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The Net External Asset Position and Economic Growth - Some Simple Correlations for 116 Countries

by

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THE NET EXTERNAL ASSET POSITION AND ECONOMIC GROWTH - SOME SIMPLE CORRELATIONS FOR 116 COUNTRIES

Abstract

Two datasets are combined to analyze a few standard implications of the theory of economic growth. Real GDP per capita (RGDP) and the investment share (IS) are taken from Summers, Heston (1988), the ratio of net external assets to GDP (=NAP) are calculated by Sinn (1990). For the period 1970-1985, the data for a sample of 116 countries are analyzed; in addition, the group of industrial countries and highly indebted countries is discussed.

One hypothesis suggests that low-income countries catch up in the process of development, and that this is, in part, made possible by the supply of capital from abroad. The data show indeed that poor countries borrow more; however, they do not grow faster than rich countries. Furthermore, those countries which show relatively high growth are not large capital importers. In general, the ratio of net external assets to GDP does not help to predict how fast a country will grow in the future; this also means that high debt is not a burden in the sense that a country will grow less than average. These results hold for the entire sample and for the two subgroups of countries as well.

A second analysis includes the investment performance. A high investment share coincides with high economic growth in the large sample, but not for industrial or highly indebted countries. The hypothesis that a low NAP goes along with a high IS is not supported by the data; the opposite is true for industrial and highly indebted countries. It seems that large creditor countries (high NAP) also invest more at home.

In general, the analysis does not support the - plausible - ideas of cycles of external debt or the stages hypothesis in the balance of payments which suggest that low-income countries tend to run a current account deficit while investing more and growing faster than other countries; such performances seem to be the exception. The fact that the level of net external assets does not, per se, say anything about the strength of economic growth implies that high debt does not mean that a country has large problems, just as the fact that a country runs a high surplus in the current account is not - by itself - a sign of strength. Therefore, conclusions for economic policy must be based on more than just figures on net external assets or current account balances.

THE NET EXTERNAL ASSET POSITION AND ECONOMIC GROWTH - SOME SIMPLE CORRELATIONS FOR 116 COUNTRIES*

I. Introduction

The issue of external debt has been in the center of the international economic policy debate for many years. The debt problem of less developed countries and the advance (or, as some would say: the decline) of the United States as the world's largest debtor have been characterized as the major "imbalances" of the world economy finding their counterparts in persistently high current account surpluses - and increasing net foreign assets - of a few industrial countries, particularly Japan and West Germany. To many observers, these facts are market failures. Only if they reflected differences in propensities to save or in investment opportunities there would be "... no guarantee that they will go away, and probably no economic reason they should" (Tobin, 1987, p. 7). There are several hypotheses why net external assets may change over time. The purpose of this paper is to look at some general facts about changes in net external assets and data related to economic growth. In particular, I want to describe a few patterns and see whether they are compatible with the standard implications derived from the theory of economic growth and of economic development.

The data to be commented on are taken from the quite well-known income comparisons for 130 countries by Summers, Heston (1988) and the data recently calculated by Sinn (1990) on the net external asset positions of 145 countries.[1] Due to some gaps in both data sets[2] the maximum number of countries is 116. In ad-

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* An earlier version of this paper was presented at the Workshop on "Net External Asset Positions: Data, Methods, and Interpretations" at the Kiel Institute of World Economics, March 5/6, 1990.

1 These data are described and interpreted in Gundlach, Scheide, Sinn (1990).

2 Either particular years are not covered or the data of interest are not provided for a few countries.

dition, two subgroups are of interest, namely industrial countries (ICs) and highly-indebted countries (HICs), with 21 and 17 members, respectively.[1] Data are used for the period for which both sets overlap, i.e. 1970-1985. The series of interest are real per capita GDP (RGDP) and the percentage share of gross domestic investment (IS) from Summers, Heston; from the Sinn-databank, annual series of net external assets in percent of GNP or GDP (it is this ratio that is defined as the net external asset position = NAP) are provided.[2] These three series, or their changes and growth rates over time, are compared in the following section.

II. A Look at Several Hypotheses

1. On the relationship between economic growth and net external assets

In an open economy, the level of net external assets may change when the economy adjusts to temporary shocks. For example, a negative real shock (harvest failure) which is transitory will induce domestic residents to decrease their current savings. This shortfall of savings can be met by an additional supply of funds through the international credit market. Equivalently, this economy will - if starting from zero balance - run a current account deficit for a while.[3] In this paper, I will, however, concentrate more on long-run determinants; in that case, external lending and borrowing may reflect different saving propensities, growth prospects, investment opportunities and so on.

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1 According to the classification of the International Monetary Fund.

2 The stock of assets and liabilities are calculated for four sectors of the economy. The total net external assets are end-of-year data, calculated in US-Dollars. GNP (GDP) are annual data, also in US-Dollars. For a description of the methods and estimation cf. Sinn (1990).

3 Cf. Barro (1990) for an analysis of various cases.

Standard (neoclassical) growth theory - if applied to economic development - suggests that countries with a low real income should grow faster than rich countries. This catching up, the theory goes, is due to higher investment opportunities in poorer countries; capital is relatively scarce, and the potential rate of return is high. Temporarily faster growth is made possible - perhaps - by higher domestic savings, but more importantly by more saving of high-income countries where capital is relatively abundant. In effect, this theory predicts that poor countries should grow faster than rich countries, and that poor countries should be in debt while wealthy countries should be creditors.

As to the first hypothesis, it is well known from other studies that the postulated relationship does not show up in the data.[1] In Figure 1, data for 116 countries are plotted for the level of real per capita GDP (RGDP) in 1970 and the average growth rate of real GDP for the period 1970-1985. There is no clear negative correlation, so there is no convergence between countries over time. This may be surprising from the point of view of those who focus on the "success stories" of countries such as South Korea, Singapore, Taiwan and Hong Kong. Indeed, these countries are in the low- to middle income range and are among the five countries with the highest average growth rates in this sample. There may be many economic reasons why this is so; however, the sample also includes poor countries with low or even negative growth rates, so the hypothesis does not hold in general. For the smaller sample of industrial countries, the relationship seems to be a little closer; GDP-growth is negatively correlated with its level at the 5 p.c. significance level. The same applies to the highly indebted countries.[2] Although the samples may be too small and the sample period too

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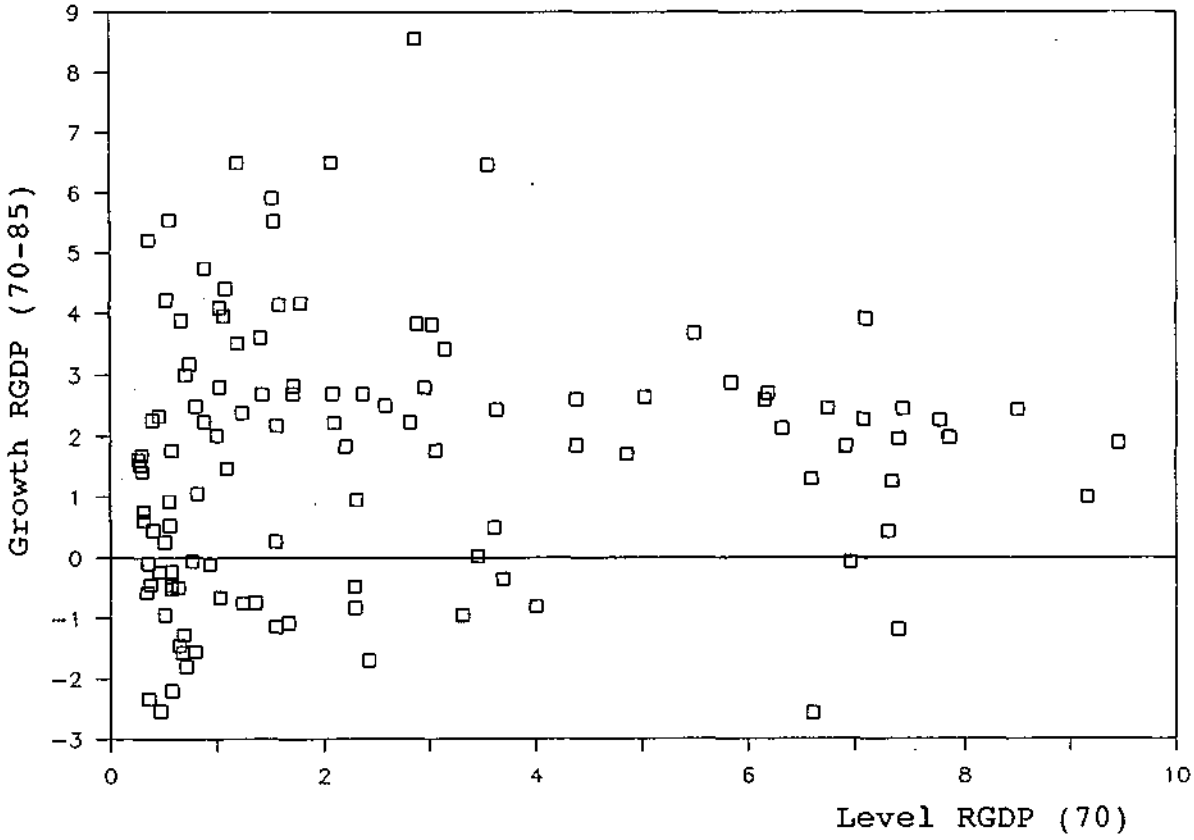
[1] See, for example, Romer (1989) who shows this for a longer time period ("stylized fact" number 7). Lucas (1988) discusses other empirical studies.

[2] The regression results are summarized in the Appendix. The OLS-estimates of the coefficients are heteroskedastic-consistent as described in the TSP-package (1987).

