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Policy Complementarities and the Washington Consensus

Prepared by Jahangir Aziz and Robert F. Wescott[1]

Authorized for distribution by Graham Hacche

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Abstract

While economists continue to debate whether particular economic policies, such as those referred to in Willliamson's (1993) "Washington Consensus," can spur growth in developing countries, this paper demonstrates that it is combinations of policies that are more critical for growth. Policy complementarity refers to the mutually reinforcing benefits of policies that create an environment that is conducive to investment and growth. Quantitative measures of policy complementarity are developed, and the study shows empirically, through both an outcomes-based probability framework and a standard regression analysis, that these complementarities are significant and robust in explaining growth outcomes over the period 1985–95.

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Author's E-Mail Addresses: jaziz@imf.org; rwescott@imf.org

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[1]Mr. Aziz is an economist in the World Economic Studies Division of the Research Department. Mr. Wescott was deputy division chief in the World Economic Studies Division of the Research Department when this paper was written; he is now a deputy division chief in European I Department. This paper was used as background material for the May 1997 *World Economic Outlook.* The authors would like to thank Flemming Larsen and Graham Hacche for comments and suggestions and Michelle Marquardt for excellent research support.

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SUMMARY

Why some developing countries grow rapidly and others do not is one of the most compelling questions in economics. Some researchers argue that good economic policies play an important role and can contribute to fast growth. Williamson (1993) even describes a set of policies that he calls the "Washington Consensus," promoting open trade, deregulation, and liberalized financial markets, that supposedly hasten the pace of economic growth the most. Other researchers, however, claim that growth rates among developing countries are determined primarily by factor endowments and natural proclivities, such as a country's ratio of investment to GDP. They argue that there is little that Washington-Consensus-type policies can do.

This paper argues that critical policy complementarities are missed on both sides in this debate. Policy complementarity refers to the mutually reinforcing benefits of policies that seem to be jointly critical for fast growth. Such a policy package seems to work largely by creating a good environment for investment and might include, for example, openness to trade, policies to secure macroeconomic stability, and measures to limit the degree of government intervention in an economy.

Policy complementarity is shown to be statistically important and robust in helping to explain growth outcomes. Among developing countries that had the most complementary policies, nearly four out of five posted either medium or fast growth. This paper concludes that, while the types of policies referred to in the Washington Consensus are generally the right ones for developing countries to pursue, progress along a multifaceted set of policy dimensions is more critical than sometimes appears to be thought, especially as the world economy becomes more globalized. This finding suggests that efforts to sequence economic reforms in developing countries could lead to outcomes that are less successful than is desirable.

I. INTRODUCTION

One of the most compelling questions in economics is why some developing countries grow rapidly and others do not. Some researchers, like Fischer (1993) and Sachs and Warner (1995), argue that good economic policies play an important role and can contribute to fast economic growth. Coining a name that reflects the thinking at institutions such as the International Monetary Fund and the World Bank, Williamson (1993) even describes a set of policies that he calls the "Washington Consensus"--policies such as the promotion of open trade, deregulation, privatization, and liberal financial markets--that supposedly hasten economic growth the most. Other researchers, such as Sala-i-Martin (1997) and Levine and Renelt (1992), however, claim that growth rates among developing countries are mainly determined by factor endowments and other non-policy factors. To them, the level of initial human capital, and what are considered to be natural proclivities, such as a country's saving rate or investment to GDP ratio, matter most, and there is relatively little that policies can do. These authors present fairly strong cross-country econometric evidence to suggest that the effects of traditional Washington Consensus-type policy variables, if they are significant at all, are not robust with respect to specification, and therefore do not merit great attention.[2]

We argue that there are critical policy complementarities that are missed on both sides in this debate, and that these complementarities are central in determining whether policies can help to promote economic growth in developing countries. Policy complementarity refers to the mutually reinforcing benefits of policies that seem to be jointly critical for fast growth. It might include, for example, openness to trade, policies to secure macroeconomic stability, and policies to limit the degree of government intervention in an economy. It appears that successful policy complementarity works by promoting investment: by reinforcing price signals, promoting effective planning and risk taking by the private sector, and ensuring that the resource allocation decisions made by the public sector are relatively peripheral and support the efficient working of market mechanisms. This paper focuses on such questions as: Do policies matter for economic growth? Why might policy complementarities be becoming more important? How can policy complementarities be quantified and tested for significance? And by how much might a well-crafted suite of complementary policies increase the probability that a typical developing country could experience fast economic growth?

