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**Factor Shares and Resource Booms
Accounting for the Evolution of
Venezuelan Inequality**

Francisco Rodríguez C.

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Francisco Rodríguez C.
October 2000, College Park

ABSTRACT

This paper studies the evolution of Venezuelan inequality since 1970. It finds a striking increase in Venezuelan inequality that has been due mainly to the rise in capital's share of GDP. It shows that the increase can be traced back to the coupling of a collapse in the ratio of physical to human capital that occurred from the 1970s with a low elasticity of substitution in production between capital and labour. It also argues that other factors can be identified as having a negative influence on inequality, namely, the policy of repeated devaluations of the currency, trade liberalization and the financial crisis of 1994.

I INTRODUCTION

Arguably, Venezuela is the greatest missed opportunity for development of the postwar period. From 1963 to 1996, Venezuela sold \$329 billion of fuel exports to the world, or \$20,420 per person.¹ However, by 1997 Venezuela's GDP per capita was 8 per cent lower than it had been in 1963. In 1963 Venezuela boasted a democratic political system with stable transitions in government administration and civil and political rights which were the envy of any other Latin American country. But during the 1990s the system barely survived two military coup attempts, and polls showed that half of Venezuelans had no confidence in the democratic system.²

To this economic and political debacle, we will argue, a third dimension must be added: the distributive one. We will show that inequality has significantly worsened during the past 27 years. In particular, the worsening has taken the form not of higher inequality among workers, but of higher inequality between those who own and those who do not own capital. Factor shares have moved decisively against labour during the last three decades, resulting in a transfer of approximately 15 per cent of GDP from labour to capital income. The disappointing performance of the country in terms of aggregate economic indicators hides the fact that an average worker today is roughly half as well off (in terms of income) as an average worker in 1970. Put together, the macroeconomic, political and distributive failures make of Venezuela one of the great economic and social disasters of the postwar period.

In what follows we will examine several possible explanations for this change in income inequality. We start by documenting it in Section 2. We follow up with an attempt in Section 3 to explain the evolution of factor shares on the basis of the evolution in human and physical capital accumulation. Alternative influences on factor shares are examined in Section 4. Section 5 then discusses in depth the loss of political power by the Venezuelan labour movement and the relationship of this with our main hypothesis. Section 6 concludes.

The main thrust of our explanation is as follows: the increase in Venezuela's income inequality can to a great extent be traced back to the decline in the country's physical capital stock and its rigid production processes. Rigid production processes imply low substitutability among factors of production and therefore make it possible for a decline in the physical capital stock to lead

¹ Evaluated at constant 1995 dollars.

² *El Nacional*, 25 October 1988.

to increases in the return to capital large enough to produce a substantial rise in capital's share of GDP. In other words, Venezuela's economic collapse, occurring within the context of a rigid production structure, has produced the country's distributive collapse. However, we also find that policies like trade liberalization, contractionary macro policies and capital account convertibility have made a far from negligible additional contribution to the worsening of Venezuela's income distribution.

