Comparing Countries for Economic Indicator Variables

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Received: November 15, 2011	Accepted: February 2, 2012	Published: March 16, 2012
doi:10.5539/ijbm.v7n6p137	URL: http://dx.doi.org/10.5539	/ijbm.v7n6p137

Abstract

The purpose of this paper is to investigate the levels of extensive (wider set of goods) and intensive (larger quantities of each good) margins, as well as price, quantity, GDP, employment and GDP per worker for 126 countries grouped by human development, region and income hierarchies. Analysis of variance and the coefficient of variation were the tools of statistical analysis. In most cases the groups of countries differ substantially between them more so than countries within the groups.

Keywords: Extensive margins, Intensive margins, Workers productivity

1. Introduction

Phelps (2008) describes a great transformation of business from self-finance to companies with financial freedom to operate and compete with one another. In a modern economy, doors are open for individuals to engage and develop new products and commercial innovations. Phelps explains that innovations produce uncertainties and unanticipated consequences. The costs and benefits of innovations are attained after their launch. Innovations transform jobs; cause rapid growth, disequilibria, and big swings in business; and contribute to employee engagement and intellectual development. Phelps goes on to say that in economies that resist innovation, the disadvantaged suffer from failure of inclusion. Also, entrepreneurship helps the disadvantaged by making their jobs less of a burden. Two alternatives are in practice for the inclusion of the disadvantaged. One of them suggests putting more resources into the economy, such as human capital and technology to raise output and employment. The other alternative suggests putting the available resources into innovative and general business activities through reforms of labor and company laws as well as reforms of the financial sector.

Hall and Jones (1999) tackle the issue of disparity of productivity between nations due to innovation. They give as an example the large difference in productivity per worker in the United States, being 35 times larger than in Niger. The explanation for such differences, as Phelps (2008) has pointed out, is a major challenge of economics. Production functions attribute the differences among countries to human and physical capital and productivity. For the case of the 35-fold difference in output between the United States and Niger, physical capital contributed a factor of 1.5 to income difference, and educational levels contributed a factor of 3.1. Productivity residual was 7.7 fold. Hall and Jones (1999) hypothesize that differences in capital accumulation and output per worker (productivity) are related to what they call social infrastructure, by which they mean institutions and government policies that determine the economic environment. The economic environment determines the accumulation of skills of individuals and determines the accumulation of capital by firms to produce output.

La Porta et al (1998) attribute economic performance to rules that cover protection of shareholders in corporations. Their sample of 49 countries reveals that countries practicing common law provide the strongest protection. The weakest countries providing legal protection for investors are those practicing French civil law.

The German and Scandinavian countries are situated in the middle between the followers of common law and the civil-law countries. Furthermore, they found that when ownership is concentrated publicly, investor protection is negatively related. On a similar theme, Heckelman (2002) attributes the structure of institutions as means to evaluate economic performance, which includes concepts related to economic freedom. Here, the argument is concerned with whether bureaucrats or politicians can manage the economy better than can agents in a free market environment or vice-versa.

Hummels and Klenow (2005) looked at a nation's extensive set of economic data and examined the implications for extensive (increasing returns) exports to an alternative, intensive (national product differentiation) exports. Nissan and Niroomand (2009) utilized Hummels and Klenow data of the eight economic variables to compare countries grouped in accordance to classification provided by United Nations Development Report (UNDD 2007). The classifications were made by income as well as development categories. This research builds on the research by Hummels and Klenow (2005) and Nissan and Niroomand (2009) by incorporating the data produced for 126 countries. The purpose is to ascertain differences among and between countries grouped by human development index, geographic proximity (level of development), and income. Following this section, the paper discusses the "purpose" of the study along with the description of data, followed by "Results," and "Conclusion" sections.

2. Purpose

Hummels and Klenow (2002, 2005), henceforth (HK2002, HK2005), set out to examine a variety of economic indicator variables. First they looked at extensive exports (increasing returns) and second at intensive exports (national product differentiation). They explain that the extensive implies that an economy twice as large as another will export twice as much, but will not export a wider variety of goods. Economies have the alternative to export either a wider range of goods at lower prices or higher quality goods at higher prices. HK2005 collected a detailed set of data for 1995 covering 126 countries. The data for each country for each year include:

- 1) Overall Share of World Exports
- 2) EM = Extensive Export Margins
- 3) IM = Intensive Export Margins
- 4) P = Export Price Index
- 5) X = Export Quantity Index
- 6) Y = Average GDP Relative to the Rest of the World
- 7) L = Average Employment Relative to the Rest of the World
- 8) Y/L = Average Productivity

Note that $0 \le IM \le 1.00$ and $0 \le EM \le 1.0$. The export price index (P) is a measure of whether an exporter's prices are high or low relative to other prices in the same type of market. Similarly, the export quantity index (X) could be interpreted as exporter's quantities relative to other quantities in the same type of market.