This paper has three main parts. The first section examines how individual economic policies seem to be related to growth. It starts with a description of the types of policies contained in the Washington Consensus, describes the focus of the paper on a select few of these policies (openness, macro stability, and size of government), and shows that based upon regression analysis, virtually none of these policies is individually significant in boosting

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[2]Sala-i-Martin (1997) actually argues that there are many variables whose effects could be considered robust defined differently from Levine and Renelt, but except for openness to trade, none of these are what are generally considered to be economic policy variables.

growth. It also describes an outcomes-based probability analysis framework that we develop as an alternative way to study the necessity and sufficiency of these types of policies to promote economic growth. This framework allows us to examine data for a set of 76 developing countries over the period 1985-95 and look at the probabilities of slow, medium, and fast income growth when certain policies were followed. Again, the finding is that individual policies are of little help in promoting fast growth.

The second section--the heart of the paper--presents a concept of policy complementarity, a methodology for developing quantitative measures of it, and the results of attempts to measure its impact via both regression analysis and the probability framework used in the previous section. After quantitative measures of policy complementarity are developed, including a concept of average policy quality, a measure of dispersion of policy stance, and an overall measure that combines both of these dimensions into an integrated policy complementarity measure, they are shown to be statistically important in helping to explain growth outcomes. By controlling for a host of standard variables that researchers typically hypothesize may influence growth outcomes, including initial per capita GDP, the investment share of GDP, measures of human capital endowment, and also such variables as fiscal measures and indicators of financial development, we also show that the significance of the policy complementarity effect is robust with respect to specification.

A final section concludes and offers thoughts about the implications of policy complementarities for policy makers. While the types of policies that constitute the Washington Consensus are generally the right policies for developing countries to pursue, progress along a multifaceted set of policy dimensions is more critical than perhaps thought, especially as the world economy becomes more globalized. This may mean that efforts to stagger economic reforms in developing countries could lead to less successful outcomes than hoped for.

II. Do Individual Policies Matter for Growth?

The list of policies that have been hypothesized to promote economic growth and development is long. Williamson's (1993) list of Washington Consensus policies includes trade liberalization, fiscal discipline, efficient public expenditure priorities, tax reform, financial liberalization, privatization, deregulation, secure property rights, the promotion of inward direct investment, and a competitive exchange rate that helps to promote exports. Others would add policies to promote macroeconomic stability, including effective monetary and fiscal policies to keep inflation tame and the economy performing close to its potential. Some would add policies that are harder to quantify, such as "good institutions" or "the

absence of civil strife."[3] The investment process may be viewed as central to the creation of higher income levels in developing countries, and therefore the analysis in this paper is focused on policies that help to ensure good resource allocation and that help to create a good environment for investment. This study concentrates on three policies in particular--openness toward trade, good macroeconomic stability (as proxied by the variance of the rate of inflation), and the government share of GDP (to proxy the degree to which the government and not the private sector makes resource allocation decisions.) All three of these policies are important in giving investors realistic price signals and few distortions.

To empirically quantify the effectiveness of these kinds of policies, we rely upon a data set covering 76 developing countries, all of which had a population greater than one million in 1985. All the data are taken from the IMF's *World Economic Outlook* database and *International Financial Statistics*, except for those for initial human capital development, which is from Barro and Lee (1993). The period for this study is 1985-95. As suggested by Mankiw, Romer, and Weil (1992), the following cross-country regression testing the human-capital-augmented Solow model is run:

$$GTH8595 = \underset{(3.40)}{2.13} - \underset{(1.15)}{0.18}\, LGDP85 + \underset{(0.019)}{0.009}\, SEC85 - \underset{(0.33)}{1.33}\, POP8595 + \underset{(0.033)}{0.12}\, INV8595 \qquad \ldots (1)$$

$R^2 = 0.37$

where *GTH8595* is the average growth rate of per capita *GDP* during the period, *LGDP85* is the log of real per capita income in 1985, *SEC85* is the secondary school enrollment ratio in 1985, *POP8595* is the average rate of growth in population, *INV8595* is the ratio of investment to GDP, and standard errors are shown in parentheses. As is evident from the standard errors, the regression coefficients of population growth and investment are significant while those of initial income and human capital are not. When the basic growth equation is augmented with proxies for openness, macroeconomic stability, and government intervention--through the ratio of exports plus import to *GDP* (*TRADE8595*), the standard deviation of inflation (*STDINF8595*), and the share of government expenditure in *GDP* (*GOV8595*)--the regression coefficients of these variables are insignificant. The estimated equation is:

[3]See for example, Douglas North (1993).