Figure 1: Level and Average Growth of Real GDP

a) All Countries



b) Industrial Countries

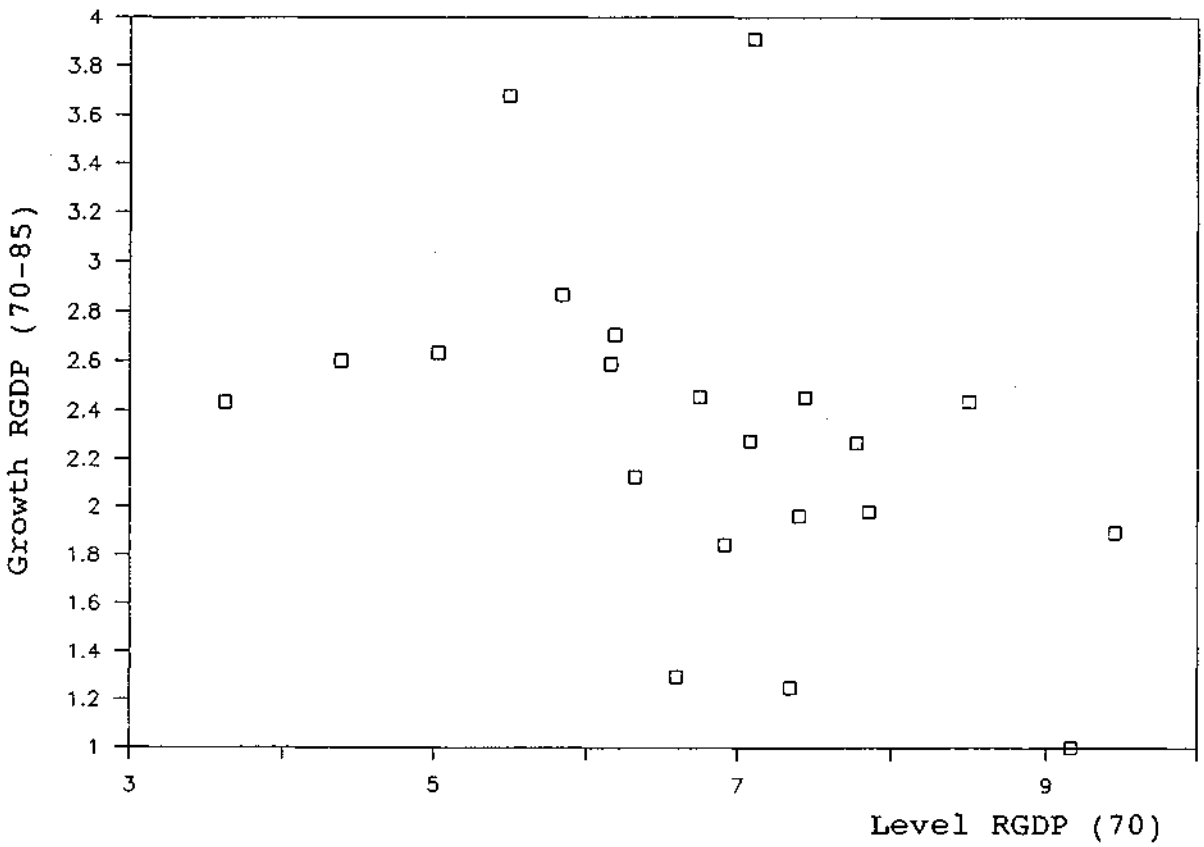
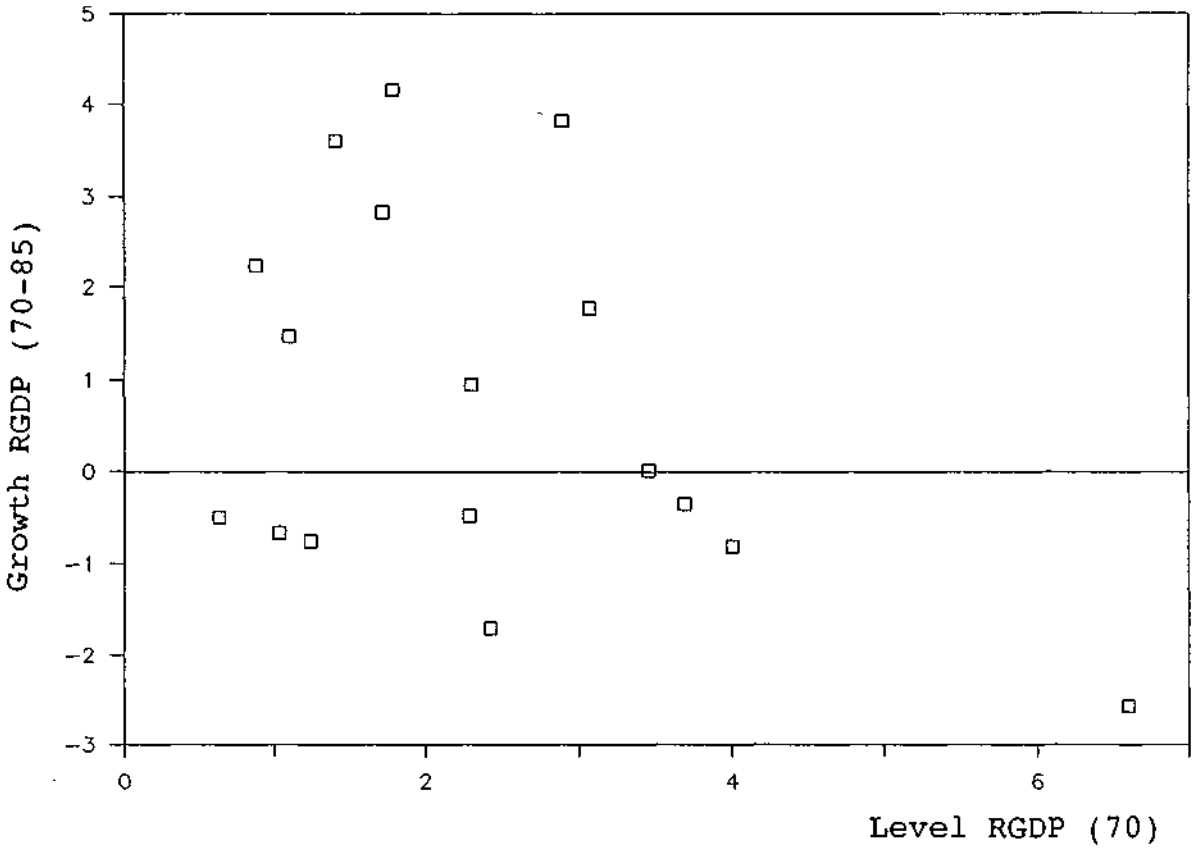


Figure 1 (contd.)

c) Highly Indebted Countries



short to really contradict the overall evidence, these observations may point at differences in the growth process of various country groups.

The second hypothesis concerns the relationship between the net external asset position and the level of GDP: Do poor countries borrow more? While this question may sound awkward with the United States being a large debtor[1], Figure 2 covers 116 countries; the graphs show the level of real GDP and the ratio of net external assets to GDP in four different years (1970, 1975, 1980, 1985). In the course of the 15-year-period, the spread between the maximum ratios for creditors and debtors has increased. In 1985, the largest creditor is Luxembourg with a NAP ratio of 363.7 p.c.; the largest net debtor, again in relation to GDP, is Mauritania (222.6 p.c.). Overall, there seems to be a positive correlation between RGDP and NAP, low-income countries borrow more while high-income countries tend to be savers. This is revealed by regression results which show a significantly positive correlation between the two variables.[2] The relationship does not, however, hold up for the two subgroups of the ICs and HICs where it seems to be more affected by outliers.[3]

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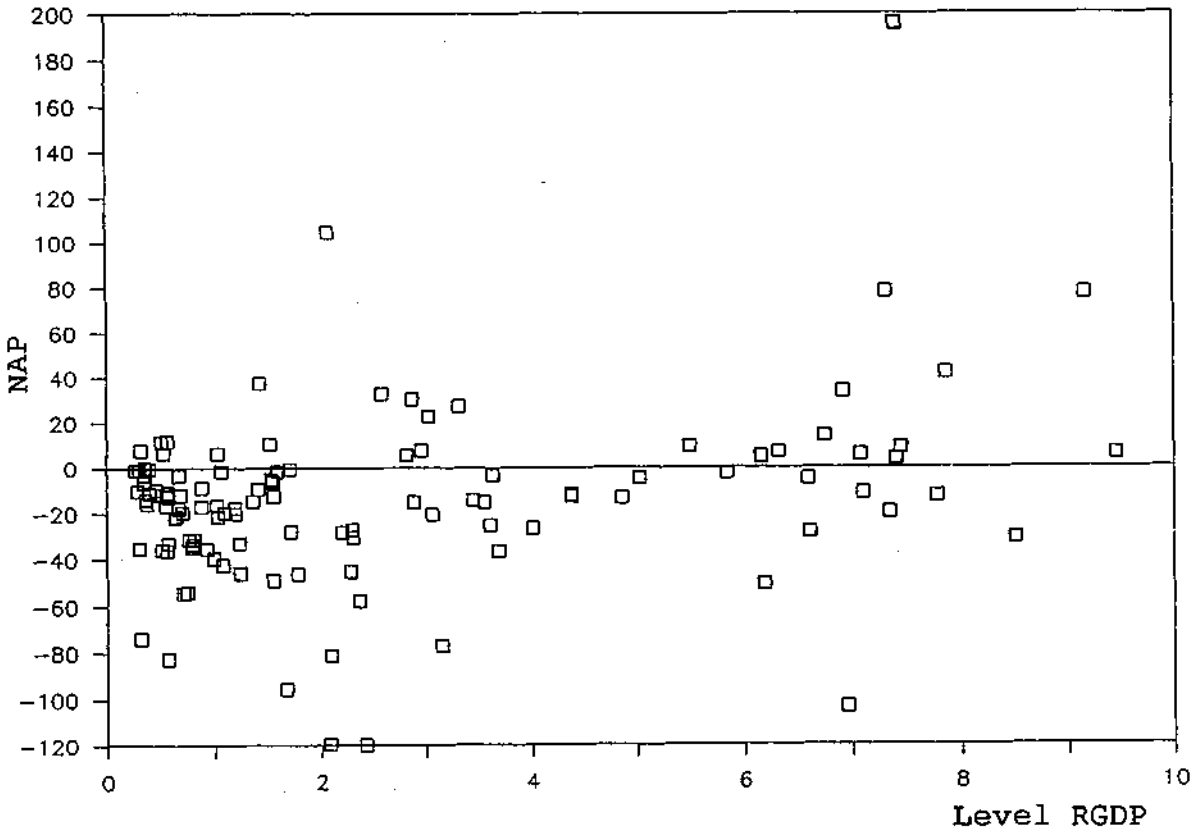
[1] The idea that the US external debt poses a problem for future generations in the US or for the world economy as a whole is widely held. It must, however, be solely based on the absolute size because in relation to GNP, that ratio is larger in twelve of the industrial countries. For example, the ratio for the US is by far surpassed by the ratio of countries such as Canada, Australia, Sweden and Denmark. Besides, the notion of a debtor has been questioned on the basis of problems concerning valuation: Ulan, Dewald (1989) find that the US was a net creditor in 1987 if assets and liabilities are measured in terms of market value instead of historic cost.

[2] At a significance level of 5 p.c. or smaller. See Appendix.

[3] The graphs are not presented here.- Interestingly, not all of the highly indebted countries can be considered problem debtors at all. For example, Uruguay shows a positive NAP in 1987 (Gundlach, Scheide, Sinn, 1990). For several of the other HICs, the net external debt is much smaller than the usually reported data on gross external debt. Furthermore, the measures of external debt concern only the book value; at market value, several of these countries would probably not be considered debtors at all.