HK2005, in Appendix A1 (pp. 720-722), provided for 126 countries estimates of their share of world exports (Overall), their fractions of extensive (EM) and intensive (IM) margins, and price (P) and quantity (X) indexes as discussed above. Also included in the appendix are a country's GDP relative to the rest of the world (Y), employment relative to the rest of the world (L), and GDP per worker relative to the rest-of-world GDP per worker (Y/L). Instead of using the data as given as was done by Nissan and Niroomand (2009), this paper provides estimates as compared to the United States. This is done by dividing the data for each country by the U.S. data, giving a score of "1" for each of the eight entries.

Using the averages as a way to compare the countries as groups, this research groups the 126 countries in accordance with the classifications provided by the United Nations Development Report (UNDP 2007) and the World Bank (2007). The classifications are done in three ways. The first is by human development, the second is by region (level of development) and the third is by income, with the purpose of finding out whether the groups of countries differ substantially for the various factors as explained in this section.

For the human development (UNDP 2007), the 126 countries are grouped according to the Human Development Index (HDI) into:

- 1) High: $0.800 \le \text{HDI} \le 1.000 \text{ (44 countries)}$
- 2) Medium: $0.500 \le \text{HDI} \le 0.800 \text{ (54 countries)}$

3) Low: $0.300 \le \text{HDI} \le 0.500 \text{ (28 countries)}$

With the HDI, explain Anand and Ravallion (1993), the notion of development is often associated with rising incomes. Nowadays, the goal of development is the reduction of poverty and improvement in social services - health and education in particular. The UNDP since 1999 has been publishing the Human Development Report (HDR) with the view that human development is "what can people do." Underdevelopment is the lack of certain capabilities. The HDI is an index constructed by incorporating three variables - longevity, knowledge and a decent standard of living.

For regional classification, the countries are grouped (World Bank 2007) into:

- 1) East Asia and the Pacific (8 countries)
- 2) Europe and Central Asia (9 countries)
- 3) Latin America and the Caribbean (26 countries)
- 4) Middle East and North Africa (7 countries)
- 5) South Asia (5 countries)
- 6) Sub-Saharan Africa (40 countries)
- 7) High OECD (25 countries)
- 8) Other High Income (8 countries)

For the income classification (World Bank 2007) the countries are grouped into

- 1) Low Income (41 countries)
- 2) Middle Income (34 countries)
- 3) Upper-Middle Income (20 countries)
- 4) High income (31 countries)

In the following, each of the 126 countries included in this study is identified by code numbers as outlined above. The statistical tools employed for analysis are the coefficient of variation and analysis of variance for each of the eight variables (Overall, EM, IM, P, X, Y, L, Y/L) by the three groupings outlined above. The coefficient of variation (CV=standard deviation/mean) is a measure for each group for each of the eight variables of the level of convergence or divergence among a group's members. Higher values of CV indicate a pulling away from the group's mean. In particular, when CV>1.00, the indication is a large magnitude of dispersion. Drennan and Lobo (1999), Friedman (1992), Rey and Dev (2006), and Dalgaard and Vastrup (2001), contend that a valid test for what is known as sigma convergence is the variance of a distribution, and, by implication, is the coefficient of variation also. The analysis of variance technique tests a hypothesis of equality of means by disaggregating total sum of squares (SST) into a between sum of squares (SSB) and a within sum of squares (SSW). The F-test as the ratio (MSB/MSW) where MSB and MSW are the mean squares obtained by dividing SSB and SSW by their proper degrees of freedom is used for testing the null hypothesis of equality of means.

3. Results

Table 1 provides the details for the eight variables for each of the 126 countries using the United States as a reference. C1, C2, and C3 identify a country for its place in accordance to HDI, region, and income classification as explained earlier. For Albania, the corresponding three codes (2, 2, 2,) indicate that Albania is situated in the medium group of the 54 countries of the HDI, is situated among the nine countries of Europe and Central Asia and is among the 54 middle income countries. To give an idea of the entries of Table 1, the means for all the 126 countries tell us that the average share of the 126 countries of nominal exports as a ratio of nominal world exports as compared to the United States is 0.0434. The extensive (EM) and the intensive (IM) margins are, respectively, 0.2501 and 0.0880, indicating that on average there is more trade in a common set of goods as compared to specialized goods. That is, the extensive margin is almost three times the intensive margin. The average GDP relative to the rest of the world (Y) and average employment relative to the rest of the world (L) as compared to the Unites States are, respectively, 0.0311 and 0.1567.

The United Kingdom accounts for 0.1067 as its share to world exports (Overall), as compared to the United States with 0.8382 for extensive (EM) and 0.1272 for intensive (IM) margins. For the price and quantity at 1.0928 and 0.1164, the indication is that the UK ships small quantities of specialized categories of goods at relatively high prices in contrast to the United States, for instance, with P=1.000 and X=1.000. UK's relative GDP (Y) to World GDP as compared to the United States is 0.1243 as compared to the United States at 1.000.

However, UK's employment relative to rest of the world is 0.2071 as compared to the United States at 1.000, which gives the corresponding worker productivity (Y/L) of 0.5992 (0.1243/0.5992).