II WHAT THE DATA SAY

FIGURE 1
GINI COEFFICIENT IN LABOUR INCOMES

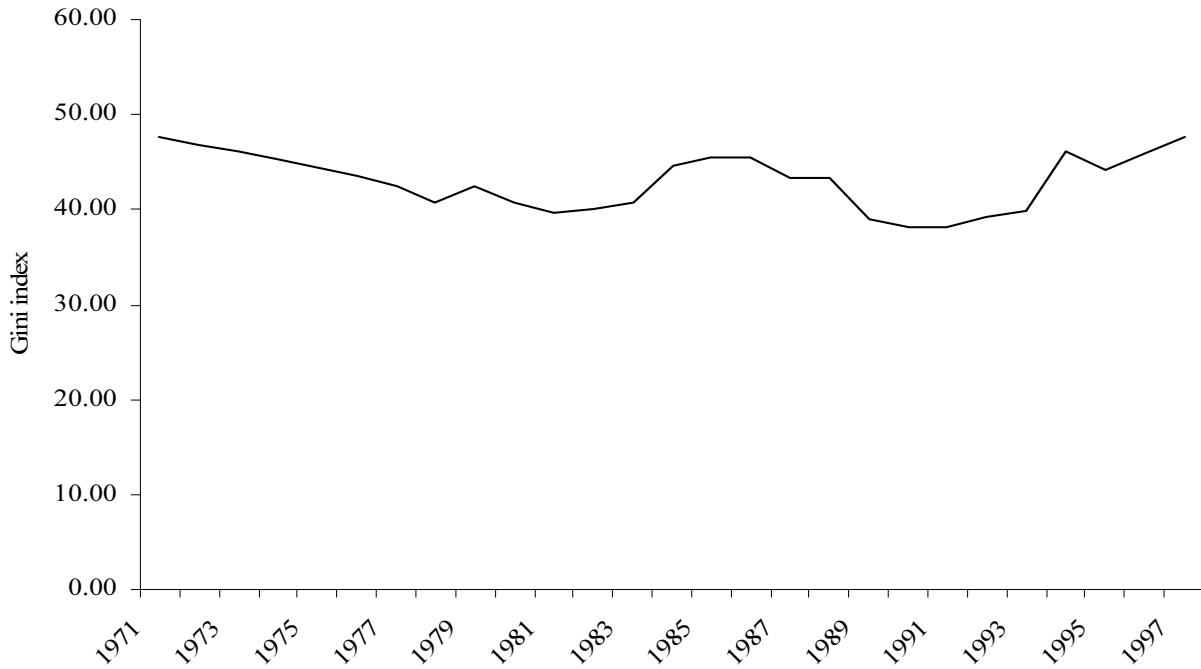


Figure 1 shows the Gini coefficient for Venezuela, calculated from data from the biannual Households Survey conducted by the Oficina Central de Estadística e Informática (OCEI) from 1971 to 1997.³ As the questions of this survey pertain only to wage income, this Gini coefficient is purely an index of wage inequality, and it includes no estimate of the contribution to inequality of disparities in capital income.

³ From 1971 to 1978 the source is UN (1981). For later years the source is our direct calculations using Venezuelan Households Survey data. Although other estimates exist for some years after 1978, all are based on tables from the Households Survey. An exception is Marcano and Ruprah (1999), whose calculations are similar to ours.

TABLE 1
GINI AND CONCENTRATION COEFFICIENTS

Figure 1 shows a Gini coefficient that is relatively trendless over the long run. There appears to be a fall in inequality during the 1970s, a rise during the early 1980s, a subsequent fall during the late 1980s, and a rise during the 1990s. The substantial year-to-year variations in the Gini, however, suggest caution in the search for explanations to these changes.⁴ Perhaps the only conclusion that can be drawn from Figure 1 is that there seem to be no major long-run shifts in the distribution of income among workers.

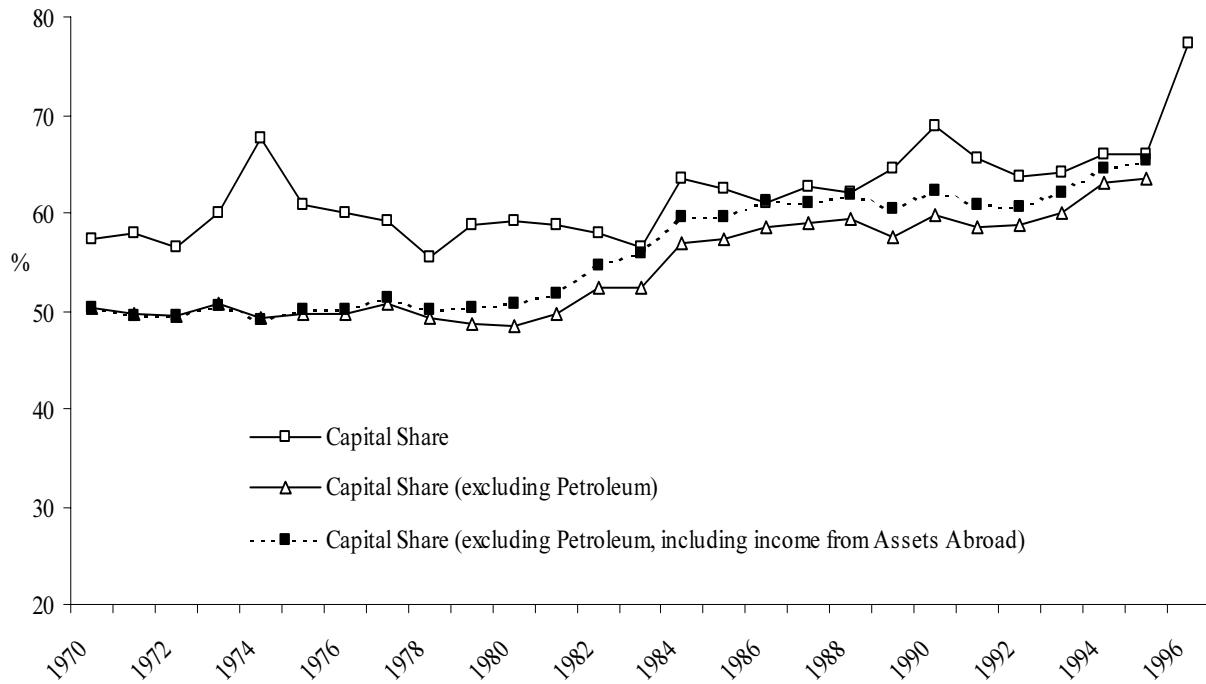
Starting in 1994, the OCEI survey also has questions regarding capital income. However, capital income appears to be grossly underestimated in the responses. The majority of individuals report very small amounts of capital income. Indeed, if one were to infer from the answers to these surveys the share of Table 1 Gini and concentration coefficients capital income in GNP, one would find a capital share of 6.6 per cent, substantially lower than the 63 per cent figure in national income statistics. It is apparent that there is a systematic bias towards underreporting income from capital, which may be related to the widespread evasion of capital income taxes in Venezuela or with the difficulties in assessing the income of very wealthy individuals. In Table 1, we have calculated the Gini coefficients using the proportion of capital income derived from national accounts statistics to scale up capital income in the OCEI survey responses. The result is a substantially higher Gini coefficient than that which is derived only from labour income: it oscillates between .62 and .65. Kakwani (1980) decompositions for the years for which data on capital income are available (see Table 1) show that the main source of this inequality is a substantial concentration of capital income, the concentration coefficient on capital income being above .8.

