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Openness, Economic Growth, and Development: Some Further Results

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I. Introduction

In a recent article in this journal, David Dollar examined the experience of 95 less developed countries (LDCs) for the period 1976–85 and found that outward-oriented countries do grow faster than more inward-oriented countries.¹ However, economists disagree as to whether a higher growth rate also means a higher level of economic development. The argument is sometimes made that liberalization policies have given rise to the problem of extensive poverty in the midst of plenty and that this and other distributional problems brought on by liberalization suggest a selective international delinking rather than full-fledged liberalization.² It has also been suggested in the development economics literature that a higher growth rate should not be seen as an end in itself. Even within the World Bank, concerns have been raised that “economic growth by itself may not alleviate the problem [of poverty] within any reasonable time-period.”³

It is not the purpose of this article to deal with all these issues. Rather, I simply ask the question, In addition to higher growth, do more open countries also have a higher level of economic development?⁴ In this article, I try to obtain a preliminary answer to this question by examining the relationship between openness and “human development” for a group of developing countries. More specifically, I examine the correlation coefficients between Dollar’s Openness Index (DOI) and a set of variables used by the United Nations Development Programme (UNDP) to measure a country’s level of human development. These variables include the level and rate of change of the Human Development Index (HDI), the income-distribution-adjusted HDI, the level and rate of change of the under-five mortality rate (UFMR), and the level and rate of change of the proportion of population with access to safe water (SW). The results indicate the following: (a) more open countries also have a higher level of human development as mea-

sured by HDI, a lower under-five mortality rate, and a higher proportion of population with access to safe water. More important, however, (b) the analysis suggests that over time more open countries have had a higher rate of improvement in the UFMR as well as in the SW variables.

The outline of this article is as follows: the nature and sources of the data are discussed in Section II, and the analysis of the correlation coefficients is provided in Section III. Finally, I present conclusions and suggestions for further research in Section IV.

II. Data

With the exception of the DOI, all the data are taken from the 1991 edition of the *Human Development Report*, published by the United Nations Development Programme.⁵

The HDI is an index composed of three indicators: life expectancy, education, and income.⁶ It was constructed on the idea that development cannot be adequately measured on the basis of income alone.

The United Nations Development Programme provides the HDI index for several years (1970, 1985, 1990), as well as a different version of the basic HDI: the distribution adjusted HDI (DAHDI; available for 33 developing countries).⁷ The distribution adjusted HDI, as its name implies, takes into account income distribution characteristics of a country in addition to the other variables included in the basic HDI.⁸

In addition, two other variables were selected in order to measure both the level and the improvement in human development: the under-five mortality rate and the proportion of population with access to safe water.⁹ Other variables such as life expectancy, daily calorie supply, adult literacy rate, and the combined primary and secondary school enrollment ratio were also available. However, since the basic HDI already includes data on life expectancy and education, only the two variables mentioned above were considered.

From these data, a total of 11 variables were available to measure the level of and improvement in human development. These were HDI70, HDI85, HDI90, CHDI, DAHDI, UFMR60, UFMR79, CUFMR, SW80, SW88, CSW.

The HDLxx variables simply represent the HDI series for the year xx. Variable CHDI measures the percentage improvement in the HDI between the years 1970 and 1985.¹⁰ The variable DAHDI is as defined above.¹¹ The UFMRxx variables represent the under-five mortality rate for the year xx, while CUFMR represents the percentage improvement in the UFMR between 1960 and 1979.¹² Finally, the SWxx variables are the safe water access variables for the year xx, with CSW measuring the improvement.¹³ The DOI variable was reconstructed using the data and methodology provided by Dollar.¹⁴