Table 2 provides descriptive statistics for the mean (Panel A) and the coefficient of variation (Panel B) for the 126 countries grouped by HDI classification for the eight (Overall, EM, IM, P, X, Y, L, Y/L) variables as explained in the "Purpose" section. For the "Overall" variable, which denotes the average of each group's share of world exports, the high HDI group, comprising 44 countries, registered 0.0965 in contrast to an average of 0.0025 for the 28 low HDI countries, a ratio of 0.0965/0.0025=38.6 in terms of the United States as a reference. This implies that, on average, the high HDI share of world exports is almost 39 times as large as the low HDI group, and it is 4.53 (0.0965/0.0213) times as large on average compared to the medium HDI group. The average share of exports for the 126 countries combined is 0.0434.

For EM (the extensive margin) for exports, the average fraction for trade for high HDI countries is substantial at 0.4597, compared to 0.1829 for the medium HDI countries, which is more than two-fold. For the low HDI countries, at 0.0504, this share is again too small compared to the two other groups. Similar differences are observed for the IM (intensive margin). It is of interest to note here the smaller magnitudes of IM as compared to EM, implying that most exports around the world consist of a broader set of goods to more markets rather than shipments of larger values of a common set of goods.

For the price P, and the quantity X, the high HDI group stands out at 0.8808 and 0.1572 as compared to the medium HDI and low HDI. Note that, as the high HDI at Y=0.0588 is 2.5 times larger than the medium HDI group (0.0588/0.0237) and 39.2 times larger than the low HDI group (0.0588/0.0015).

For employment relative to the rest of the world (L), the medium HDI countries capture a large average at 0.2664, while the difference between high HDI and low HDI countries is somewhat minor. Dividing the GDP, Y, by L, as an estimate for productivity (Y/L), the high HDI group has magnitudes of 0.5352 as compared to 0.1634 for the medium HDI and, 0.0355 for the low HDI group. The respective ratios are 3.28 and 15.1.

The coefficient of variation (CV) for the three groups by HDI for the eight variables is shown in panel (B). CV tells whether the individual members of a group depart significantly from the group's mean. The indication from Panel (B) is that for Overall, with values of CV<1.00, for most groups there is significant convergence, implying small disparities among them.

For EM, the low HDI group CV=1.06. For IM, the medium HDI group stands out at CV=1.07. For all the 126 combined at CV=0.96, the indication is convergence. However, for the price P, the CV within all countries seems to be major at CV=2.93. For the high HDI, CV=2.91. For medium HDI, CV=3.03 and CV=6.54 for low HDI. For the quantity X, the low HDI group has CV>1.00, indicating wide dispersion.

For GDP (Y) and employment (L), with no exception CV < 1.00, implying small dispersions among the member countries of the groups. For Y/L, there seems to be large dispersions among the member countries of each group to that group's average at CV=2.60 for high HDI, CV=1.87 for medium HDI and CV=2.22 for low HDI.

Table 3 and Table 4, similar to Table 1, display the means in Panel (A) and the coefficient of Variation in Panel (B) for the eight variables. This time, the 126 countries are grouped by (region) geographic proximity (Table 3), and income (Table 4). The results have similar interpretations to those found in Table 1.

Table 5 provides the results of the analysis of variance for testing equality of means by HDI category, Panel (A); region, Panel (B); and income, Panel (C). With the exception of variable L among the eight variables (Panels A and C), the test of hypothesis of equality is rejected at p=0.000. For L in Panel (A), p=0.326 and in Panel (C), p=0.500. The most significant difference between groups is for the productivity variable Y/L at F=144.45 in Panel (A), F=73.11 in Panel (B) and F=274.62 in Panel (C). One anticipates that differences in human development, region and income are due to the productivity among the nations in each group.

4. Conclusion

This paper, through the use of data on eight major economic indicator variables for 126 countries supplied by HK2005, aligned the countries by HDI, region and income classifications. The dividing lines for HDI were in accordance with the classifications provided by UNDP (2007), and the dividing lines for region and income classifications were provided by the World Bank (2007). The aim of the paper was to probe whether the divisions so obtained can differentiate the groups of countries for their economic performance. Note that the data supplied by HK2005 were converted into U.S. reference by dividing the entries of a country by the comparable U.S. entries. All comparisons, therefore, are in relation to the United States. Among the noted findings is that richer countries grouped by HDI, income and region differ substantially with the exception of Labor (L) variable when countries are grouped by HDI and income. This research was a further look at what Nissan and Niroomand

(2009) have done using the same statistical methods of the coefficient of variation and the analysis of variance for analysis. However it differs in two different procedures. The first is the transformation of data provided by HK 2005 by making it relative to the US. The second is the use of different ways of aggregating the countries into groups in accordance to classifications provided by UNDP (2007) and World Bank (2007).

