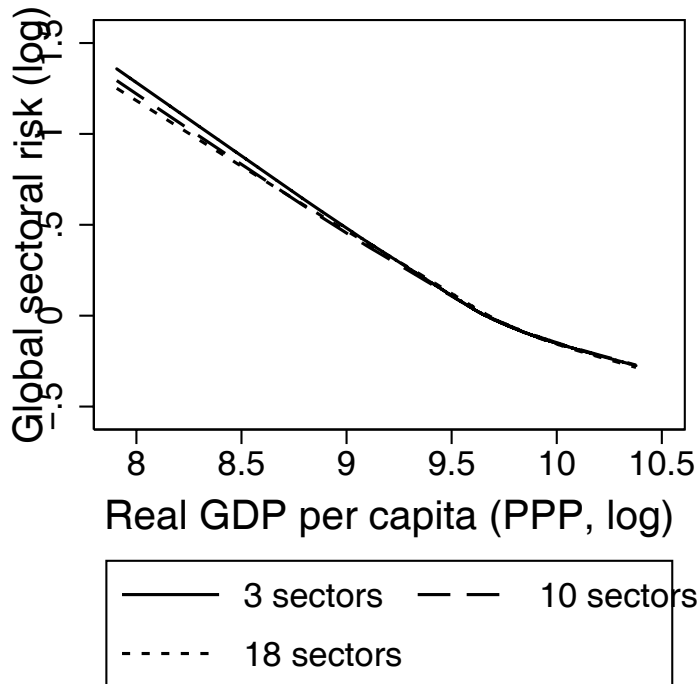
Robustness to aggregation (OECD sample)

Global sectoral risk

Pooled

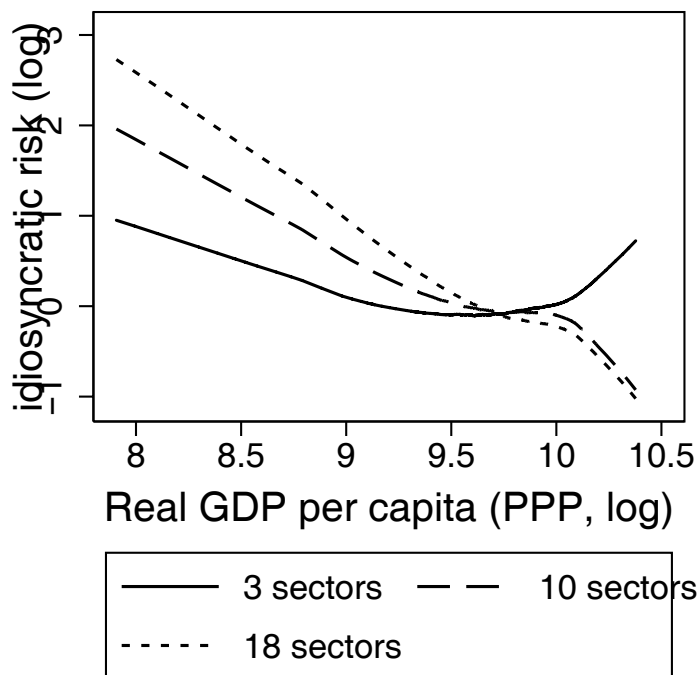


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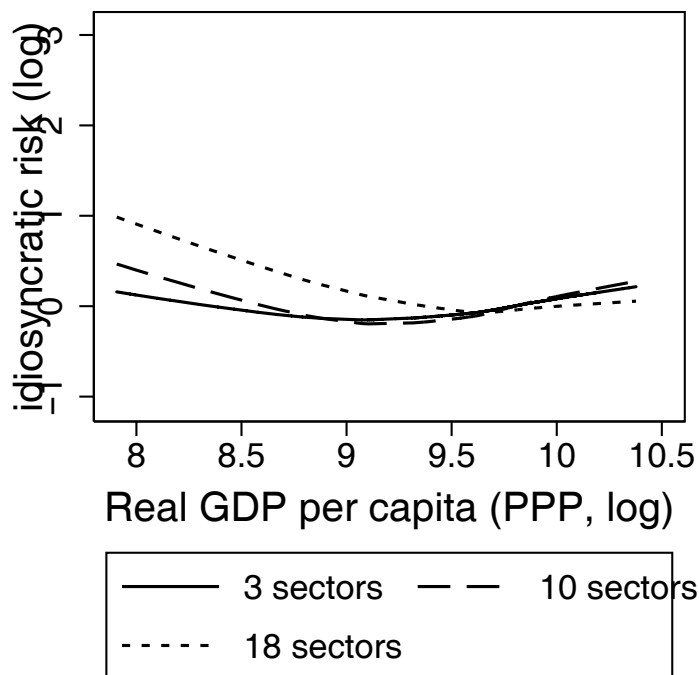