$$GTH8595 = \underset{(3.45)}{3.06} - \underset{(1.16)}{0.33}\, LGDP85 + \underset{(0.019)}{0.009}\, SEC85 - \underset{(0.35)}{1.10}\, POP8595$$

$$+ \underset{(0.033)}{0.13}\, INV8595 - \underset{(0.015)}{0.002}\, TRADE8595 - \underset{(0.011)}{0.019}\, STDINF8595 - \underset{(0.04)}{0.05}\, GOV8595$$

$$R^2 = 0.42 \qquad \text{... (2)}$$

This lack of statistical significance for key policy variables corroborates the evidence found in other studies, such as Sala-i-Martin (1997) and Levine and Renelt (1992), where these and similar policy variables have been shown not to have robust correlations with growth. This result contrasts sharply with the frequently assumed importance of government policies. Williamson (1993) in discussing the extent of consensus among policymakers and economists over what are appropriate polices states that

> *"... (whether to) establish and maintain outward-oriented market economies subject to macroeconomic discipline is essentially a positive question. The proof may not be quite as conclusive as the proof that the Earth is not flat, but it is sufficiently well established as to give sensible people better things to do with their time than to challenge its veracity."*

Unfortunately, as equation (2) shows, such a conclusion does not appear to be supported by the data.

This lack of explanatory power for these policy variables suggests either: (i) that the selected variables are poor proxies for the kind of policies being considered, or, (ii) that these policies really do not have any strong direct effect on growth. Given that it is difficult to measure policies directly, researchers are forced to use proxies for empirical investigations. Clearly there are a large number of proxies for these policies that can be justified as reasonable and a vast range of them have been employed in this literature.[4] Depending on the particular proxies used, the above result might be overturned for any number of reasons. Instead of going through an entire array of alternative proxies to see whether some of them turn out to be significant, however, this study continues with the ones selected on the grounds that given the Levine and Renelt result, it is likely that even if some policy variable were to turn out to be significant, it would probably not be robust. Moreover, it is unlikely that the ratio of trade to GDP would fall in a country where trade has been liberalized, or that the macroeconomy could be considered stable when volatility in the rate of inflation is high.

The second possibility, that these policies do not have any direct impact on growth and that they may matter only through their effects on factor accumulation, would seem a

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[4]For example, see Harrison, (1996), for a survey of different proxies used to measure the openness of an economy.

rather hasty conclusion to draw, especially when based upon evidence from cross-country regressions. Cross-country regressions essentially look for average effects. As Quah (1996) has pointed out, this technique effectively constructs a "representative" economy that best fits the wide and diverse experiences among the countries in the sample. All that equation (2) suggests is that for the 76 countries in the sample over the period 1985-95, the best-fitting *linear representative* economy is one where only population growth and investment matter for economic growth. The fact that some countries could in some fundamental policy-related sense be different from the others is not captured by equation (2), and this difference could account for their different growth outcomes.

In this paper, as discussed in the introduction, we hypothesize that policies interact in a complex way and that complementarities among policies are important in accounting for differences in growth experiences. To test this hypothesis two alternative empirical techniques were used. First, an outcomes-based probability analysis is carried out where the probabilities of achieving high, medium, and low growth are computed, conditional on each country's stance with regard to the three policies described earlier, and on an interactive term that measures the degree of complementarity among them. The findings of the probability analysis are corroborated by more traditional cross-country regressions, where it is shown that the degree of complementarity among the three policies is not only significant but also robust in explaining growth.

A. Methodology

The 76 developing countries in the sample are classified into high, medium, and low categories along each of four dimensions--real per capita income growth, openness, macroeconomic stability, and size of government. *GTH8595* and *TRADE8595* are the variables used to measure growth and openness, while the reciprocals of *STDINF8595* and *GOV8595* are the proxies for stability and the size of government. All four variables are then standardized by taking the difference from their respective means and dividing by the standard deviation of the cross-country distribution for the variable. A country is placed in the high category with respect to a variable if the standardized value for that variable is higher than *0.5*, in the low category if below *-0.5*, and in the medium category otherwise.[5] Next, the frequency of countries in the high, medium, and low growth categories is commuted, conditional on the countries satisfying certain specified criteria along policy dimensions, such as high openness or a low standard deviation of inflation. These frequencies are then used to derive the conditional probabilities of achieving high, medium, and low growth.

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[5]These cut-off points correspond to mean ± ½ standard deviation of the respective distributions.

To check for robustness, the actual growth rates are controlled for various factors, such as the initial per capita income and human capital, population growth, the rate of investment, and alternative policy proxies such as the fiscal deficit and the share of commercial bank deposits in total deposits. Conditional probabilities of success of different policy combinations are then computed using these controlled growth rates. Since these controlled growth rates (residuals from cross-country regressions) incorporate the effects of factor accumulation and other policies, the conditional probabilities reflect the direct effects of openness, stability, and government size on economic performance. If the computed conditional probabilities, after controlling for the effects of factor accumulation and different combinations of policies other than these three do not change significantly, then they can be presumed to be robust to the effects of changes in the conditioning information.