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Table 1. Economic Performance	variables by	Country (Referen	nce U.S.)
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Country	C1	C2	C3	Overall	EM	IM	Р	Х	Y	L	Y/L
Albania	2	2	2	0.0005	0.1042	0.0053	0.4898	0.0112	0.0010	0.0101	0.0983
Angola	3	6	1	0.0040	0.0956	0.0415	0.6959	0.0600	0.0014	0.0370	0.0387
Argentina	1	3	3	0.0583	0.3845	0.1514	0.7582	0.1996	0.0377	0.1027	0.3669
Australia	1	7	4	0.0673	0.5893	0.1143	0.7707	0.1484	0.0426	0.0640	0.6748
Austria	1	7	4	0.0462	0.5486	0.0842	1.0074	0.0836	0.0178	0.0269	0.6670
Bangladesh	2	5	1	0.0067	0.0864	0.0775	0.5554	0.1396	0.0184	0.2071	0.0893
Barbados	1	3	3	0.0003	0.0159	0.0186	0.7142	0.0260	0.0004	0.0017	0.4145
Belgium	1	7	4	0.0383	0.5150	0.0742	1.1199	0.0664	0.0223	0.0303	0.7438
Belize	2	3	3	0.0004	0.0237	0.0153	0.7299	0.0212	0.0001	0.0000	0.2782
Benin	3	6	1	0.0004	0.0264	0.0130	0.5487	0.0240	0.0006	0.0185	0.0325
Bolivia	2	3	2	0.0020	0.0689	0.0289	0.4279	0.0676	0.0020	0.0202	0.0979
Botswana	2	6	3	0.0002	0.0339	0.0047	0.6129	0.0076	0.0009	0.0034	0.2585
Brazil	2	3	2	0.0715	0.5140	0.1390	0.6707	0.2076	0.1164	0.4226	0.2748
Bulgaria	1	2	2	0.0103	0.3910	0.0265	0.5228	0.0504	0.0059	0.0286	0.2062
Burkina Faso	3	6	1	0.0003	0.0189	0.0177	0.8712	0.0204	0.0009	0.0337	0.0266
Cameroon	3	6	1	0.0060	0.1344	0.0445	0.6123	0.0728	0.0026	0.0455	0.0555
Canada	1	7	4	0.3912	0.9031	0.4333	0.9695	0.4468	0.0718	0.1061	0.6738
Cape Verde Is.	2	6	2	0.0000	0.0104	0.0038	0.9228	0.0044	0.0001	0.0017	0.1221
Central Afr.R.	3	6	1	0.0002	0.0197	0.0121	0.5430	0.0224	0.0004	0.0118	0.0339
Chad	3	6	1	0.0004	0.0021	0.1832	0.7017	0.2612	0.0006	0.0168	0.0380
Chile	1	3	2	0.0231	0.1787	0.1293	0.6314	0.2048	0.0127	0.0387	0.3251
China	2	1	2	0.3015	0.7722	0.3906	0.4143	0.9424	0.3936	7.4226	0.0530
Colombia	2	3	2	0.0250	0.2518	0.0993	0.6992	0.1420	0.0222	0.1246	0.1780
Comoros	2	6	1	0.0000	0.0003	0.0745	1.9940	0.0372	0.0001	0.0017	0.0551
Congo	2	6	1	0.0026	0.1056	0.0242	0.4368	0.0552	0.0005	0.0084	0.0529
Costa Rica	1	3	3	0.0089	0.1419	0.0627	0.7313	0.0860	0.0019	0.0084	0.2035
Cyprus	1	8	4	0.0024	0.2104	0.0112	0.7888	0.0144	0.0012	0.0017	0.5118
Denmark	1	7	4	0.0276	0.3899	0.0707	1.0699	0.0660	0.0130	0.0202	0.6565
Dominica	2	3	3	0.0001	0.0120	0.0065	0.7027	0.0092	0.0000	0.0000	0.2331
Dominican Rep.	2	3	2	0.0113	0.1618	0.0698	0.7896	0.0884	0.0030	0.0168	0.1749
Ecuador	2	3	2	0.0094	0.1272	0.0736	0.6593	0.1120	0.0046	0.0253	0.1879
Egypt	2	4	2	0.0125	0.2697	0.0462	0.5183	0.0896	0.0221	0.1212	0.1821
El Salvador	2	3	2	0.0058	0.1112	0.0524	0.6902	0.0760	0.0025	0.0118	0.1978
Ethiopia	3	6	1	0.0012	0.0227	0.0527	0.7436	0.0708	0.0031	0.1751	0.0178
Fiji	2	1	2	0.0013	0.0329	0.0406	0.7931	0.0512	0.0004	0.0017	0.2277
Finland	1	7	4	0.0242	0.3272	0.0739	1.1864	0.0624	0.0100	0.0185	0.5649
France	1	7	4	0.1123	0.7318	0.1535	1.2713	0.1208	0.1293	0.1902	0.6793
Gabon	2	6	3	0.0053	0.0919	0.0571	0.6403	0.0892	0.0010	0.0034	0.2682
Gambia	3	6	1	0.0001	0.0061	0.0127	0.6344	0.0200	0.0001	0.0034	0.0341
Germany	1	7	4	0.2784	0.8622	0.3228	1.1802	0.2736	0.1890	0.2912	0.6499
Ghana	2	6	1	0.0038	0.0697	0.0548	0.7534	0.0724	0.0023	0.0589	0.0389
Greece	1	7	4	0.0035	0.1309	0.0268	0.4996	0.0536	0.0137	0.0303	0.4534
Grenada	2	3	3	0.0000	0.0065	0.0062	0.6681	0.0092	0.0000	0.0000	0.1605
Guatemala	2	3	2	0.0100	0.1709	0.0586	0.4278	0.1368	0.0039	0.0202	0.1947
Guinea	3	6	1	0.0012	0.0372	0.0318	0.4973	0.0640	0.0018	0.0219	0.0806