Idiosyncratic risk

Pooled

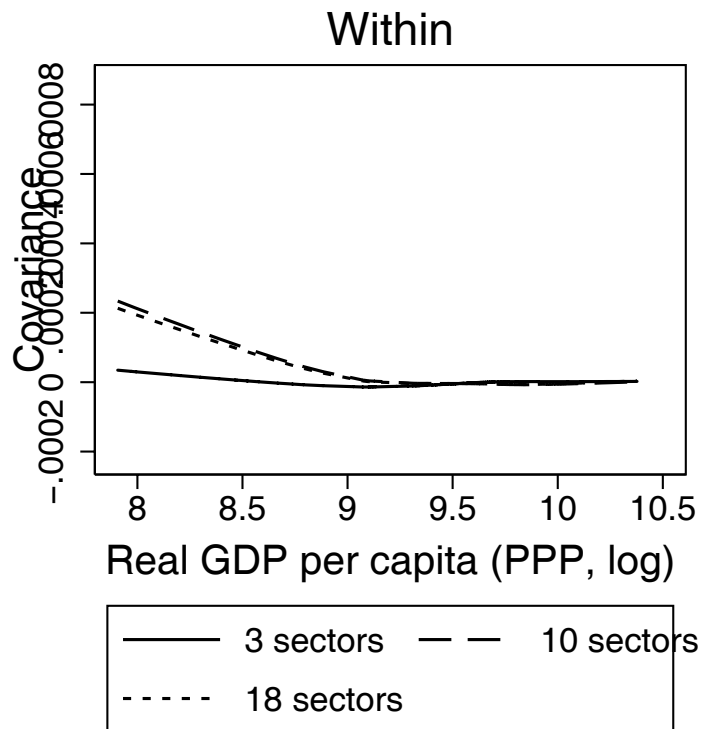
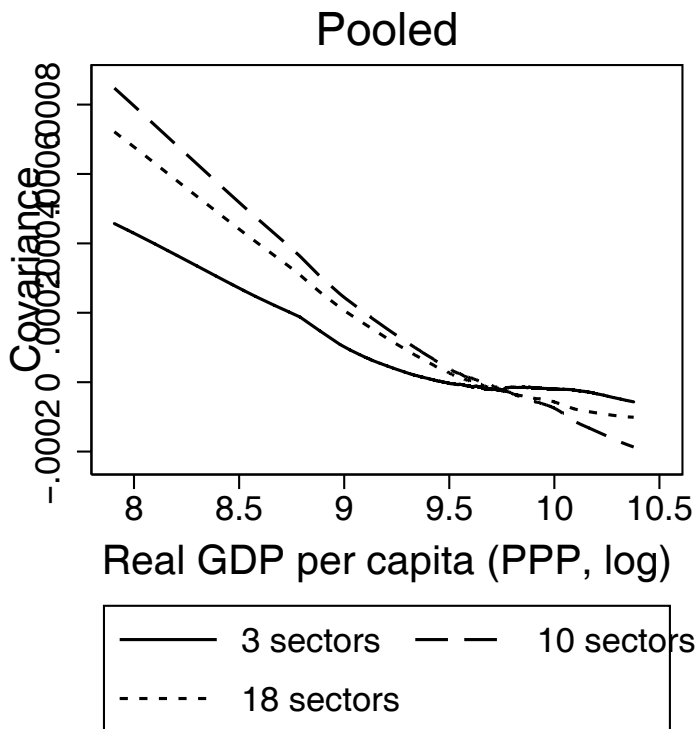


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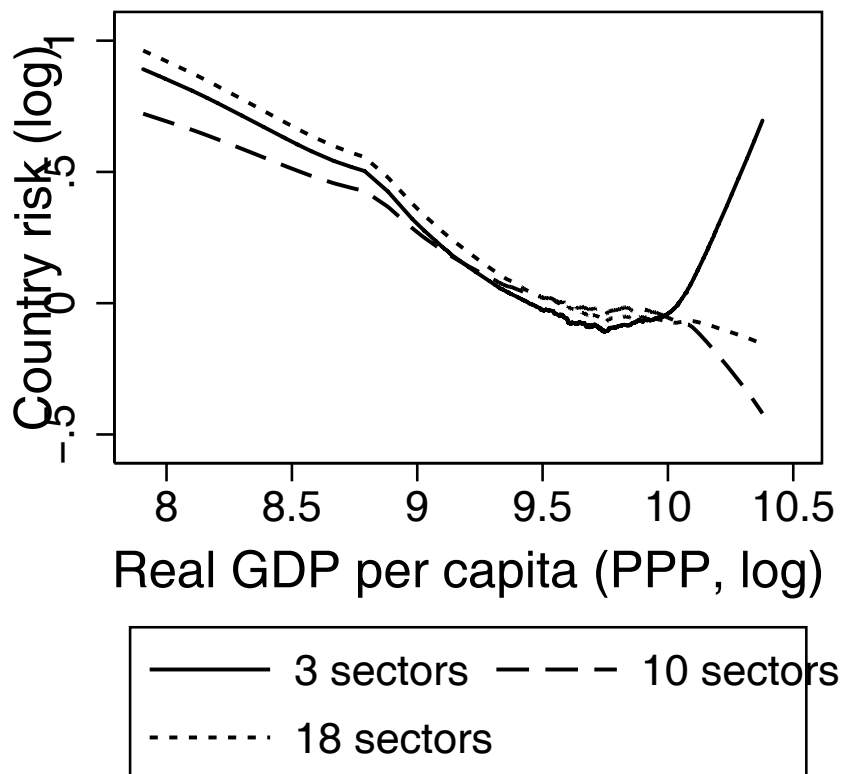