Figure 2: Net External Asset Position and Level of Real GDP

a) 1970



b) 1975

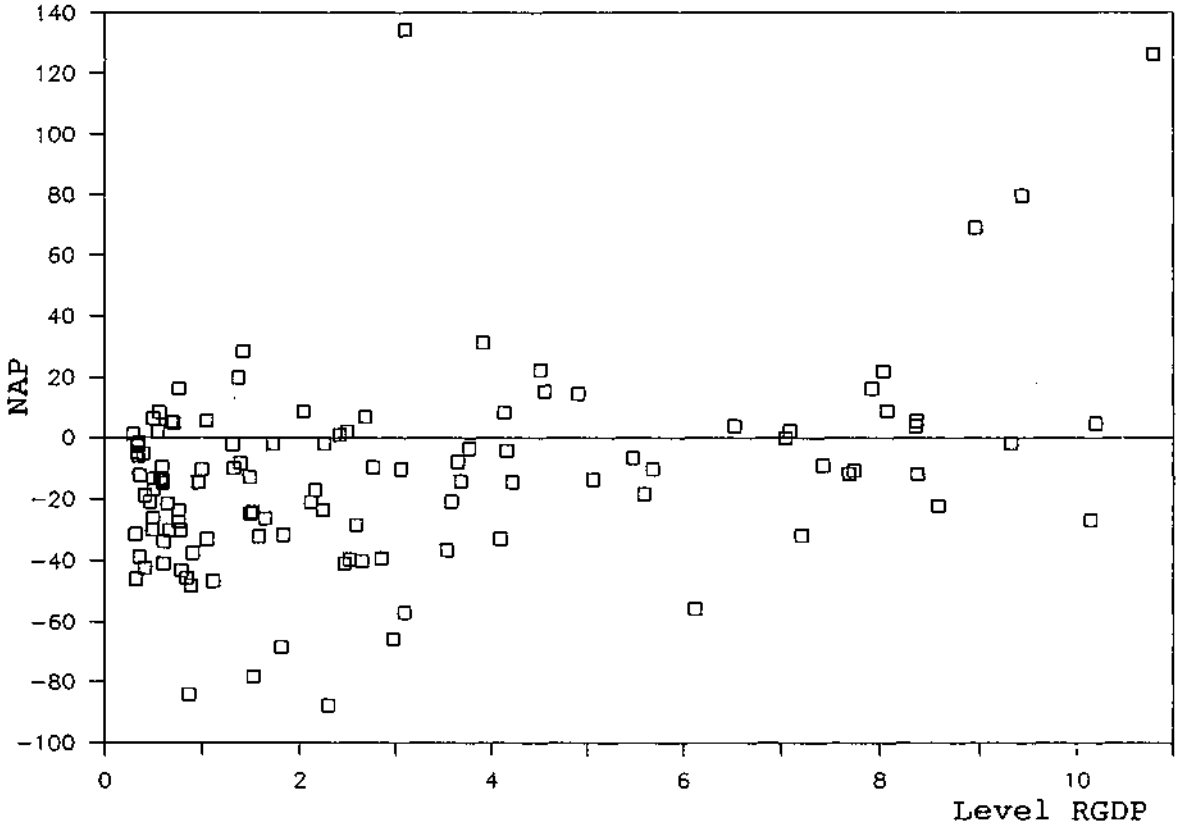
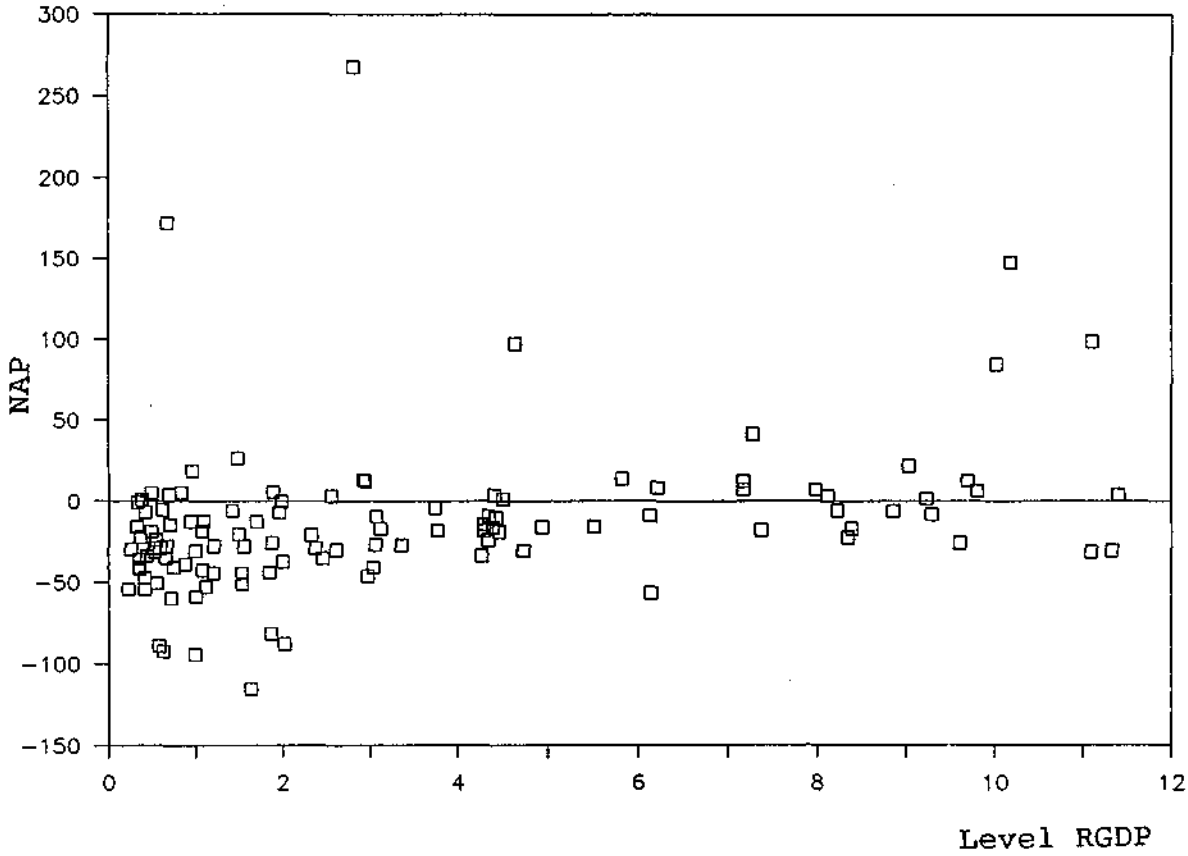
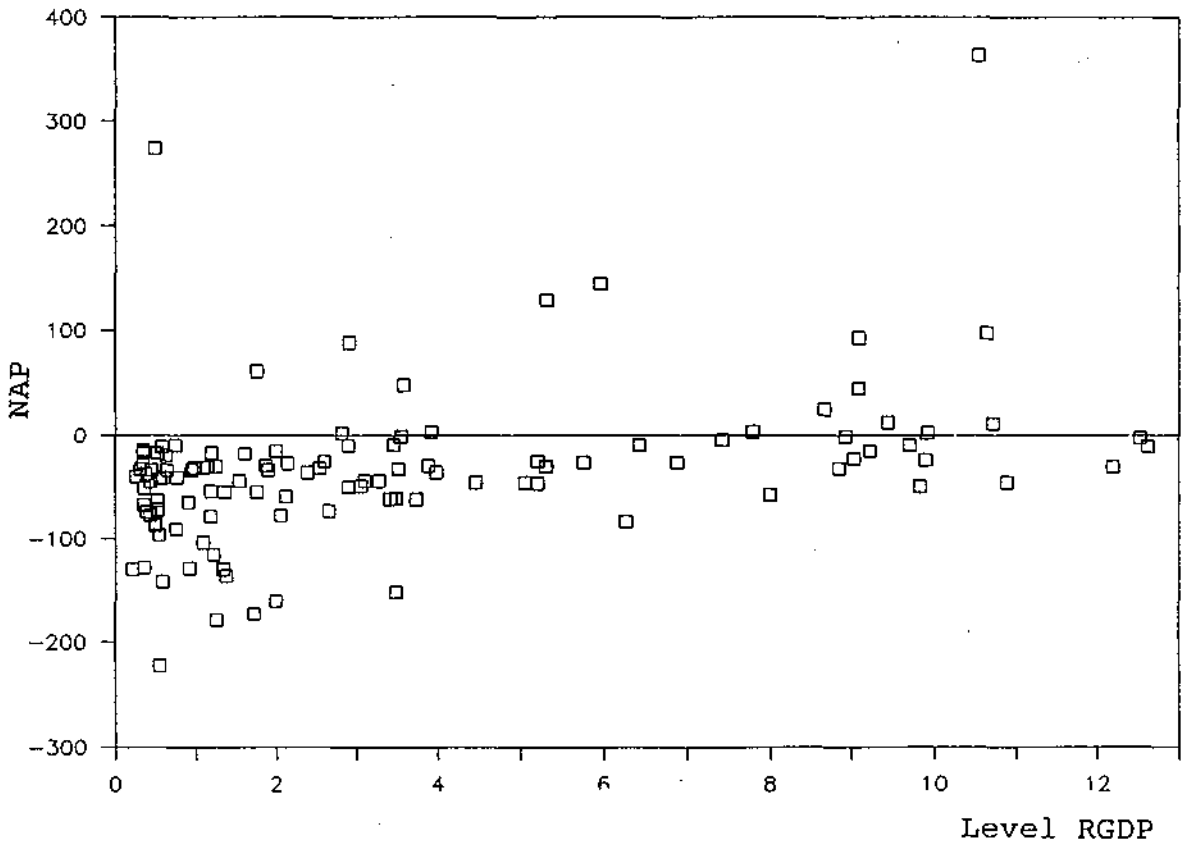


Figure 2 (contd.)

c) 1980



d) 1985



An interesting connection between the two hypotheses discussed above is the question whether high GDP-growth coincides with more or less foreign debt. Is a relatively strong growth "financed" by foreign savings? To test this, several ways are possible to illustrate the relationship between economic growth and changes in the net external asset position. In order to keep the number of graphs limited, I focus on the average growth rate of RGDP between 1970 and 1985 on the one hand and the change in the NAP between 1970 and 1985 on the other (Figure 3). Whether all 116 countries or just the 21 industrial or the 17 highly indebted countries are considered, no relationship between the variables can be found.[1]

Taken together, these three findings suggest that low-income countries are in a bad situation in the sense that, on average, they show relatively high foreign debt but they do not grow faster than high-income countries. All these results, however, do not say anything about the direction of causality: Are the poor countries in debt because they do not grow, or is their growth so low because they are in debt? One way to shed light on this issue is to look at the level of debt in a certain year and the average growth in the following period. These data pairs are combined in Figure 4 for the base years 1970, 1975 and 1980 and the respective five-year period that follows. The graphs do not reveal that high debt is connected with lower growth in the future or vice versa. Only for the first period - i.e. for the NAP in 1970 and the growth of RGDP between 1970 and 1975 - there is a positive relationship.[2] But the positive sign contradicts the hypothesis of the "ideal" path. Furthermore, the correlation is not significant for the group of the

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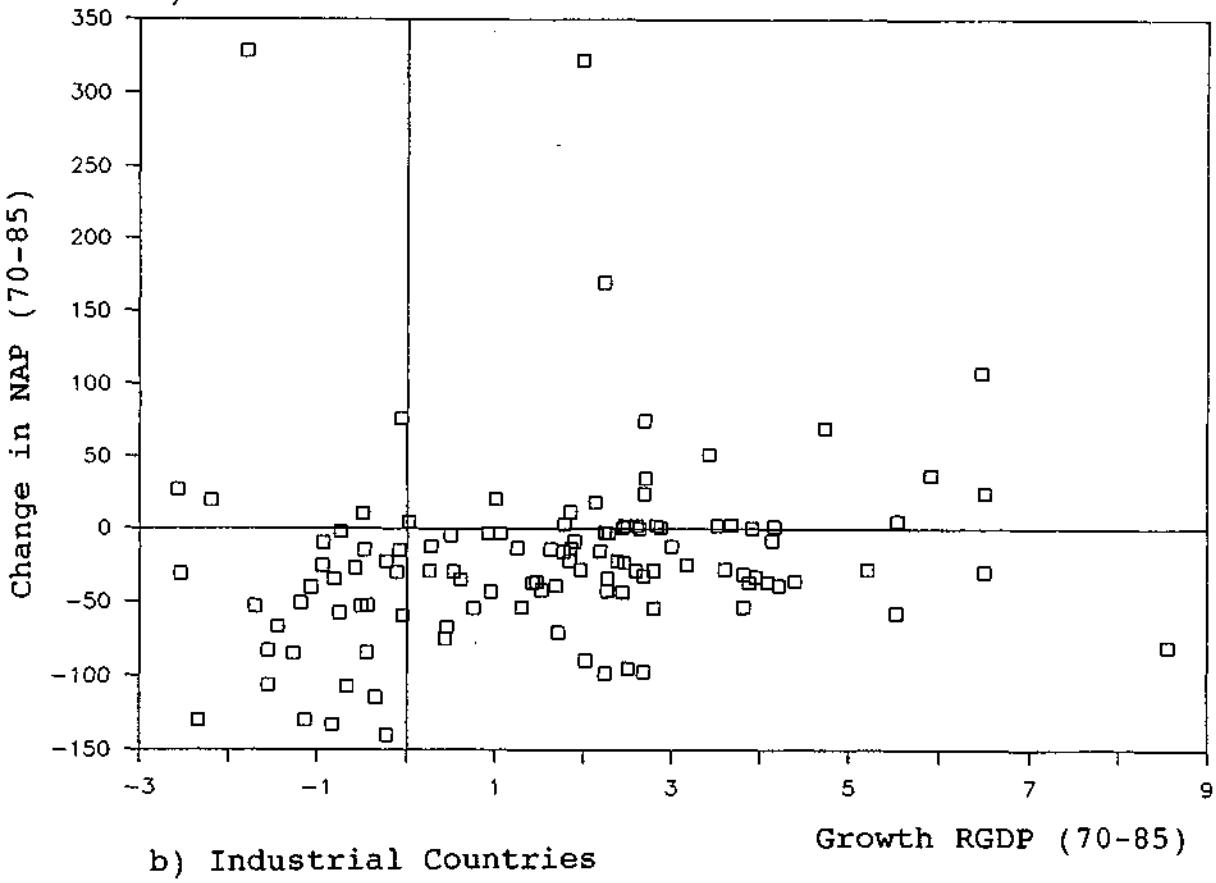
[1] There is no significant correlation in the regressions. The same analysis was pursued for subperiods of 5 years each. Also in these cases, a clear relationship cannot be made out.

[2] The coefficient is different from zero at a significance level of 5 p.c. See Appendix.