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Country	2	C2	C3	Overall	EM	IM	P	X	Y	L	Y/L
Guinea-Diss	3	0	1	0.0001	0.0112	0.0109	0.0873	0.0130	0.0001	0.0034	0.0249
Guyana	2	6	2	0.0009	0.0254	0.0345	0.5493	0.0628	0.0002	0.0017	0.1058
Haiti	3	3	1	0.0005	0.0650	0.0080	0.6579	0.0124	0.0011	0.0219	0.0515
Honduras	2	3	2	0.0061	0.0979	0.0619	0.6857	0.0104	0.0012	0.0118	0.0982
Hong Kong	1	8	4	0.0621	0.6198	0.1001	0.5815	0.1720	0.0166	0.0219	0.7562
Hungary	1	2	3	0.0390	0.5754	0.0677	0.6439	0.1052	0.0093	0.0286	0.3160
Iceland	1	7	4	0.0046	0.0595	0.0778	0.7770	0.1000	0.0006	0.0017	0.5531
India	2	5	1	0.0377	0.4899	0.0769	0.5506	0.1396	0.2032	3.0337	0.0670
Indonesia	2	1	2	0.0618	0.4945	0.1249	0.6313	0.1980	0.0754	0.5572	0.1354
Iran	2	4	2	0.0359	0.1838	0.1950	0.6872	0.2840	0.0311	0.1246	0.2491
Ireland	1	7	4	0.0168	0.2799	0.0601	1.9811	0.0304	0.0065	0.0101	0.6622
Israel	1	8	4	0.0227	0.4416	0.0515	1.2791	0.0404	0.0094	0.0152	0.6355
Italy	1	7	4	0.1075	0.7191	0.1496	1.0842	0.1380	0.1258	0.1650	0.7660
Ivory Coast	3	6	1	0.0111	0.1889	0.0586	0.7321	0.0800	0.0027	0.0370	0.0721
Jamaica	2	3	2	0.0037	0.0705	0.0518	0.6880	0.0756	0.0010	0.0084	0.1136
Japan	1	7	4	0.6539	0.7943	0.8233	1.1590	0.7100	0.3341	0.5825	0.5732
Jordan	2	4	2	0.0012	0.0691	0.0168	0.5279	0.0316	0.0016	0.0067	0.2400
Kenya	3	6	1	0.0037	0.0765	0.0489	0.7141	0.0684	0.0036	0.0943	0.0377
Lesotho	3	6	1	0.0003	0.0244	0.0109	0.5479	0.0200	0.0003	0.0067	0.0426
Luxembourg	1	7	4	0.0010	0.0319	0.0324	0.9711	0.0338	0.0015	0.0017	1.1820
Macedonia	2	2	2	0.0031	0.1656	0.0186	0.6414	0.0288	0.0009	0.0067	0.1548
Madagascar	3	6	1	0.0020	0.0769	0.0259	0.7799	0.0332	0.0011	0.0404	0.0279
Malawi	3	6	1	0.0008	0.0229	0.0333	0.6417	0.0520	0.0007	0.0303	0.0233
Malaysia	2	1	3	0.1036	0.5963	0.1738	0.5619	0.3092	0.0188	0.0522	0.3670
Mali	3	6	1	0.0003	0.0123	0.0239	0.6785	0.0348	0.0008	0.0337	0.0249
Malta	1	8	4	0.0039	0.1927	0.0200	0.7414	0.0272	0.0005	0.0017	0.5062
Mauritania	3	6	1	0.0017	0.0207	0.0834	0.5755	0.1448	0.0003	0.0084	0.0388
Mauritius	2	6	3	0.0036	0.0778	0.0471	0.9098	0.0516	0.0013	0.0034	0.3700
Mexico	1	3	3	0.1749	0.8158	0.2144	0.7078	0.3028	0.0695	0.2239	0.3112
Morocco	2	4	2	0.0227	0.2831	0.0801	0.7970	0.1004	0.0095	0.0589	0.1593
Mozambique	3	6	1	0.0005	0.0216	0.0224	0.7937	0.0280	0.0013	0.0556	0.0243
Myanmar	2	1	1	0.0009	0.0196	0.0457	0.8660	0.0528	0.0004	0.0219	0.0197
Namihia	2	6	2	0.0022	0.0525	0.0427	0.8975	0.0476	0.0007	0.0034	0.2176
Nenal	2	5	1	0.00022	0.0323	0.0127	0.6113	0.3120	0.0028	0.0623	0.0438
Netherlands	1	7	1	0.0454	0.6326	0.0719	0.0115	0.0744	0.0341	0.0505	0.6652
New Zealand	1	7		0.0434	0.0520	0.0715	0.9025	0.0744	0.0041	0.0303	0.0052
Nicoragua	2	2	1	0.0223	0.2540	0.0073	0.6200	0.0224	0.0007	0.0110	0.0963
Nicaragua	2	5	1	0.0012	0.0331	0.0224	0.0899	0.0324	0.0001	0.0101	0.0803
Niger	3	0	1	0.0005	0.0498	0.0091	0.7843	0.0110	0.0008	0.0320	0.0252
Nigeria	3	0	1	0.0243	0.1581	0.1558	0.7813	0.1968	0.0108	0.3855	0.0281
norway	1	/	4	0.1317	0.1402	0.1973	0.7843	0.2516	0.0109	0.0152	0./12/
Pakistan	2	5	1	0.0104	0.1403	0.0742	0.6059	0.1224	0.0245	0.2458	0.1000
Panama	1	3	3	0.0068	0.1237	0.0554	0.6875	0.0808	0.0015	0.0067	0.2242
Papua New Guin	2	1	1	0.0052	0.0405	0.1281	0.7771	0.1648	0.0016	0.0152	0.1113
Paraguay	2	3	2	0.0048	0.0477	0.1007	0.6020	0.1672	0.0027	0.0152	0.1807
Peru	2	3	2	0.0073	0.1175	0.0624	0.4204	0.1484	0.0109	0.0724	0.1508
Philippines	2	1	2	0.0242	0.3879	0.0622	0.6565	0.0948	0.0224	0.2020	0.1111