B. The Necessity and Sufficiency of Good Policies

Using this methodology, Tables 1-3 summarize the empirical results on the effects of individual policies. They show the probabilities of achieving high, medium, and low real per capita income growth over 1985-95, conditional on high openness, high macroeconomic stability, and a small government sector. When the rate of growth is not controlled for any factor or policy, the probability of achieving high growth (for the sample this turned out to be an annual real per capita rate of growth higher than *2.53* percent over 1985-95) with high or medium openness (trade ratio higher than *43.7* percent) and any combination of the other two policies is only *0.32* (Table 1). The probability of low growth (less than *0.36* percent a year) is *0.31*. When the growth rate is controlled for initial *GDP*, initial human capital, population growth, and the rate of investment, the probability of high growth falls to *0.24* and remains at about this level when the fiscal deficit *(FISCDEF8595)* and the ratio of commercial bank deposits in total deposits *(BANK8595)*--a proxy for financial sector development used by King and Levine (1993) and others--are included.[6]

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[6]The actual regressions of growth on these factors and the control policy variables is shown in Table 7, columns 6 and 8.

Table 1. Openness
(Conditional Probabilities)

Control Variables	High Growth	Medium Growth	Low Growth
None	0.32	0.37	0.31
GDP85, SEC85, INV8595, POP8595	0.24	0.51	0.26
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	0.22	0.49	0.30
GDP85, SEC85, INV8595, POP8595, FISCDEF8595, BANK8595	0.24	0.49	0.28

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on openness being high or medium. Openness is measured as the ratio of trade (export + import) to GDP. The high, medium, and low cutoff points, for both growth and openness, were determined as mean ± half standard deviation of the respective sample distributions. In the case of growth (without controlling for any other variable) the cut-off points were 2.53 and -0.36 percent, while for openness the points were 67.6 and 43.7 percent. The variable *GDP85* is the logarithm of the 1985 per capita GDP, *SEC85* is the 1985 secondary school enrollment ratio, *INV8595* is the 1985-95 average investment to GDP ratio, *POP8595* is the period average population growth rate, *FISCDEF8595* is the average fiscal deficit for the period, and *BANK8595* is the period average ratio of commercial bank deposit to total deposit.

Similarly, neither high macroeconomic stability nor a small government sector by itself seems to be related to high growth (Tables *2* and *3*), although the conditional probabilities of attaining high growth are marginally higher in the latter cases. Consequently, high or medium openness, low or medium inflation, and a small or medium-sized government sector individually do not seem to guarantee economic success. The fact that conditional probabilities in all three cases do not change significantly when different sets of controls are used for the rate of growth suggests that these results are robust to alternative specifications.

Table 2. Macroeconomic Stability
(Conditional Probabilities)

Control Variables	High Growth	Medium Growth	Low Growth
None	0.35	0.42	0.24
GDP85, SEC85, INV8595, POP8595	0.31	0.51	0.18
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	0.32	0.46	0.22
GDP85, SEC85, INV8595, POP8595 FISCDEF8595, BANK8595	0.30	0.49	0.22

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on macroeconomic stability being high or medium. Stability is measured as the reciprocal of the standard deviation of the rate of inflation. The high, medium, and low cutoff points, for both growth and stability, were determined as mean + half standard deviation and mean minus half standard deviation of the respective sample distributions. In the case of growth (without controlling for any other variable) the cut-off points were 2.53 and -0.36 percent, while for the standard deviation of inflation the points were 33.2 and 5.7 percent.

Table 3. The Size of Government
(Conditional Probabilities)

Control Variables	High Growth	Medium Growth	Low Growth
None	0.37	0.38	0.25
GDP85, SEC85, INV8595, POP8595	0.32	0.50	0.18
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	0.33	0.41	0.27
GDP85, SEC85, INV8595, POP8595, FISCDEF8595, BANK8595	0.33	0.43	0.25

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on the size of government being low or medium. The size of government is measured as the ratio of government expenditure to GDP ratio. The high, medium, and low cutoff points, for both growth and stability, were determined as mean + half standard deviation and mean minus half standard deviation of the respective sample distributions. In the case of growth (without controlling for any other variable) the cut-off points were 2.53 and -0.36 percent, while for the size of government the points were 29 and 20 percent.