Figure 3: Change in Net External Asset Position and Growth of Real GDP

a) All Countries



b) Industrial Countries

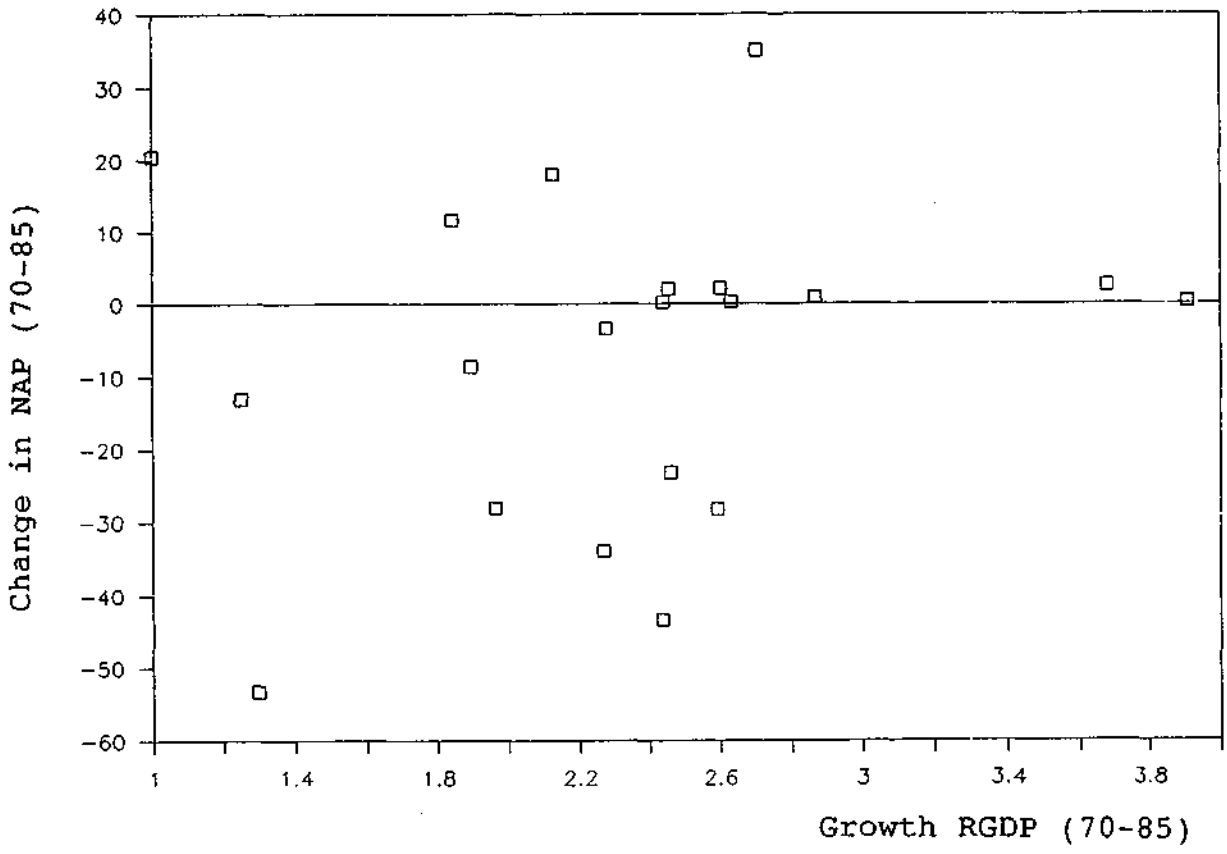


Figure 3: (contd.)

c) Highly Indebted Countries

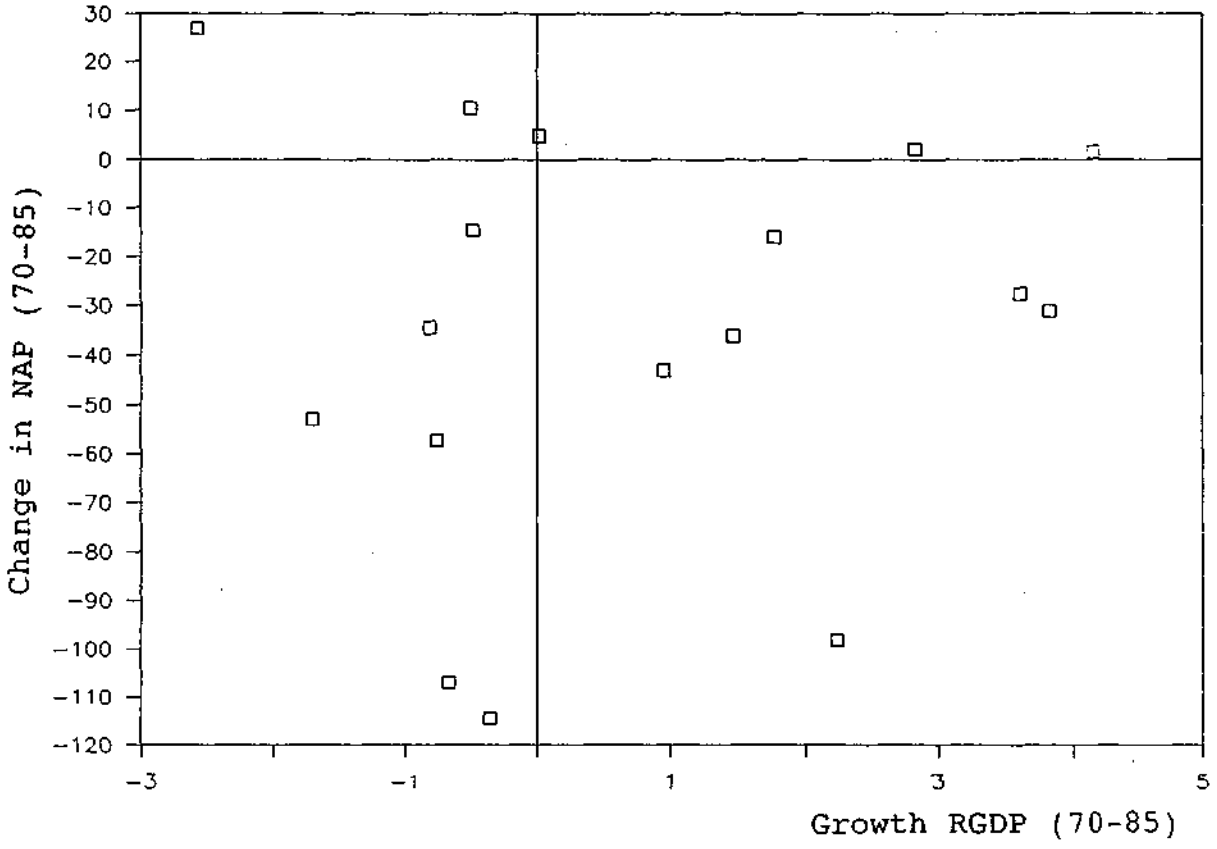
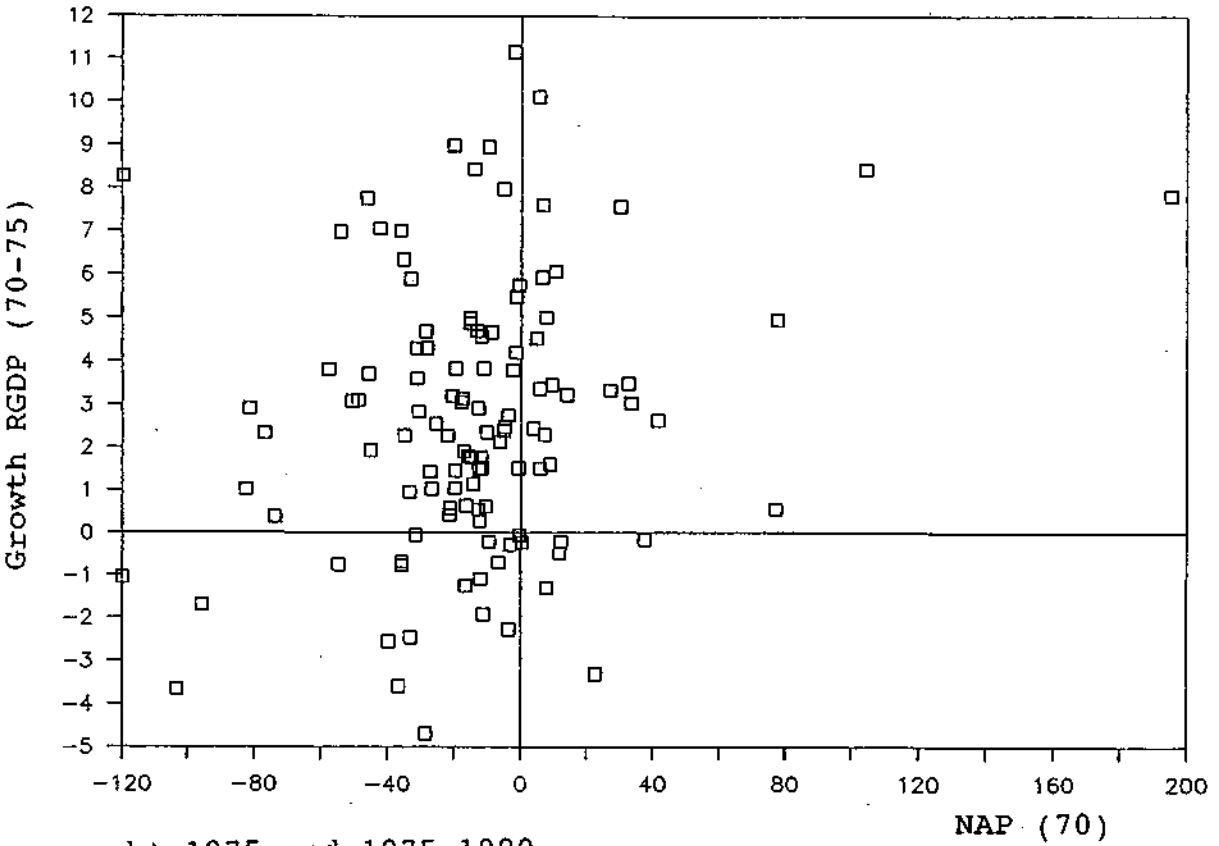