Table 1 Continued

Table 1 Continued

Country	C1	C2	C3	Overall	EM	IM	Р	Х	Y	L	Y/L
Poland	1	2	3	0.0600	0.6355	0.0946	0.4975	0.1900	0.0296	0.1229	0.2420
Portugal	1	7	4	0.0060	0.2544	0.0236	0.5733	0.0408	0.0135	0.0320	0.4287
Romania	2	2	2	0.0151	0.3880	0.0389	0.4998	0.0776	0.0113	0.0808	0.1404
Russia	2	2	2	0.0953	0.5172	0.1844	0.5257	0.3504	0.1147	0.5320	0.2154
Rwanda	3 6 1 0.0002 0.0145 0.0112 0.7110 0.0156 0.0005 0.0219 0.0222										
Senegal	3 6 1 0.0018 0.0508 0.0359 0.6512 0.0552 0.0013 0.0286 0.0450										
Seychelles	elles 1 6 3 0.0001 0.0059 0.0189 0.6772 0.0280 0.0001 0.0000 0.3159										
Sierra Leone	a Leone 3 6 1 0.0002 0.0219 0.0068 0.7190 0.0096 0.0004 0.0118 0.0362										
Singapore	1	7	4	0.1015	0.6232	0.1629	0.9018	0.1808	0.0084	0.0152	0.5794
Slovak Republic	1	2	3	0.0384	0.5312	0.0722	0.5311	0.1360	0.0053	0.0185	0.2976
Slovenia	1	8	4	0.0247	0.4792	0.0515	0.6665	0.0776	0.0026	0.0067	0.4000
South Africa	2	6	2	0.0412	0.4413	0.0934	0.6785	0.1376	0.0298	0.0943	0.3159
South Korea	1	7	4	0.1338	0.7104	0.1882	0.7685	0.2448	0.0651	0.1347	0.4853
Spain	1	7	4	0.0284	0.4640	0.0613	0.9420	0.0648	0.0682	0.1111	0.6126
Sri Lanka	2	5	2	0.0047	0.1393	0.0336	0.7333	0.0456	0.0058	0.0539	0.1087
St. Vincent & Gre	2	3	3	0.0002	0.0075	0.0259	0.7391	0.0352	0.0001	0.0000	0.2181
Sweden	1	7	4	0.0514	0.5266	0.0978	1.2639	0.0772	0.0192	0.0320	0.5897
Switzerland	1	7	4	0.1548	0.6974	0.2221	1.5367	0.1444	0.0182	0.0269	0.6562
Syria	2	4	2	0.0109	0.1510	0.0725	0.6729	0.1076	0.0058	0.0253	0.2360
Taiwan	1	8	4	0.1489	0.7032	0.2118	0.5712	0.3708	0.0331	0.0657	0.5011
Tanzania	3	6	1	0.0012	0.0543	0.0218	0.6834	0.0320	0.0014	0.0993	0.0145
Thailand	2	1	2	0.0576	0.5499	0.1049	0.6160	0.1700	0.0425	0.2256	0.1882
Тодо	2	6	1	0.0003	0.0268	0.0118	0.4577	0.0260	0.0004	0.0118	0.0321
Trinidad&Tobago	1	3	3	0.0043	0.0929	0.0465	0.5711	0.0812	0.0012	0.0034	0.3478
Tunisia	2	4	2	0.0207	0.3689	0.0560	0.8184	0.0684	0.0052	0.0202	0.2479
Turkey	2	2	2	0.0468	0.4486	0.1043	0.6901	0.1512	0.0398	0.1919	0.2082
United Kingdom	1	7	4	0.1067	0.8382	0.1272	1.0928	0.1164	0.1243	0.2071	0.5992
United States	1	7	4	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Uganda	2	6	1	0.0017	0.0274	0.0622	0.6569	0.0948	0.0016	0.0657	0.0245
Uruguay	1	3	3	0.0009	0.1378	0.0669	0.7603	0.0880	0.0030	0.0101	0.2905
Venezuela	2	3	3	0.0446	0.2273	0.1965	0.6054	0.3244	0.0163	0.0539	0.3018
Yemen	3	4	1	0.0015	0.0481	0.0315	0.6180	0.0508	0.0014	0.0269	0.0525
Zaire	3	6	1	0.0043	0.1029	0.0412	0.3968	0.1040	0.0015	0.1532	0.0096
Zambia	3	6	1	0.0013	0.0277	0.0465	0.7324	0.0636	0.0008	0.0219	0.0359
Zimbabwe	2	6	1	0.0039	0.1059	0.0371	0.7395	0.0500	0.0030	0.0370	0.0805
Mean				0.0434	0.2501	0.0880	0.7450	0.1191	0.0311	0.1567	0.2648
Standard Deviation				0.1182	0.2603	0.1278	0.2544	0.1493	0.1035	0.7167	0.2446
Notes: C1 HDI: 1. Hi	gh, 2.	Mediu	ım, 3.	Low.							
C2 Region: 1.	East	Asia aı	nd Pac	ific, 2. Eur	ope and C	entral Asia	a, 3.Latin	America a	nd the Ca	ribbean,	
4. Middle Ea	ist and	l North	n Afric	a, 5. South	Asia, 6. S	ub-Sahara	n Africa, '	7. High O	ECD, 8. C	ther High	Income
C3 Income: 1	. Low,	2. Mi	ddle, 3	B. Upper M	iddle, 4. H	ligh.					
EM = extensive margin, IM = intensive margin, P = price, X = quantity, Y country GDP,											
L = country employment											
Y/L = country	Y/L = country GDP per worker.										
Sources: Hummels an	nd Kle	now (2	2005),	Human De	velopmen	t Report (2007) and	World Ba	nk (2007)).	