What can be deduced above whether these types of policies are *necessary* for good economic performance? In Table 4 the probabilities of achieving high growth are computed, conditional on one policy being poor and the other two policies showing at least one at a high level and at most one of medium level. This tests whether poor performance along one policy front with good performance among the other two results in low growth. The probability of achieving high growth in this scenario is between *0.24* and *0.14* for the different sets of controls, while the probability of low growth is between *0.38* and *0.29*. This result suggests that even if two of the three policies are "right" but one policy is "wrong", a country will not achieve high growth. Good policies in all these categories do seem to be necessary for high growth.

Table 4. The Necessity of Policies
(Conditional Probabilities)

Control Variables	High Growth	Medium Growth	Low Growth
None	0.19	0.43	0.38
GDP85, SEC85, INV8595, POP8595,	0.19	0.52	0.29
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	0.24	0.43	0.33
GDP85, SEC85, INV8595, POP8595, FISCDEF8595, BANK8595	0.14	0.57	0.29

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on one policy being poor with other two being at least one high and at most one medium.

Table 5. The Sufficiency of Policies
(Conditional Probabilities)

Control Variables	High Growth	Medium Growth	Low Growth
None	0.20	0.35	0.45
GDP85, SEC85, INV8595, POP8595	0.25	0.35	0.4
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	0.25	0.25	0.50
GDP85, SEC85, INV8595, POP8595, FISCDEF8595, BANK8595	0.25	0.35	0.40

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on one policy being in the high category with other two being at least one in the low and at most one in the medium group.

Are such policies individually *sufficient* to promote fast growth? The answer is no, which is not surprising, given the earlier evidence from the cross-country regressions. Table *5* summarizes the probabilities of achieving different levels of growth conditional on one policy being the "right" type and the other two being the "wrong" types. The conditional probabilities of achieving high growth is between *0.20* and *0.25*, while that of low growth is between *0.40* and *0.50*. Good performance along a single policy dimension with poor policies along the other two tends to lead to low growth. The conclusions that emerge are that no policy by itself seems to be sufficient for fast growth, and that at least a moderate degree of policy success is necessary in several areas to achieve fast growth.[7] This points at least tentatively toward a possible complementarity among these policies--that a good policy produces the desired outcome only in the company of other mutually reinforcing good policies.

III. Policy Complementarities

The concept of policy complementarity has to do with the complex interactions that take place among and between policies, and whether or not a favorable environment for investment and for growth is created. Do policies combine to provide clear world price signals? Do they combine to provide appropriate incentives for risk takers? Do they promote the most efficient allocation of resources, taking into account best practice technology? A favorable policy complementarity would be one in which a combination of policies work to

[7]This conclusion differs sharply from that drawn by Sachs and Warner, "Economic Convergence" who conclude that an open trade stance and protection of private property rights are sufficient for fast growth.

give the right world price signals, proper incentives for returns, and efficient resource allocation.

The importance of policy complementarity may be argued to be inextricably intertwined with the pressures of globalization in the world economy. As the forces of globalization become ever stronger, with countries linked ever more tightly via trade flows, capital flows, and technology transfers, it is to be expected that policy complementarities would become increasingly important.[8] Consider, for example, a country that was open to foreign trade, but that did not welcome foreign capital or technology. Would it not be surprising if the country failed to reap the full potential gains from trade, and hence did not realize its maximum growth potential as a result? Or consider the risks that not aligning a suite of policies in the same direction might entail. If a country was very open to foreign trade and capital flows, but did not achieve a good degree of macroeconomic stability--say by allowing inflation to accelerate sharply--it might well find that the foreign capital would flee, with heavily negative ramifications for the economy, such as perhaps soaring interest rates or a financial panic. In fact, it is possible to imagine cases in which adopting some Washington Consensus-type policies, but neglecting to implement important other policies, might actually lead to a growth outcome that could be inferior to the case of making fewer reforms.

The probability analysis framework used earlier may be used to assess the role of policy complementarities. In keeping with the three-category classification of policies described earlier, we define three types of policy complementarities: (i) high quality complementarity--combinations of policy scores of 3 out of 3 highs or 2 highs and 1 medium, (ii) medium quality complementarity--combinations of 3 medium or 1 high and 2 medium policy scores, and (iii) low quality complementarity--policy scores of all 3 lows, 2 lows and 1 medium, and 1 low and 2 medium. This leaves behind the following combinations of policy scores, 2 highs and 1 low, 1 high and 2 lows, and 1 high, 1 medium, and 1 low. We classify these as situations of no complementarity.