Figure 4: Net External Asset Position and Future Growth of Real GDP

a) 1970 and 1970-1975



b) 1975 and 1975-1980

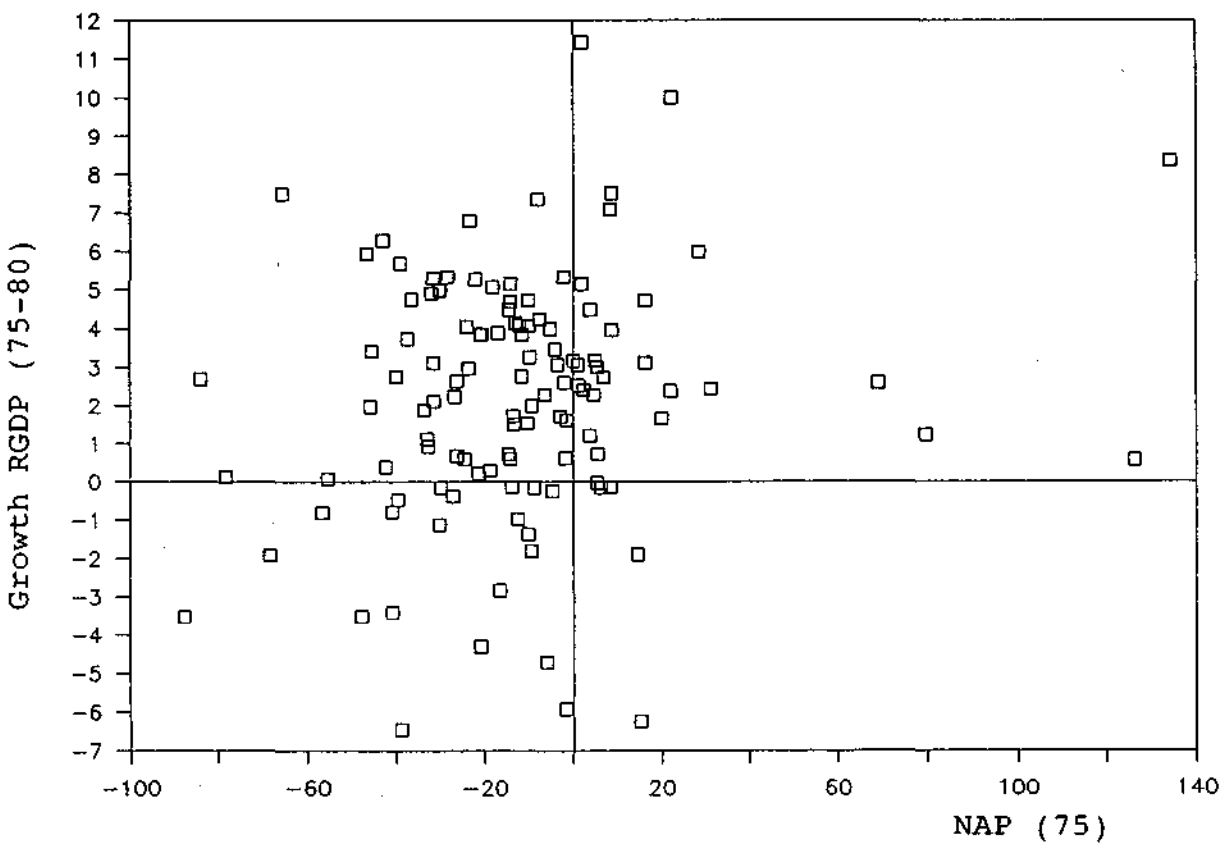
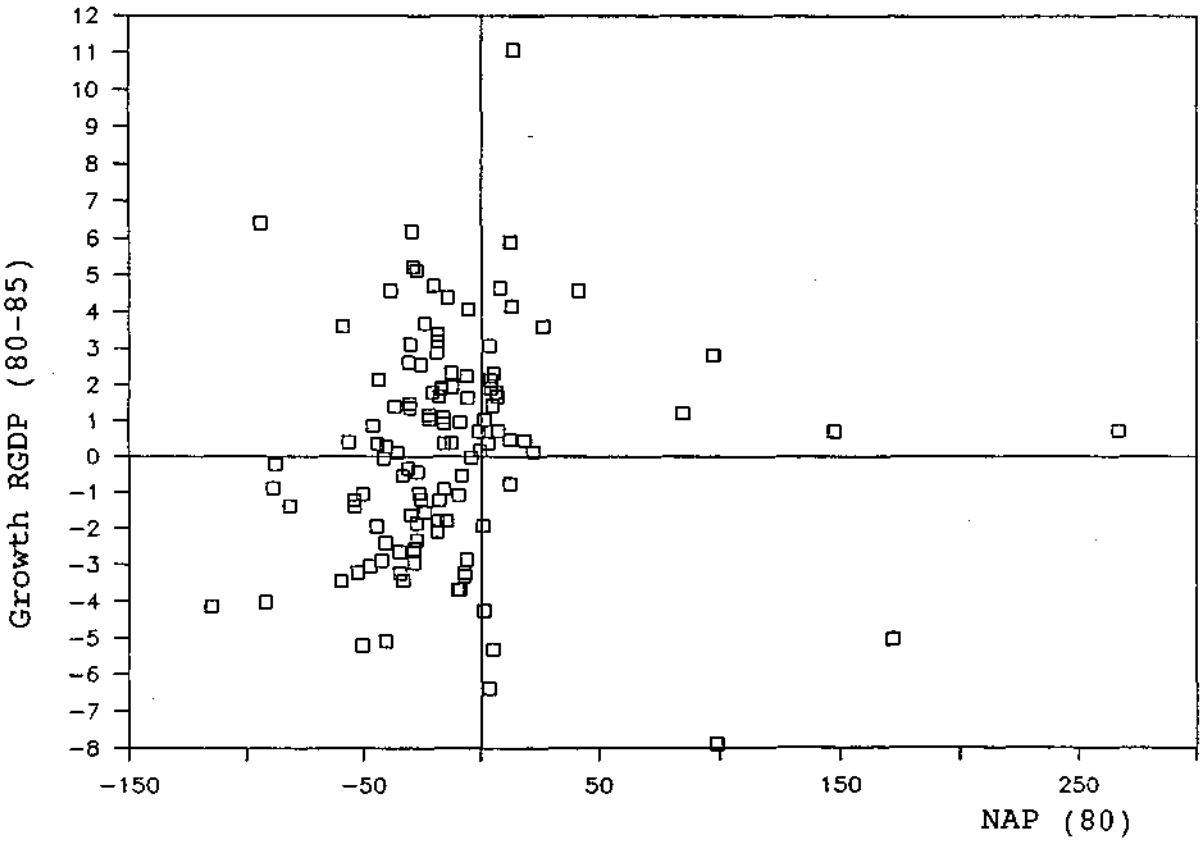


Figure 4 (contd.)
c) 1980 and 1980-85



industrial countries - with the exception of the first period - and the highly indebted countries either. This may be surprising in the case of the latter group since these countries obviously showed weak growth in the 1980s. However, this group is not among those countries for which debt is extremely high or growth is extremely low. Furthermore, the highly indebted countries were growing at rates above average in the 1970s.

These results, though certainly not based on a thorough investigation of causality, do not support the view that high debt is a burden that may prevent growth. A similar hypothesis is discussed in Gundlach, Scheide, Sinn (1990). There it is shown for a group of developing countries that the ratio of external debt is highly sensitive to the measures which represent the quality of domestic economic policy.[1]

2. On the relationship between economic growth, investment and net external assets

Standard neoclassical theory predicts that, in the steady state, the rate of economic growth is not correlated with the share of output devoted to investment; countries with high saving and investment will reach a higher level of real GDP, but they do not grow faster. For intervals between steady states, however, higher investment will lead to higher growth rates, simply because of the shift to a higher path. For the 15-year-period considered in this paper, such a relationship can indeed be found. Figure 5 combines the average growth rate of RGDP between 1970 and 1985 with the average investment share (IS) in

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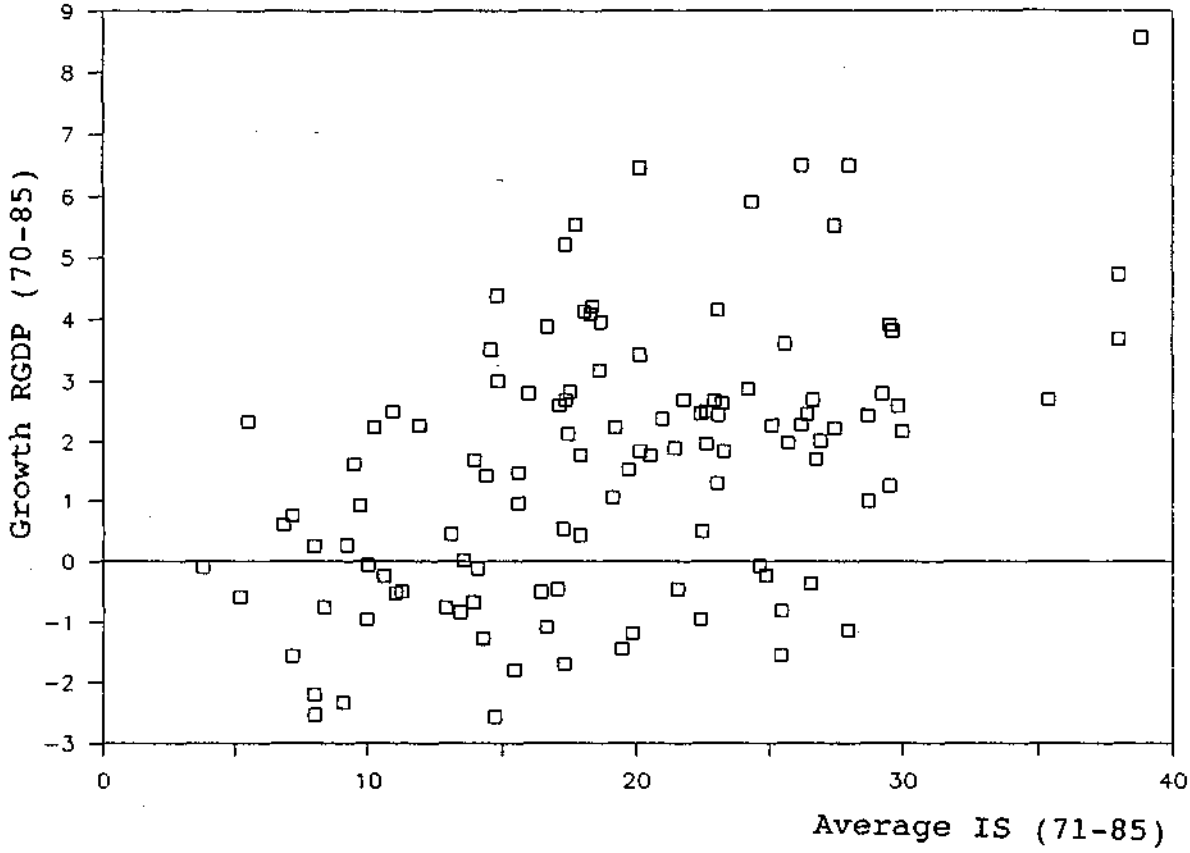
[1] "Quality" is, of course, difficult to define; a measure which represents domestic price distortions - largely due to government policy - is used to approximate the thrust of economic policy.

Figure 5: Investment Share and Growth of Real GDP

a) All Countries



b) Industrial Countries

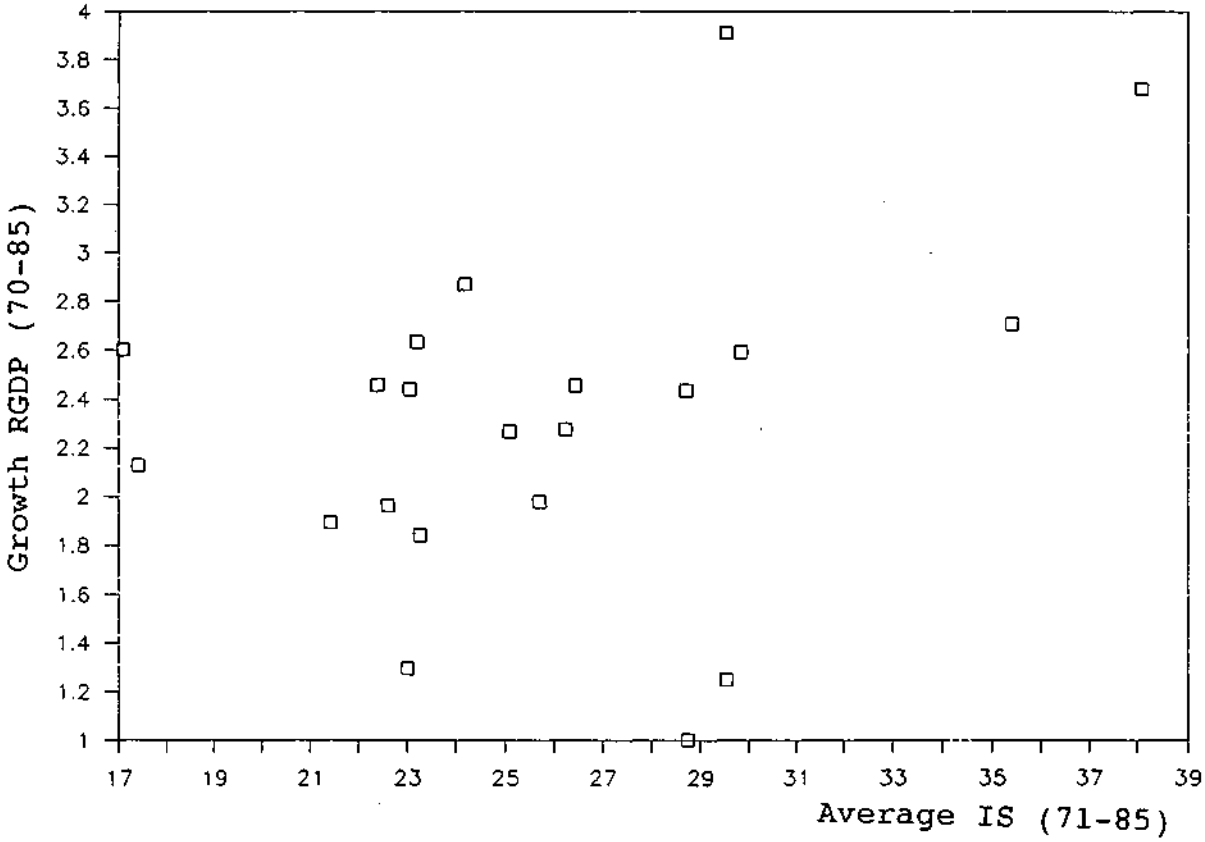
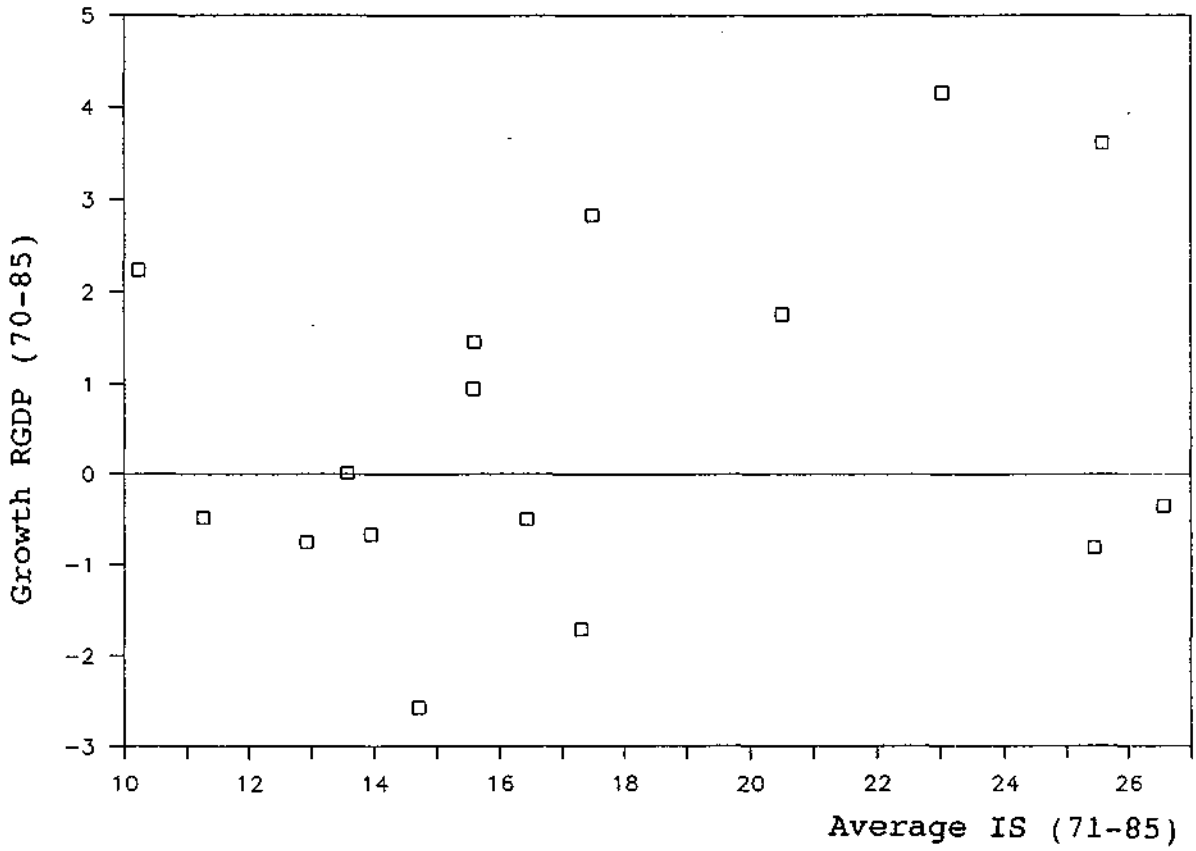