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Panel A: Mean										
	n	Overall	EM	IM	Р	Х	Y	L	Y/L	
High	44	0.0965	0.4597	0.1411	0.8808	0.1572	0.0588	0.0882	0.5352	
Middle	54	0.0213	0.1829	0.0702	0.6738	0.1193	0.0237	0.2664	0.1634	
Low	28	0.0025	0.0504	0.0390	0.6691	0.0587	0.0015	0.0527	0.0355	
All	126	0.0434	0.2501	0.0880	0.7450	0.1191	0.0311	0.1567	0.2648	
Panel B: CV										
	n	Overall	EM	IM	Р	Х	Y	L	Y/L	
High	44	0.5276	1.6777	0.7407	2.9089	0.8567	0.3724	0.5020	2.6018	
Middle	54	0.4661	0.9698	1.0718	3.0297	0.8354	0.3792	0.2472	1.8653	
Low	28	0.5102	1.0633	0.9489	6.5406	1.0121	0.7500	0.6809	2.2188	
All	126	0.3670	0.9611	0.6887	2.9281	0.7977	0.2999	0.2186	1.0828	
Note: EM = extensive margin, IM = intensive margin, P = price, X = quantity, Y = country GDP										
L = country employment, Y/L = country GDP per worker.										
Sources: Hummels & Klenow (2005)										
Human I	Develop	ment Repo	ort (2007)	and calcu	lations by	the autho	ors.			

Table 2. Economic Variables Components Descriptive Statistics by Humn Development Index (Reference U.S.)