Based upon this classification scheme, the probability of achieving high growth conditional upon policies displaying high quality policy complementarity in *0.89* (Table 6). For medium quality complementarity, the probability of high growth is only *0.17*, but that of medium growth is a high *0.61*. Low quality complementarity, which includes policy combinations that are strongly biased towards poor economic performance, has a *0.13* probability of generating high growth and a *0.44* chance of low growth. The probability of achieving high growth conditional on policies having no complementarity is about *0.24*, while the conditional probability of low growth from no complementarity is a relatively high *0.37*.

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[8]See the IMF's May 1997 *World Economic Outlook* for a discussion about these globalization trends.

When the rate of growth is controlled for factor accumulation, the fiscal deficit, and the stage of financial development, the conditional probability of high growth in the high quality complementarity case falls from *0.89* to *0.56*, although the joint probability of high or medium growth remains the same as before at close to *1*. The conditional probabilities of the low and medium quality complementarity and no complementarity categories do not change significantly. Despite the fall in the probability of high growth for the high complementarity case, it is still about two and a half times higher than in situations where policies do not have any complementarity.

Table 6. Complementarities in Policies and Economic Growth
(Conditional Probabilities)

Control Variables		*High Growth*	*Medium Growth*	*Low Growth*
None	*No Complementarity*	0.24	0.39	0.37
	Low Quality Complementarity	0.13	0.44	0.44
	Medium Quality Complementarity	0.17	0.61	0.22
	High Quality Complementarity	0.89	0.11	0.00
GDP85, SEC85, INV8595, POP8595	*No Complementarity*	0.24	0.39	0.36
	Low Quality Complementarity	0.25	0.37	0.37
	Medium Quality Complementarity	0.22	0.67	0.11
	High Quality Complementarity	0.56	0.44	0.00
GDP85, SEC85, INV8595, POP8595, FISCDEF8595	*No Complementarity*	0.27	0.33	0.39
	Low Quality Complementarity	0.25	0.37	0.37
	Medium Quality Complementarity	0.17	0.56	0.28
	High Quality Complementarity	0.56	0.44	0.00
GDP85, SEC85, INV8595, POP8595, FISCDEF8595, BANK8595	*No Complementarity*	0.21	0.46	0.33
	Low Quality Complementarity	0.31	0.31	0.37
	Medium Quality Complementarity	0.22	0.50	0.28
	High Quality Complementarity	0.56	0.44	0.00

Notes: The table summarizes the probabilities of achieving high, medium, and low growth conditional on the degree of complementarity among and quality of policies. The no complementarity category refers to policy scores of 2 highs and 1 low, 1 high and 2 lows, or 1 high, 1 medium, and 1 low. The low quality complementarity includes policy scores of all three low, 2 lows and one medium, and 1 low and 2 medium. The middle category has policy combinations of 3 medium or 1 high and 2 medium scores. The high quality complementarity category includes 3 highs, 3 highs and 1 medium combination of policy scores.

These results suggest that policies need to be mutually supportive and consistent if they are to be effective. *Ceteris paribus* calculations based on estimated linear representative economies that simulate the effect of a change in a particular policy on growth can provide quite misleading predictions. The usefulness of a policy depends upon what the accompanying policies are. A consistent set of good policies has a significantly higher probability of leading to fast growth than a set of policies that lack consistency, even when some of them are the right ones.

In order to corroborate the conclusions derived from Table 6, econometric evidence was also obtained using cross-country regressions. The first step was to develop a variable that measures policy complementarity and that can serve as the counterpart to the complementarity categories used in the probability analysis. Our choice of variable was largely guided by two considerations: (i) in keeping with the other right-hand side variables it should be continuous rather than discrete and, (ii) it should be easily and efficiently reproducible. As discussed in the previous paragraphs, policy complementarity has two aspects--the dispersion or variation in quality among the policies adopted by a country, and the overall quality of policies. For example, in Table 6 we used three sub-categories of complementarity, namely high, medium, and low quality. Given these objectives we constructed two different variables--one that captures the dispersion in quality of a country's policies, and another that measures the overall quality of its policies. These two variables were then combined to create the policy complementarity proxy.

An immediate problem in attempting to measure the relative dispersion in quality among different policies pursued by a country is that the proxies for the policies have different metrics. For example, the standard deviation of the rate of inflation, the share of trade in GDP, and the share of government expenditure in GDP are not directly comparable or additive. To get around this problem all variables including the policy related ones were standardized. A standardized variable for a country now measures by how many standard deviations (of the variable's own cross-country distribution) it is higher or lower than the average for the sample. For example, if a country's trade share, standardized, is *-0.5*, this means that the country's trade to GDP ratio is half a standard deviation below the average openness of the sample. The standardized variables for macroeconomic stability and the size of government are defined in a similar manner. Since the rate of growth is also standardized, partial correlations from cross-country regressions will denote whether above-average quality along a policy dimension is associated with above or below average growth.