III. Correlation Coefficients

The Pearson correlation coefficients between DOI and the 11 measures of human development are provided in table 1 in column 1. The results show the following. (a) The HDI90, HDI70, and HDI85 variables all show a statistically significant positive correlation with DOI, indicating that more open countries also have a higher level of human development. (b) During the period 1970–85, the improvement in human development was lower for more open countries. However, the correlation coefficient is very close to zero and is statistically insignificant. (c) Even when income distribution is accounted for, the level of human development is positively correlated with openness. Again, however, the correlation coefficient is statistically insignificant. Correlation coefficients for the mortality rate and safe water access variables provide stronger results. A negative statistically significant correlation for both UFMR60 and UFMR89 indicates that the under-five mortality rates are lower for more open countries. But what is more interesting is that the improvement in the under-five mortality rates have also been

TABLE 1
CORRELATION COEFFICIENTS

Variable	Full Sample (1)	Without Africa (2)	Without Asia (3)	Without Latin America (4)	Without the Middle East (5)
HDI90	.46* (94)	.22 (51)	.50* (79)	.58* (70)	.39* (82)
HDI70	.37* (81)	.11 (44)	.41* (67)	.51* (61)	.33* (71)
HDI85	.43* (81)	.19 (44)	.47* (67)	.53* (61)	.40* (71)
CHDI	-.09 (81)	-.01 (44)	-.03 (67)	-.16 (61)	-.04 (71)
DAHDI	.24 (33)	.07 (29)	.57* (23)	.35** (24)	.18 (29)
UFMR60	-.35* (88)	-.15 (45)	.27* (73)	-.49* (64)	-.34* (82)
UFMR89	-.39* (88)	-.15 (45)	-.34* (73)	-.52* (64)	-.38* (82)
CUFMR	.44* (88)	.22 (45)	.40* (73)	.53* (64)	.44* (82)
SW88	.29* (65)	.16 (39)	.46* (54)	.21 (41)	.29* (61)
SW80	.07 (65)	-.05 (39)	.27** (54)	.01 (41)	.04 (61)
CSW	.31* (65)	.34* (39)	.23** (54)	.28** (41)	.35** (61)

NOTE.—Figures in parentheses represent number of data points on which the coefficients of correlation are based.

* Statistically significant at the 5% level.

** Statistically significant at the 10% level.

higher for more open countries, as is evidenced by the positive correlation between DOI and CUFMR. A similar result holds for the safe water variable. More open countries have had not only a higher level of safe water access but also a higher rate of improvement in safe water access.¹⁵

Next, the sensitivity of the results is tested by dropping each region in turn.¹⁶ The results are displayed in columns 2–5. The broad impression is that of concordance of each sample result with that of the full sample. The signs of the correlation coefficients are stable in almost all of the cases and, with the exception of the sample that excludes Africa, mostly retain their statistical significance or insignificance. Given that African countries make up 46% of the full sample, this is not surprising. But even there, the signs of the correlation coefficients are the same as for the full sample.¹⁷

IV. Conclusions

While the results support the broad conclusion that more open countries have a higher level of human development as well as a higher rate of improvement in human development, the results are preliminary. It is clear, however, that the issue merits further research in several directions. First, a more rigorous econometric approach would provide a more solid footing for the evidence. Second, a broader set of measures of human development or income distribution should be used. Third, other more traditional measures of outward orientation should be used to test the sensitivity of the results. Finally, on the theoretical side, the possible relationships between openness and human development or income distribution need to be investigated more thoroughly so as to provide applied econometricians the requisite alternative hypotheses.

As indicated, however, this article is meant only as a small initial step in the investigation of this very important issue. Only further research will indicate whether these preliminary findings hold up.

Notes

1. D. Dollar, "Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976–1985," *Economic Development and Cultural Change* 40 (1992): 523–44.

2. See, e.g., T. Banuri, ed., *Economic Liberalization: No Panacea* (Oxford: Clarendon, 1991).

3. H. Chenery, M. S. Ahluwalia, C. L. G. Bell, J. H. Duloy, and R. Jolly, *Redistribution with Growth* (New York: Oxford University Press, 1974), p. 3.

4. This issue of more open countries having a higher rate of growth is itself not fully resolved. See, e.g., L. Taylor, "Economic Openness: Problems to the Century's End," in Banuri, ed., for a different viewpoint. However, for the purposes of this article, this issue is set aside.