Table 5. Economic variables Components Descriptive Statistics by Region (Reference U.)	Table 3. Ecc	onomic Variable	s Components	Descriptive	Statistics by	Region	(Reference U	J.S.)
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Panel A: Mean									
	n	Overall	EM	IM	Р	Х	Y	L	Y/L
East Asia and	8	0.0695	0.3617	0.1338	0.6645	0.2479	0.0694	1.0623	
Pacific									0.1517
Europe and Central	9	0.0343	0.4174	0.0680	0.5602	0.1223	0.0242	0.1134	
Asia									0.2088
Latin America and	26	0.0185	0.1549	0.0702	0.6583	0.1056	0.0122	0.0473	0.2178
the Caribbean									
Middle East and	7	0.0151	0.1962	0.0712	0.6628	0.1046	0.0110	0.0548	
North Africa									0.1953
South Asia	5	0.0121	0.1792	0.0563	0.6113	0.1518	0.0510	0.7205	0.0818
Sub-Saharan Africa	40	0.0033	0.0593	0.0405	0.7096	0.0586	0.0021	0.0431	0.0787
High OECD	25	0.1422	0.5420	0.1895	1.0277	0.1854	0.0939	0.1270	0.6550
Other High Income	6	0.0441	0.4412	0.0744	0.7714	0.1171	0.0106	0.0188	0.5518
All Countries	126	0.0434	0.2501	0.0880	0.7450	0.1191	0.0311	0.1567	0.2648
Panel B: CV									
	n	Overall	EM	IM	Р	Х	Y	L	Y/L
East Asia and									
Pacific	8	0.6915	1.2299	1.1799	4.5923	0.8455	0.5199	0.4123	1.3841
Europe and Central									
Asia	9	1.1100	2.3176	1.2274	7.3517	1.1782	0.6643	0.6718	2.9408
Latin America and									
the Caribbean	26	0.5014	0.8707	1.2513	6.6428	1.2138	0.4652	0.5169	2.3394
Middle East and									
North Africa	7	1.2177	1.6669	1.2088	5.6027	1.2512	0.9665	1.1161	2.7087
South Asia	5	0.8231	1.0034	2.0252	8.2944	1.5553	0.5953	0.5560	3.1103
Sub-Saharan Africa	40	0.4459	0.7772	1.0916	2.9395	1.1248	0.4236	0.6301	0.8275
High OECD	25	0.6172	2.0247	0.7962	3.4052	0.8196	0.4611	0.5721	4.1614
Other High Income	6	0.7917	2.1181	1.0027	2.9320	0.8566	0.8377	0.7737	4.4144
All Countries	126	0.3670	0.9611	0.6887	2.9281	0.7977	0.2999	0.2186	1.0828
Note: EM = extensive	margir	n, IM = inte	nsive marg	gin, P = pr	ice, $X = q$	uantity, Y	country C	6DP	
L = country em	ployme	nt, $Y/L = cc$	ountry GD	P per wor	ker.		•		
Sources: Hummels an	d Kleno	ow (2005),	World Bar	ık (2007) a	and calcul	ations by	the author	S	

Panel A: Mean									
	n	Overall	EM	IM	Р	Х	Y	L	Y/L
Low	41	0.0035	0.0639	0.0439	0.6934	0.0718	0.0073	0.1282	0.0438
Middle	34	0.0280	0.2401	0.0795	0.6375	0.1336	0.0295	0.3106	0.1793
Upper Middle	20	0.0275	0.2269	0.0701	0.6725	0.1090	0.0099	0.0322	0.2893
High	31	0.1232	0.5225	0.1672	0.9781	0.1722	0.0777	0.1061	0.6350
All	126	0.0434	0.2501	0.0880	0.7450	0.1191	0.0311	0.1567	0.2648
Panel B: CV									
	n	Overall	EM	IM	Р	Х	Y	L	Y/L
Low	41	0.5000	0.7821	1.1285	2.9506	1.0700	0.2303	0.2720	1.8029
Middle	34	0.5224	1.2637	1.1103	4.8405	0.8227	0.4173	0.2456	2.7878
Upper Middle	20	0.6125	0.8714	1.0868	7.1164	1.0552	0.5593	0.5629	4.4592
High	31	0.5839	2.0307	0.7603	3.1736	0.8134	0.4195	0.5214	4.0875
All	126	0.3670	0.9611	0.6887	2.9281	0.7977	0.2999	0.2186	1.0828
Note: EM = extensive margin, IM = intensive margin, P = price, X = quantity, Y = country GDP									
L = count	L = country employment, Y/L = country GDP per worker.								
Sources: Humm	els and	Klenow (2	005), Wor	ld Bank (2	007) and ca	alculations	by the aut	hors.	

Table 4. Economic	Variables Com	ponents Descri	ptive Statistics	by Income	(Reference U.S	S.)
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Table 5. F-tests for Equality of Means of Economic Performance Components (Reference U.S.)

Panel A: HDI	F	p-value				
Overall	7.83	0.001				
EM	39.41	0.000				
IM	6.99	0.001				
Р	11.19	0.000				
X	3.90	0.023				
Y	2.95	0.056				
L	1.13	0.326				
Y/L	144.45	0.000				
Panel B: Region	F	p-value				
Overall	4.09	0.000				
EM	18.56	0.000				
IM	3.91	0.001				
Р	8.64	0.000				
X	2.83	0.009				
Y	2.30	0.031				
L	2.82	0.009				
Y/L	73.11	0.000				
Panel C: Income	F	p-value				
Overall	7.63	0.000				
EM	32.11	0.000				
IM	6.54	0.000				
Р	16.06	0.000				
Х	2.95	0.035				
Y	3.27	0.024				
L	0.79	0.500				
Y/L	274.62	0.000				
Note: EM = extensive margin, IM	= intensive margin					
P = price, X = quantity, Y contract of the second	ountry DP					
L = country employment, Y	/L = country GDP p	er worker				
Sources: Hummels and Klenow (2005), Human Development Report						
(2007), World Bank (2007) and ca	lculations by the au	thors				