To measure the relative dispersion across policy stances adopted by a country we use the standard deviation of the three standardized variables of interest--openness, stability, and the size of government. This measure is termed policy dispersion *(POLDISP)*. Overall (or average) policy quality *(POLQLTY)* is measured by the median of the three standardized variables. Finally, policy complementarity *(POLCOMP)* is evaluated as the difference between *POLDISP* and *POLQLTY*, so that the quality of the overall policy stance is discounted by the dispersion among the constituent policies. An alternative technique often used in the literature is to add to a linear regression specification a multiplicative interaction term and estimate its significance. For example, in a regression of $Y = a + b_1 * X_1 + b_j * Xj$ one can add an interactive term such as $b_3 * X_1 * X_2$ such that the partial derivative of X_i is $b_1 + b_3 * Xj$. If b_3 is significant, then the effect of X_i on Y depends on what happens to Xj . Although this has the flavor of policy complementarity between X_1 and Xj, in fact, it measures policy spillovers or externalities. Policy complementarity essentially requires a measure of relative dispersion between X_1 and Xj, rather than their joint effect.

To evaluate the impact of policy complementarity on growth we first add *POLDISP* to the base regression--equation (1). As shown in Table 7, equation (3), this variable has a significant negative coefficient suggesting that regardless of the quality of the policy stance, if policies are widely dispersed growth falters. Overall policy quality however, has no significant impact on growth, although its coefficient is positive as one would expect. When *POLCOMP* is added to the base regression it is significant and positive, meaning that better policy complementarity leads to faster growth (equation (5) in Table 7). Given the lack of significance of *POLQLTY* it follows that the significant correlation of *POLCOMP* largely has to do with *POLDISP*, such that one is justified in having constructed this synthetic variable.

To test for robustness, the conditioning information was altered by the introduction of two other policy variables, the average fiscal deficit as a percent of *GDP (FISCDEF8595)* and the share of commercial bank deposits in total deposits *(BANK8595)*. Many authors such as Fischer (1993) and King and Levine (1993) have argued that these two variables, which measure the fiscal stance and the level of financial development, are important factors in the growth process. Individually, each of these variables is significantly correlated with growth (equations 6 and 7), but as pointed out in Levine and Renelt (1992), they lose their significance once the set of conditioning information is changed. In this case, when *FISCDEF8595* and *BANK8595* are added to the base regression simultaneously, both are rendered insignificant (equation 8). This result verifies, for the period 1985-95, the non-robust results obtained from extreme bound analysis undertaken in Levine and Renelt, and extends that finding for just developing countries.[9] However, both *POLDISP* and *POLCOMP* remain robust to the inclusion of *BANK8595* and *FISCDEF8595* (equations 9 and 10).

The robust and positive correlation of *POLCOMP* with growth corroborates the results derived from the probability analysis. There the probability of achieving high growth increased significantly when policies were consistent and of good or high quality. Here we also show that countries with better policy complementarity have higher rates of growth. The probability analysis showed that the lack of complementarity, even when some polices were of the right kind, reduced the probability of high growth. This regression analysis also indicates that countries that have a high dispersion among their polices (high *POLDISP*), on the average, have lower growth.

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[9]The Levine and Renelt study covered the period 1960-85 and their sample included industrial countries. Although, Levine and Renelt used more indicators for financial development, a complete set of data for those variables for the period 1985-95 was not available for a number of countries in the sample.

Table 7. Cross-Country Regressions: Macroeconomic Polices and Growth
(Dependent Variable - Standardized Growth Rate of Real Per Capita GDP)