Robustness to aggregation (OECD sample)

Sector-country covariance



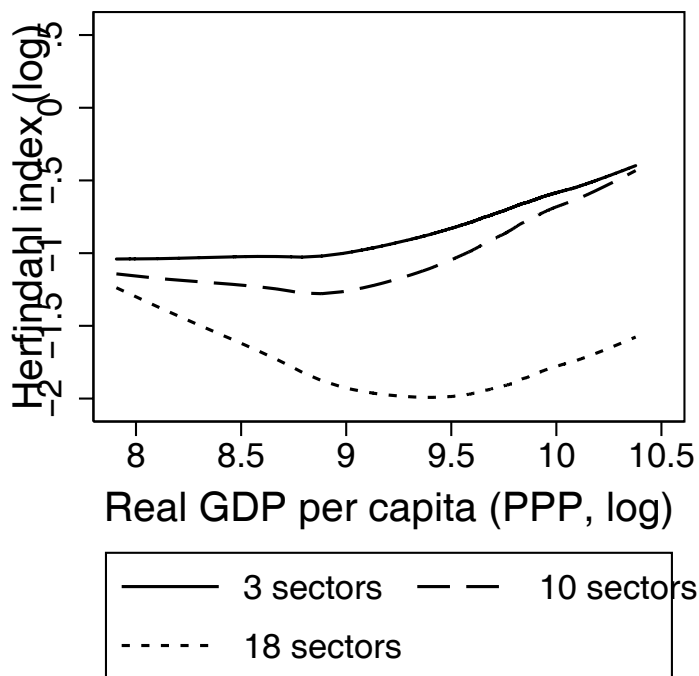
Country risk



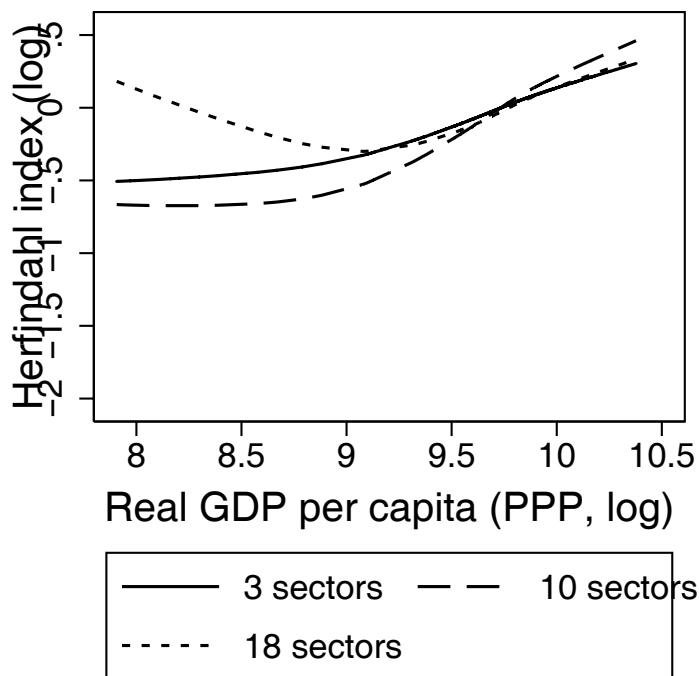
Robustness to aggregation (OECD sample)