Figure 5 (contd.)

c) Highly Indebted Countries



this period.[1] Although the correlation is not very strong (with an R^2 of 0.22), the equation is highly significant and the coefficient is positive at the 1 p.c. significance level. Somewhat surprisingly, maybe, the relationship does not show up in the smaller samples of the ICs or HICs. This supports the idea, therefore, that the process of growth in developing countries differs from that in the industrial countries[2] and, possibly, in the other developing countries which are labelled HICs.

A hypothesis similar to the one in the first part of this section concerns the relationship between investment and net external assets: Do countries with high investment borrow more? If this were so, it would support the idea which is often put forward, namely that savers are taking advantage of better investment opportunities abroad by exporting capital. Figure 6 shows the combination of the NAP in 1975 (or 1980 and 1985, respectively) and the average investment ratio (IS) for 1971-1975 (or 1976-1980 and 1981-1985, respectively). In general, it cannot be said that big international debtors invest much at home, or that big international creditors invest little at home, the graphs and regressions do not reveal any significant relationship of this kind. For the second and third subperiod, there is even a positive relationship, i.e. high (international) savers even have a high (domestic) investment ratio.[3]

A similar test supports the notion that the postulated negative relationship does not show up in the data. The question is: Do countries which are able to raise their investment share also lower their net external position? In Figure 7, the changes of the NAP between 1975 and 1980 (1980 and 1985, respectively) is

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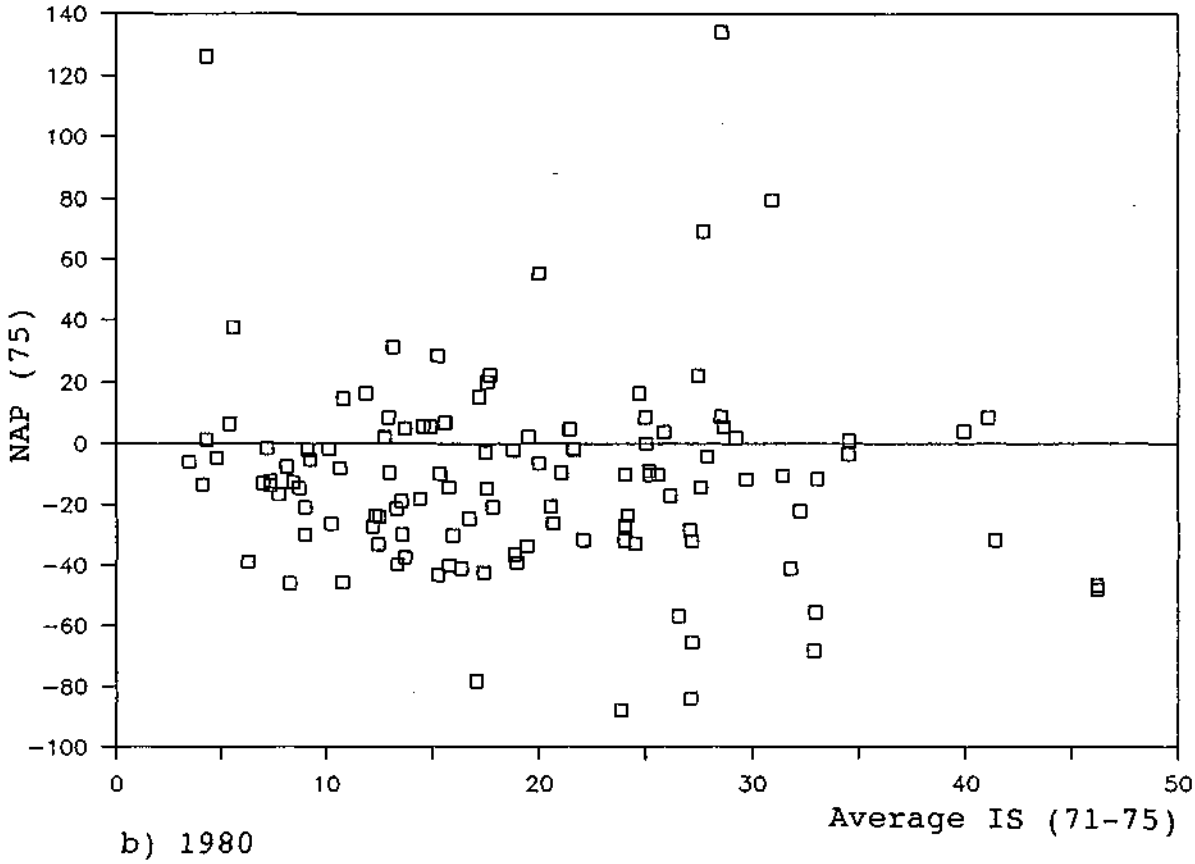
[1] Summers, Heston (1988) do not provide investment data for Hungary and Yugoslavia. Therefore, these countries are dropped in the samples discussed in the remaining part of this section, i.e. there are now 114 countries.

[2] See this interpretation in Romer (1989, p. 62).

[3] See the regression results in the Appendix.