Independent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Constant	0	0	0.001	-0.02	-0.001	0	0	0	0	0	0
	(0.09)	(0.09)	(0.1)	(0.09)	(0.09)	(0.1)	(0.1)	(0.1)	(0.09)	(0.09)	(0.09)
Log of initial per capita GDP (LGDP85)	-0.076	-0.04	-0.04	-0.03	-0.06	-0.1	-0.15	-0.17	-0.18	-0.18	-0.13
	(0.15)	(0.15)	(0.14)	(0.15)	(0.14)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.16)
Investment share (INV8595)	0.37*	0.40*	0.42*	0.34*	0.40*	0.33*	0.29*	0.28*	0.33*	0.32*	0.32*
	(0.1)	(0.11)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.12)
Population growth (POP8595)	-0.41*	-0.33*	-0.37*	-0.40*	-0.36*	-0.36*	-0.40*	-0.37*	-0.34*	-0.35*	-0.34*
	(0.1)	(0.11)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.1)	(0.11)
Secondary school enrollment (SEC85)	0.07	0.07	0.09	0.06	0.09	0.08	0.08	0.09	0.1	0.1	0.1
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Share of international trade in GDP (TRADE8595)		-0.02									-0.07
		(0.13)									(0.13)
Standard deviation of inflation (STDINF8595)		-0.18									-0.14
		(0.1)									(0.11)
Size of government in GDP (GOV8595)		-0.17									-0.05
		(0.12)									(0.15)
Fiscal deficit as a percent of GDP (FISCDEF8595)						-0.23*		-0.14	-0.11	-0.1	-0.12
						(0.11)		(0.12)	(0.12)	(0.12)	(0.14)
Share of commercial bank deposit in total deposit (BANK8595)							0.27*	0 .19	0.2	0.17	0.14
							(0.11)	(0.13)	(0.13)	(0.13)	(0.14)
Dispersion in policy stance (POLDISP)			**-0.21***						**-0.18****		
			(0.1)						(0.095)		
Average quality of policies (POLQLTY)				0.22							
				(0.16)							
Policy complementarity (POLCOMP)					**0.22***					**0.17****	
					(0.1)					(0.098)	
R2	0.37	0.42	0.41	0.38	0.42	0.41	0.41	0.43	0.46	0.46	0.44
Number of observations	76	76	76	76	76	76	76	76	76	76	76

Notes: All independent variables are standardized. A asterisk indicates that the variable in such a regression is significant at the 5 percent level, while a double asterisk indicates significance at the 10 percent level. Standard errors are given in parentheses.

IV. Conclusions and Considerations for Policy makers

This paper, like earlier research, finds scant evidence that *individual policies* that have been thought to promote faster economic growth--such as an open trade stance, stable macroeconomic policies, and a relatively small government sector--do much good. Although it is possible to show simple correlations between these types of individual policies and growth performance, the results are not very robust. From an econometric point of view, a slight re-specification of the policy variable in question or the addition of an extra explanatory variable typically causes any significant positive influence to disappear. In this sense, this paper tends to confirm the findings of Sala-i-Martin (1997) and Levine and Renelt (1992).

But whereas these researchers tend to see this as the end of the story, this paper suggests that this is just the beginning of the story. Instead, it appears to be *combinations of policies* that are important: hence this paper's focus on policy complementarities. We demonstrate, using both an outcomes-based probability analysis approach and a standard regression approach, that favorable combinations of policies can significantly increase a developing country's economic growth performance. As shown in Tables 1-5, the probability that the typical developing country experienced fast per capita income growth over the period 1985-95 was in the range of 0.20 to 0.35 if it had only a single high quality policy. But this probability jumped to the range of 0.55 to 0.90 when there was complementarity at a high quality level among three key policy areas--openness, macroeconomic stability, and size of government. We have also demonstrated econometrically that although none of these three policies individually is significant in explaining the pace of economic growth, collectively they are significant in explaining growth when they are summarized in the policy complementarity variable that we define.

This conclusion supports the intuition among economists in the policy making community that good policies help countries to grow faster, and it should encourage researchers to study more carefully policy interactions and policy complementarities. While the paper suggests a set of core policies--trade openness, macroeconomic stability, and a relatively low degree of government involvement in economic activity--that appear to greatly improve a country's chances of exhibiting rapid economic growth, there may be other policy combinations that are even more effective in promoting growth. These findings support the overall logic of the Washington Consensus, if not its component by component details. It appears that it is important to think about a set of policies that can help to promote growth, and that carefully crafting a policy package can pay handsome dividends in terms of improved economic outcomes.

This finding about policy complementarities could have somewhat unsettling ramifications for countries that are seeking to sequence their policy reforms, perhaps to try to stagger the political battles that they face with special interest groups. This issue is very complex. It is probably better to make policy progress on some fronts than to do nothing, but

national authorities must recognize that policy gaps in critical areas can cause improvements in economic growth to be imperceptible, and, in a worst case scenario, could cause problems if reforms are not sequenced carefully. In particular, countries that have liberalized their capital markets and that receive large amounts of foreign capital inflows must be careful to make sure that they do not backslide in other critical areas.

That policy complementarities are becoming more important as the world economy becomes more globalized should not be surprising. International business decisions, such as where to set up an overseas manufacturing plant, how to pay for it, where to sell its products, how much technology to transfer to the plant, and where to source that technology are increasingly interrelated. It is to be expected that policies that hinder any aspect of such an operation may disrupt expansion plans, and by extension, the pace of economic growth. As the forces of globalization continue to increase in the world economy, policy complementarities appear likely to become even more important.

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