5. United Nations Development Programme (UNDP), *Human Development Report 1991* (New York: Oxford University Press, 1991).

6. The HDI has been criticized by several authors as not being the ideal index to measure the level of human development. See, e.g., O. H. Chowdhury, "Human Development Index: A Critique," *Bangladesh Development Studies* 19 (September 1991): 125-27; A. C. Kelley, "The Human Development Index: Handle with Care," *Population and Development Review* 17 (June 1991): 315-24. Partly in response to these criticisms, the UNDP has brought out several different versions of the basic HDI. For technical details about this index and the other measures of human development, see the appendixes in UNDP.

7. However, the years covered by the indexes are not the same. For 1990, e.g., the HDI was available for 94 of the developing countries covered by Dollar (the one country that causes the discrepancy is Taiwan). But for 1970 and 1985, the HDI index was available only for 81 of those countries. In addition, UNDP's list of developing countries differs from that of Dollar.

8. Amartya Sen's welfare index ("Informational Bases of Alternative Welfare Approaches: Aggregation and Income Distribution," *Journal of Public Economics* 3 [1974]: 387-403, and "Real National Income," *Review of Economic Studies* 43 [February 1976]: 19-39) is an alternative measure of well-being that takes into account income distribution.

9. These are defined as the "annual number of deaths of children under five years of age per 1,000 live births" and "the percentage of the population with reasonable access to safe water supply including treated surface waters, or untreated but uncontaminated water such as that from springs, sanitary wells and protected boreholes" (UNDP, pp. 193-96).

10. I could also have looked at the change in HDI for the periods 1970-90 or 1985-90, but since the DOI was constructed for the years 1976-85, I decided that using the 1990 data would be inappropriate and would introduce spurious correlation (noncorrelation) since the DOI might have changed between 1985 and 1990. Most countries had a positive value for CHDI, indicating an improvement in the HDI. However, one country, Jamaica, had a negative value for CHDI (-2%).

11. Unfortunately, only 29 observations were available for which there were data for both DOI and DAHDI. In the case of HDI70 and HDI85, 81 observations were available.

12. All countries showed a decline in the UFMR between these 2 years. Hence the percentage improvement is calculated as $(UFMR60 - UMFR79)/UFMR60$ rather than the other way around.

13. The SW80 variable is actually the average for the years 1975-80. Also, since the SWxx variables are already in percentage form and the percentage has gone up between 1980 and 1988 for most countries, the improvement is measured simply by $SW88 - SW80$. Unlike the CUFMR variable, however, some values for CSW were negative, reflecting a worsening of safe water access.

14. Dollar (n. 1 above). A problem arose in this reconstruction. Dollar does not provide the exact formula employed in the construction of the openness index, and a simple weighted average of the distortion and variability of the real exchange with weights suggested in Dollar (0.021 for the distortion and 0.10 for the variability—the exact formula used was $DOI = 0.021 [\text{distortion}] + 0.10 [\text{variability}]$) did not replicate Dollar's ranking of outward orientation provided in table 4 of his article. Hence, in this article, the ranking provided in his table 4 was used to assign values for DOI. More specifically, for the 94 countries involved, a rank of 94 was assigned to Malta, the most open country in Dollar's sample, and a rank of 1 to Nigeria, the least open country. In this article, therefore, DOI ranges from 1 to 94. I recognize that there are

some subtle differences between my method and Dollar's, but, it is hoped, none so substantial as to affect the results.

15. Curiously enough, unlike SW88 and CSW, the correlation coefficient between SW80 and DOI is very small and statistically insignificant. As is discussed later, it becomes significant only when the 16 Asian countries are excluded from the sample.

16. As in Dollar, the data set consists of countries from four regions: Asia, Africa, Latin America, and the Middle East. Dollar also includes some European countries but, as noted in n. 7 above, the UNDP's definition of developing countries is somewhat different.

17. The exception is the SW80 variable. It changes sign and statistical significance or insignificance from sample to sample. Further investigation is required for this variable.

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