Figure 6: Net External Asset Position and Investment Share

a) 1975



b) 1980

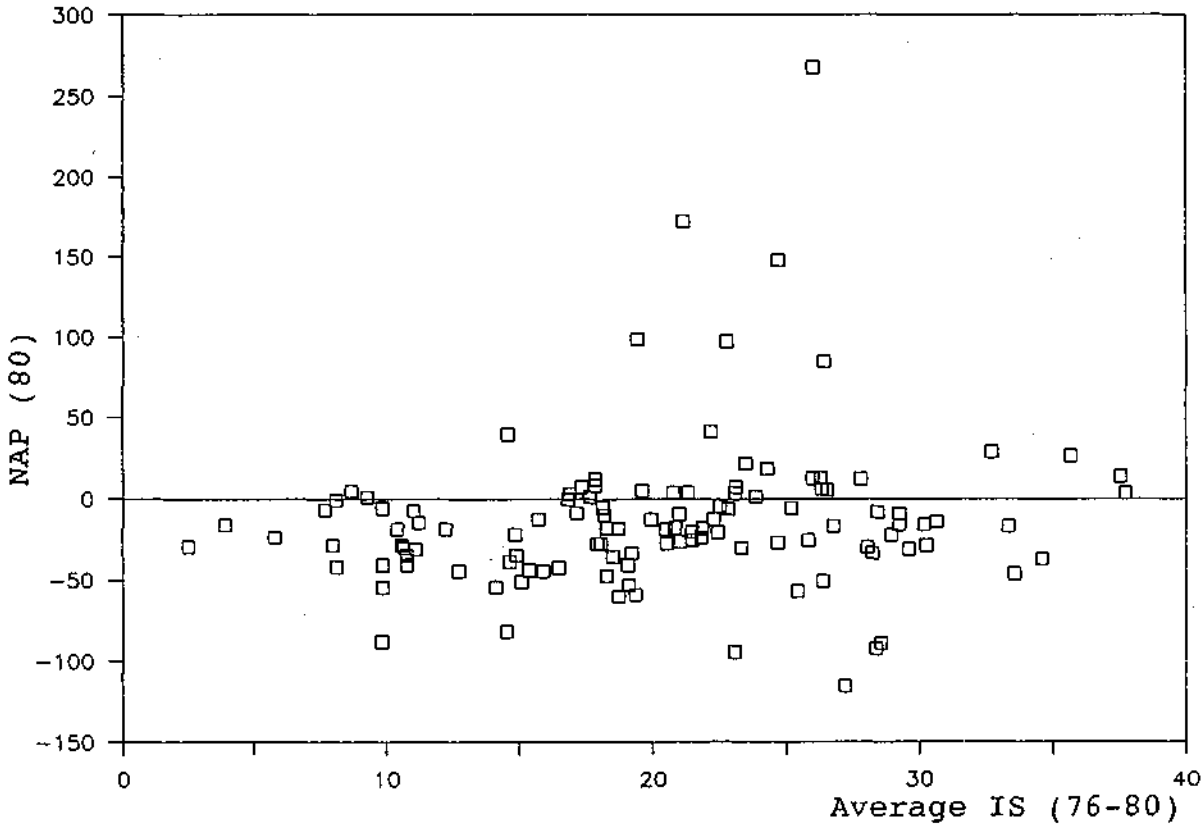


Figure 6 (contd.)
c) 1985

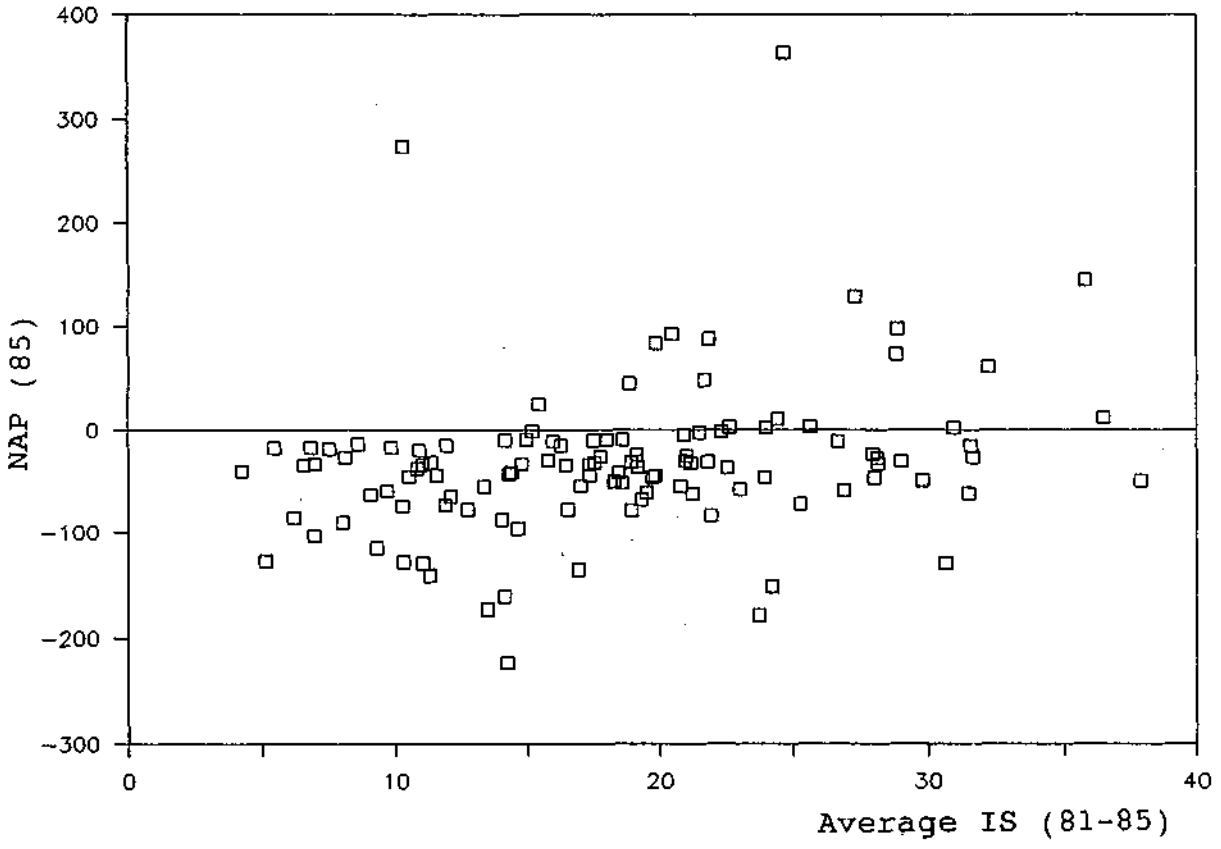
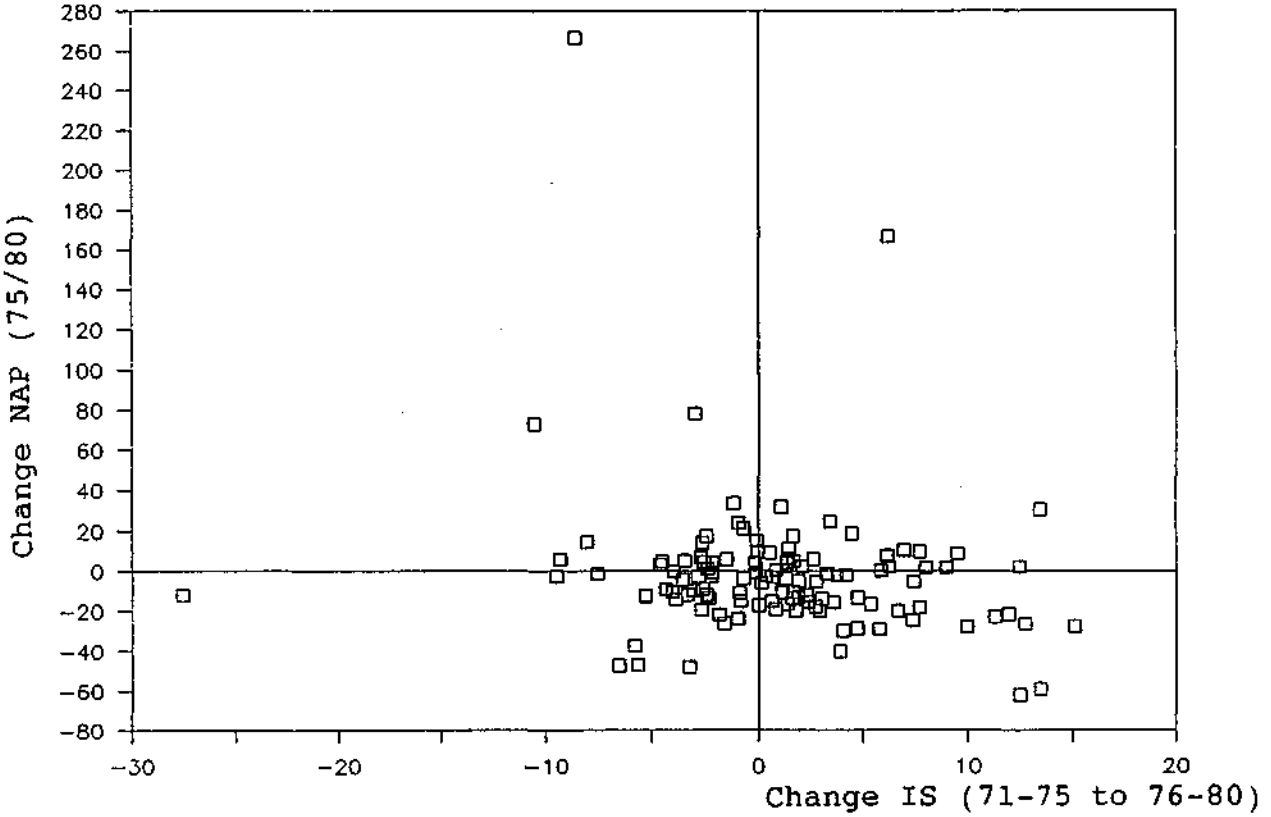
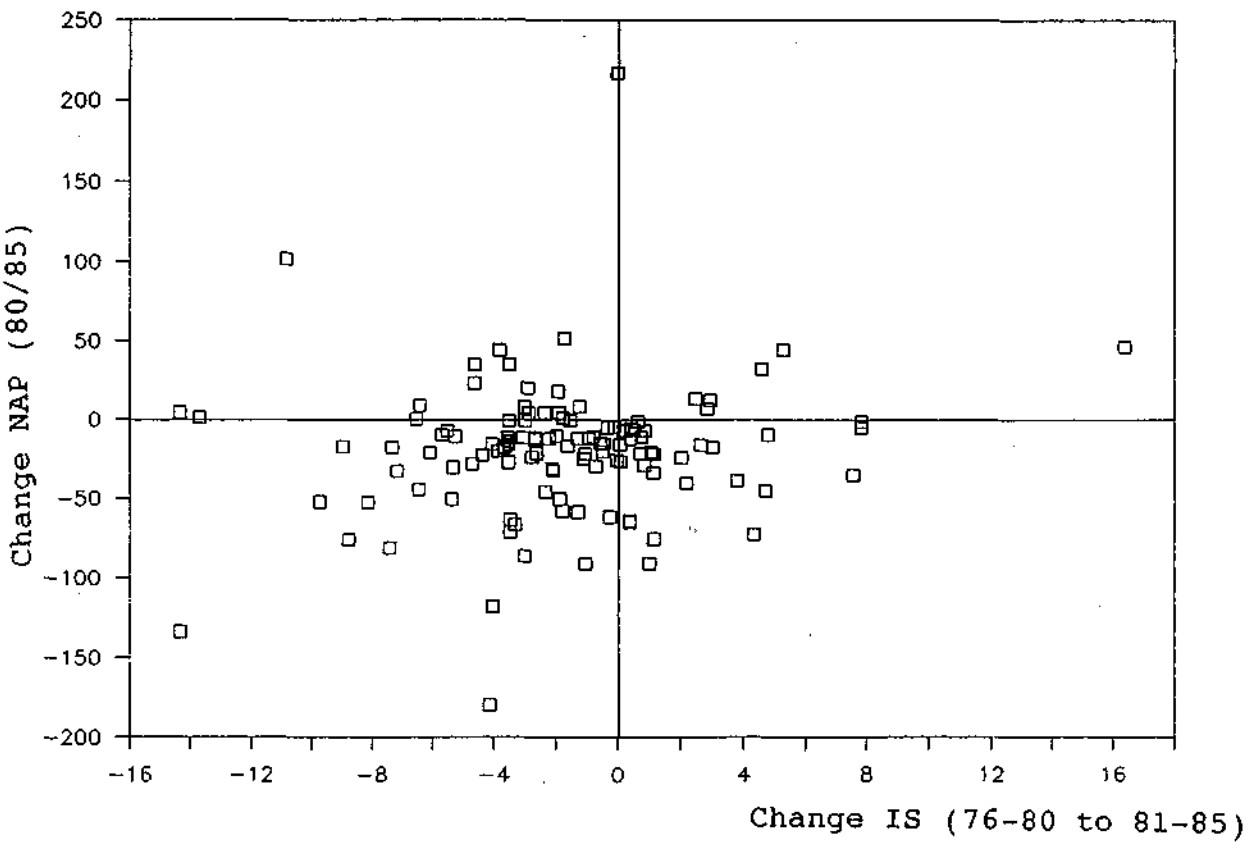


Figure 7: Change in Net External Asset Position and Change in Investment Share

a) 1975 to 1980 and 1971-75 to 1976-80



b) 1980 to 1985 and 1976-80 to 1981-85



plotted against the change in the average IS between 1971-1975 and 1976-1980 (1976-1980 and 1981-1985, respectively). The general result is that more investment may go along with both a rise or a fall in the net external asset position, there is no clear-cut relationship between the two variables.

Given all these results - i.e. the non-existence of correlation -, it would be surprising if a high debt now would indicate more investment later. Indeed, Figure 8, which is the equivalent to Figure 4 in the first part of this section, does not show any relationship.[1] Only for the third subperiod, there seems to be a correlation between NAP and IS[2]; however, it is positive and not negative as postulated. But this may also be influenced by a few outliers (a few countries show an extremely high increase of NAP). In general, therefore, it cannot be said that a high level of debt reflects good or bad investment opportunities in the future. These results also hold for industrial as well as highly indebted countries where investment ratios differ substantially for the net external asset position.

III. Summary and Conclusions

The hypothesis that the ratio of net external assets to GDP does not, per se, say anything about the strength of economic growth[3] has found some support by the empirical analysis in this paper. A large creditor may show more or less growth than the average, a large debtor may have difficulties in servicing its debt or may use the funds exactly in order to grow fast. In a similar vein, high debt is not equivalent with large

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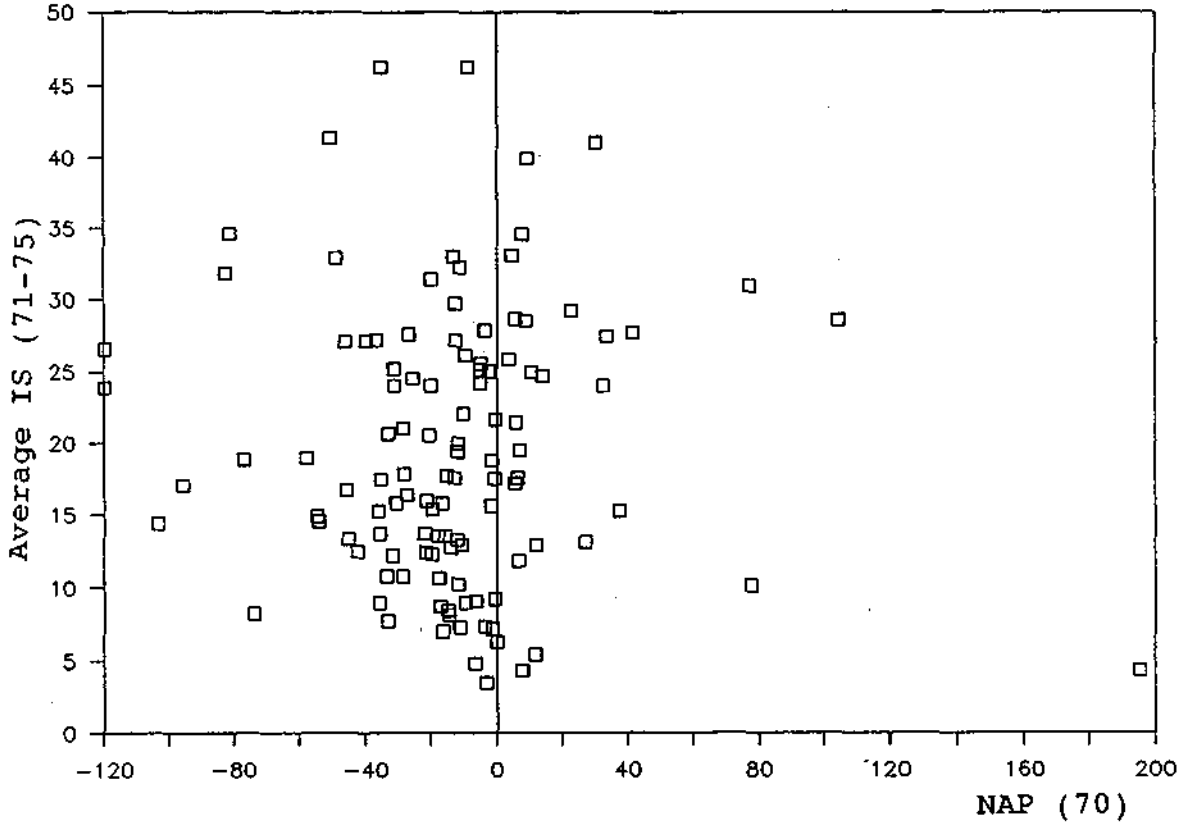
[1] As before, I look at NAP in the years 1970, 1975 and 1980. These are compared with the average investment ratio in the respective five-year period which follows those years.