Concentration

Pooled

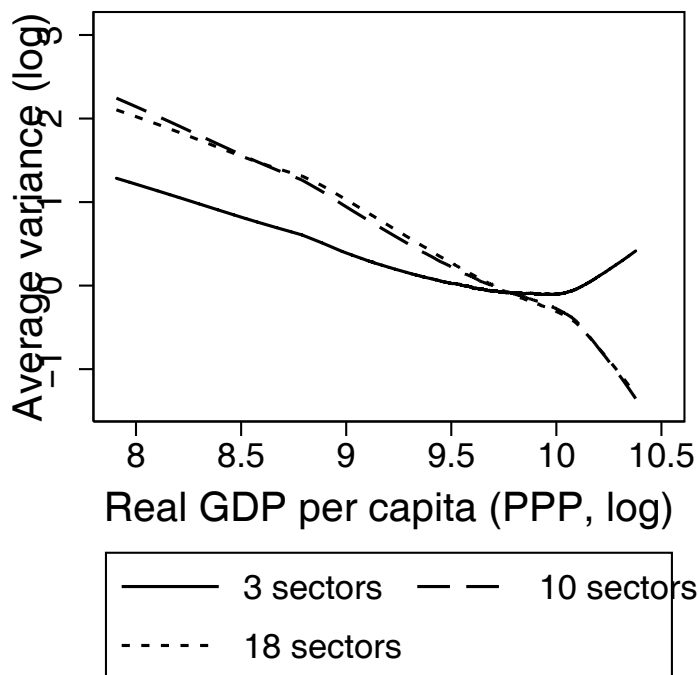


Within



Average idiosyncratic variance

Pooled



Within

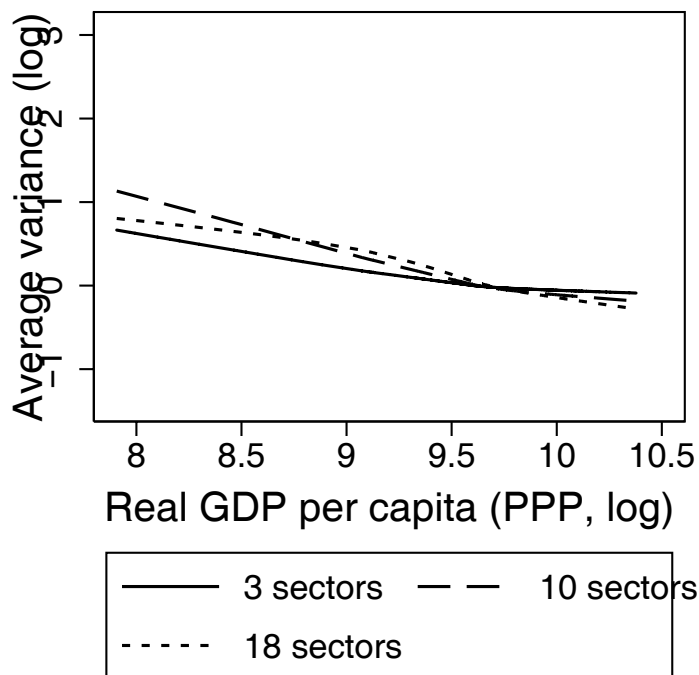


Table R1. Alternative Sectoral Breakdowns

Panel A. UNIDO sample			
Sector	Original breakdown	10-sector code	3-sector code
Food products	1	1	1
Textiles	2	2	1
Wearing apparel, except footwear	3	3	2
Leather products	4	3	2
Footwear, except rubber or plastic	5	3	2
Wood products, except furniture	6	4	1
Furniture, except metal	7	4	2
Paper and products	8	5	1
Printing and publishing	9	5	2
Industrial chemicals	10	6	1
Rubber products	11	7	2
Plastic products	12	7	2
Pottery, china, earthenware	13	7	1
Iron and steel	14	8	1
Fabricated metal products	15	8	2
Machinery, except electrical	16	9	3
Transport equipment	17	10	3
Professional & scientific equipment	18	10	3
Other manufactured products	19	10	2
Panel B. STAN-OECD sample			
Sector	Original breakdown	10-sector code	3-sector code
AGRICULTURE, HUNTING, FORESTRY AND FISHING	1	1	1
MINING AND QUARRYING	2	2	2
Food products, beverages and tobacco	3	3	2
Textiles, textile products, leather and footwear	4	4	2
Wood and products of wood and cork	5	5	2
Pulp, paper, paper products, printing and publishing	6	5	2
Chemical, rubber, plastics and fuel products	7	5	2
Other non-metallic mineral products	8	6	2
Basic metals and fabricated metal products	9	6	2
Machinery and equipment	10	7	2
Transport equipment	11	7	2
Manufacturing not elsewhere classified	12	8	2
ELECTRICITY, GAS AND WATER SUPPLY	13	9	3
CONSTRUCTION	14	10	2
WHOLESALE AND RETAIL TRADE; RESTAURANTS AND HOTELS	15	10	3
TRANSPORT AND STORAGE AND COMMUNICATION	16	10	3
FINANCE, INSURANCE, REAL ESTATE AND BUSINESS SERVICES	17	10	3
COMMUNITY SOCIAL AND PERSONAL SERVICES	18	10	3

Note: Numbers indicate the sector group. When 2 or more sectors are aggregated into one, all sectors are assigned a new (and identical) number.