[2] The coefficient is significant at the 5 p.c. level. See Appendix.

[3] This idea is extensively discussed by Gundlach, Scheide, Sinn (1990).

Figure 8: Net External Asset Position and Future Investment Share

a) 1970 and 1971-75



b) 1975 and 1976-80

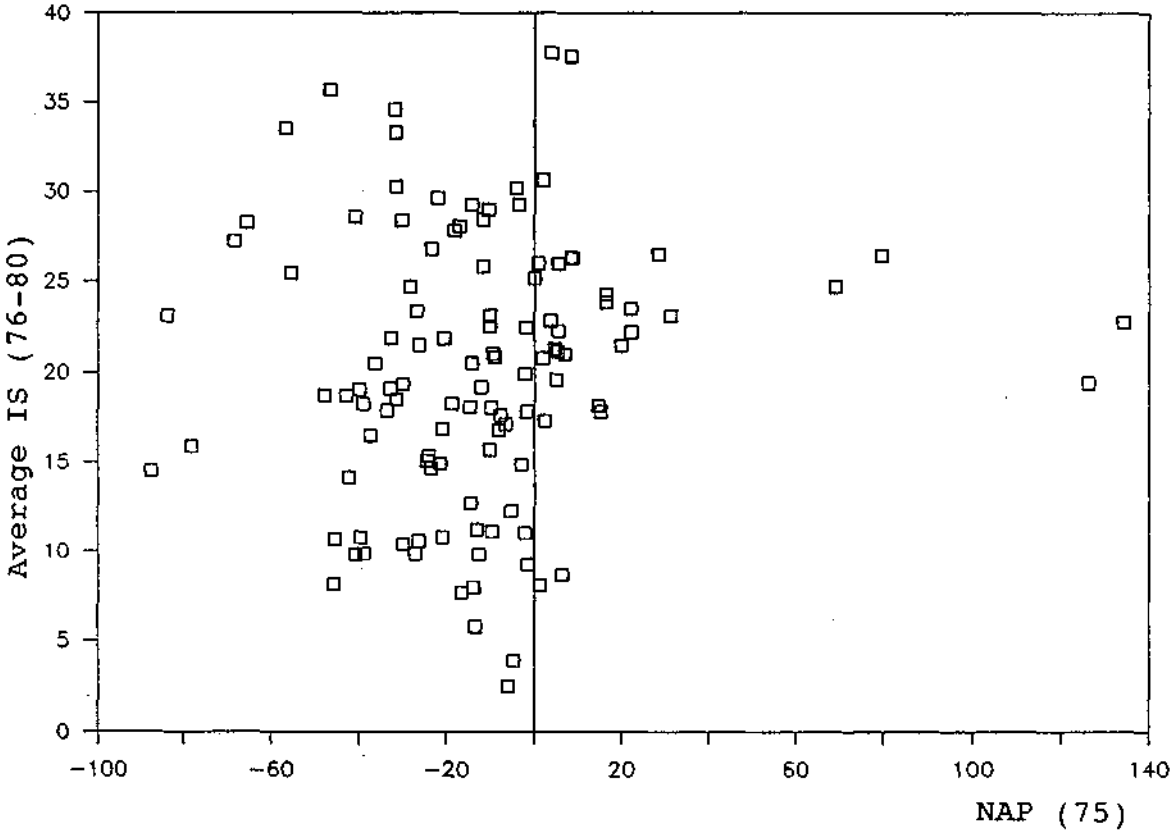
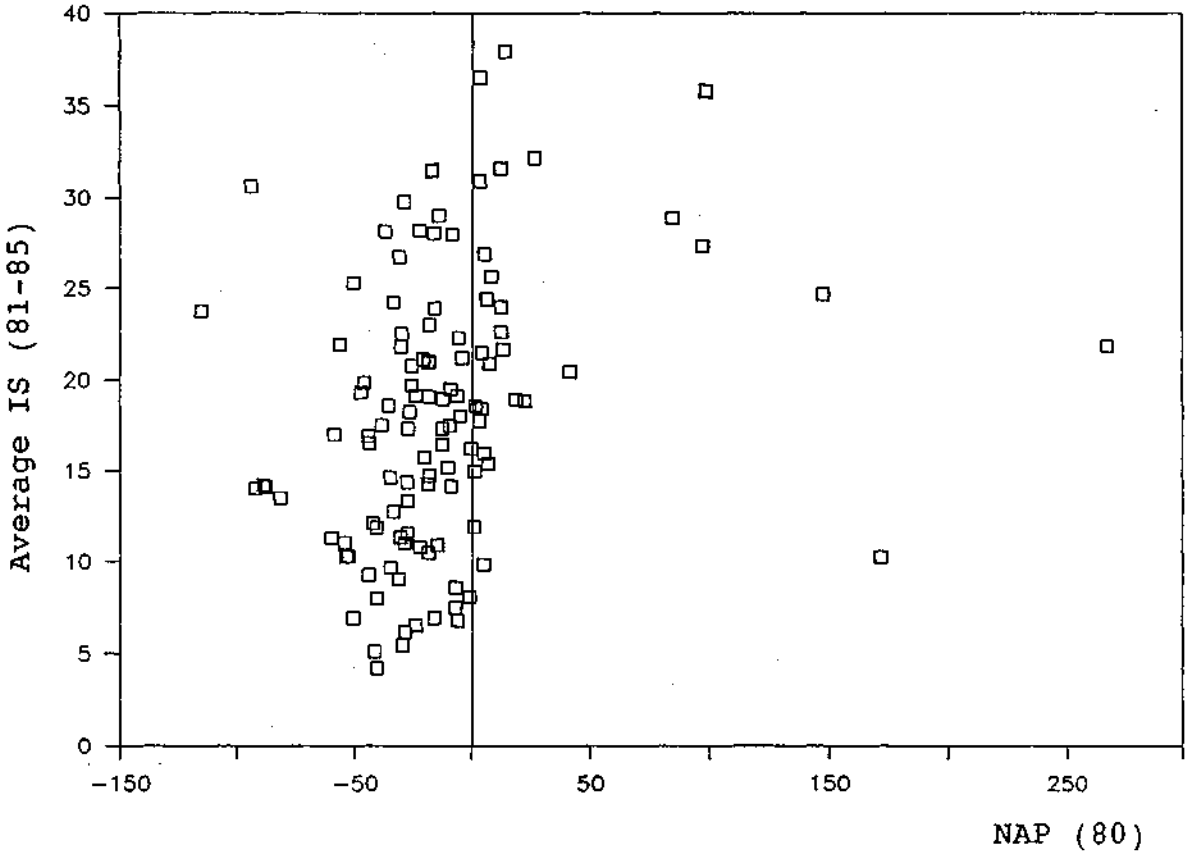


Figure 8 (contd.)
c) 1980 and 1981-85



problems, just as the fact that a country persistently runs a current account surplus is - by itself - not a sign of strength. Therefore, it is also not possible to derive policy conclusions from the fact alone that a country is in debt or is a big creditor. For example, the growth performance of the United States and West Germany was about the same during the 1980s, although both countries differed substantially with respect to their net external asset position.

I have concentrated on very simple and general relationships and have not tested specific hypotheses or hypotheses derived from a complete model. Nevertheless, the stylized facts have to be explained. Many of the postulated relationships cannot be supported. The prediction that poor countries catch up in the course of time and that this process is made possible by capital from abroad[1] is at variance with the data: Low-income countries tend to borrow more but they do not grow faster. While there are several plausible stories about the behavior of the current account balance (or, what should - ideally - be the same: the changes in net external assets) in the course of economic development, they are not - at least on this general level - supported by the data. For example, the idea of stages in the balance of payments suggests that a country runs a current account deficit while investing more and growing faster than other countries.[2]

These hypotheses are certainly plausible and have intuitive appeal; but such cycles cannot be observed for a larger number of countries. A notable exception is the United States. This country did indeed catch up during last part of the 19th century, accumulating foreign debt (running deficits in the current

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[1] This scenario is called the "ideal" path of economic development in the world economy (Gundlach, Scheide, Sinn, 1990), which indicates that it can rarely be observed in reality.

[2] The idea of cycles of the current account balance is developed by Samuelson (1980). Similarly, Siebert (1989) describes the theory of a debt cycle.For an empirical test of the stages-hypothesis see Genberg, Swoboda (1988) and Sinn (1990).

account) and raising the investment share.[1] Ideally, we should have observed something similar for less developed countries in recent years because they are the natural candidates for the catching-up process and should therefore, ideally, be attractive for international investors. In some cases we actually did (South Korea and others); but in the case of most of the now highly indebted countries, foreign lending turned out - ex post - to be a mistake because it did not lead to an investment boom or faster growth in those countries.

Therefore, more information is necessary to allow an account for these obviously divergent experiences between countries. These simple correlations between a limited number of various are not sufficient for this purpose. What was responsible for the success of some countries, and why did others fail in attracting capital from abroad? How important is the fact that high growth in some countries could be achieved by sufficient domestic savings whereas in other countries, foreign capital played a larger role? Besides investigating the issue of market valuation of external assets and liabilities, further research would most likely have to focus on a larger number of determinants of saving and investment. One obvious candidate is economic policy in the broadest sense: How do governments compete among each other to attract investment from abroad? Can we define and measure the quality of economic policy in terms of tax policy, the provision of public goods and so on? Another possible channel for explanations is the degree of capital mobility and of openness of a country, especially because foreign trade has played a major role in the growth success of several countries, particularly in Asia.

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[1] Cf. the discussion in Gundlach, Scheide, Sinn (1990). By the way, the US net external debt was at that time much higher than presently, amounting to some 25 p.c. of GDP at the end of the 19th century, compared to roughly 11 p.c. in 1989.

Appendix

Regression Results for the Relationships Presented in the Graphs[1]

Regression Results

Graph	Constant	Independent Variable	$\bar{R}^2$	F-Value
1a	1.44 (4.96)	0.0001 (1.19)	-0.00	0.83
1b	3.75 (6.93)	-0.0002* (2.69)	0.15	4.45*
1c	2.10 (2.63)	-0.0006* (2.53)	0.12	3.08
2a	-25.65 (6.10)	0.0046* (2.57)	0.08	10.85*
2b	-24.73 (6.60)	0.0042** (3.37)	0.13	18.81**
2c	-29.64 (4.95)	0.0047** (3.58)	0.10	13.15**
2d	-62.17 (6.90)	0.0081** (3.55)	0.14	19.70**
3a	-27.85 (2.99)	4.83 (1.47)	0.02	3.03
3b	22.46 (0.49)	-5.98 (0.44)	-0.05	0.06
3c	-35.71 (3.04)	1.63 (0.34)	-0.06	0.10

[1] Heteroskedastic-consistent OLS estimates (TSP-package).- The dependent and independent variables are those in the respective figures. The t-values are given in parentheses, the F-value is calculated for the regressions. The significance levels of 5 p.c. and 1 p.c. are indicated with * and ** for the coefficient of the independent variable and for the F-value. $\bar{R}^2$ is the (adjusted) correlation coefficient.

Graph	Constant	Independent Variable	$\bar{R}^2$	F-value
4a	2.884 (9,92)	0.017* (2,24)	0.04	5.39*
4b	2.426 (7.62)	0.017 (1.73)	0.02	3.61
4c	0.289 (0.94)	0.003 (0.49)	-0.01	0.32
5a	-1.064 (2.35)	0.139** (6.02)	0.22	32.87**
5b	1.148 (1.70)	0.045 (1.62)	0.06	2.37
5c	-1.300 (0.79)	0.107 (1.09)	0.02	1.28
6a	-7.36 (1.10)	-0.254 (0.74)	-0.00	0.65
6b	-33.28 (4.52)	0.986* (2.16)	0.02	2.70
6c	-78.70 (4.67)	2.464** (2.69)	0.06	7.63**
7a	-0.29 (0.08)	-1.097 (1.29)	0.02	3.54
7b	-17.92 (4.49)	1.265 (1.18)	0.01	1.91
8a	19.13 (19.29)	-0.131 (0.54)	-0.01	0.32
8b	20.38 (30.28)	0.021 (1.33)	-0.00	0.92
8c	18.78 (25.08)	0.039* (2.27)	0.05	7.35**

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