As discussed above, the distribution of labour income seems almost trendless over the period of study. Venezuela's factorial distribution of income, however, tells another story. Figure 2 illustrates the evolution of Venezuela's capital share from 1970 to 1996. The data show a marked increase from the 1970s to the 1980s, accompanied by a sharp jump in 1996, the last year for which there

⁴ If one looks long enough at Figure 1, one can start to see a tendency for inequality to rise over time, particularly given the fact that the 1997 observation (47.76) is higher than the values for any other year. However, this value must be interpreted with utmost caution, as there were important changes in the design of the survey in 1994 which were also accompanied by a jump of 6.1 points in the Gini coefficient. The key changes were adoption of clustering based on the 1990 census, addition of a large number of new questions and a substantial reduction in the sample size. See Marcano and Ruprah (1999) for a description of these changes.

are available data. This jump, to 77.9 per cent, would mean that Venezuela has the third highest capital share among countries in Latin America.⁵

FIGURE 2
CAPITAL SHARE, 1970-96

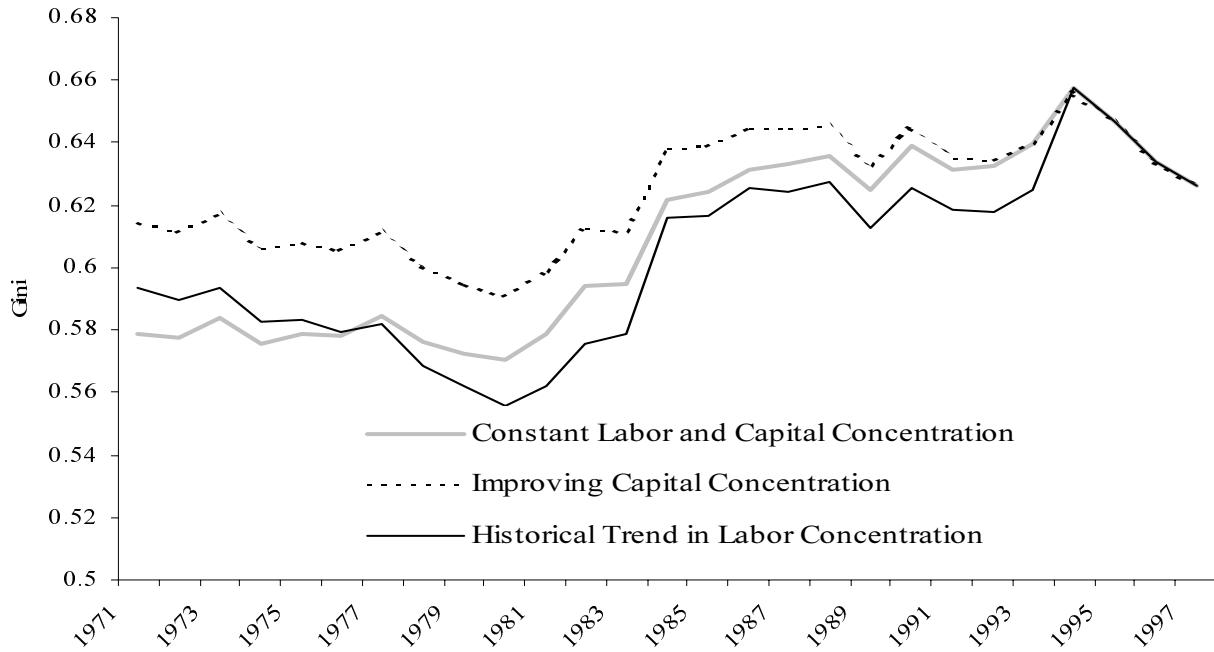


This jump in capital share is striking, because the capital share of GDP in Venezuela is affected by the operating surplus of the state oil enterprise. From the 1970s to the 1990s, there was a steady fall in oil's share of GDP. Aggregate capital share statistics should therefore be biased against finding a rise in the capital share. The aggregate capital share may thus be underestimating the rise in Venezuela's capital share. Indeed, Figure 2 shows that the rise in the capital share has been higher in the non-oil economy than in the aggregate economy, indicating a transfer of 11 points of GDP from labour to capital income between the 1970s and the 1990s.

We can use the capital share data to get a rough idea of how the Gini coefficient in total (as opposed to labour) incomes has evolved in Venezuela since 1971. We do this in Figure 3 and Table 1. As we have no information on capital income before 1994, the evolution of the Gini coefficient will depend on our assumption about how the concentration coefficients of labour income and capital income have evolved over time.

⁵ Behind Paraguay (.81, 1991) and Peru (.79, 1991).

FIGURE 3
ESTIMATED EVOLUTION OF GINI COEFFICIENT, 1971-97



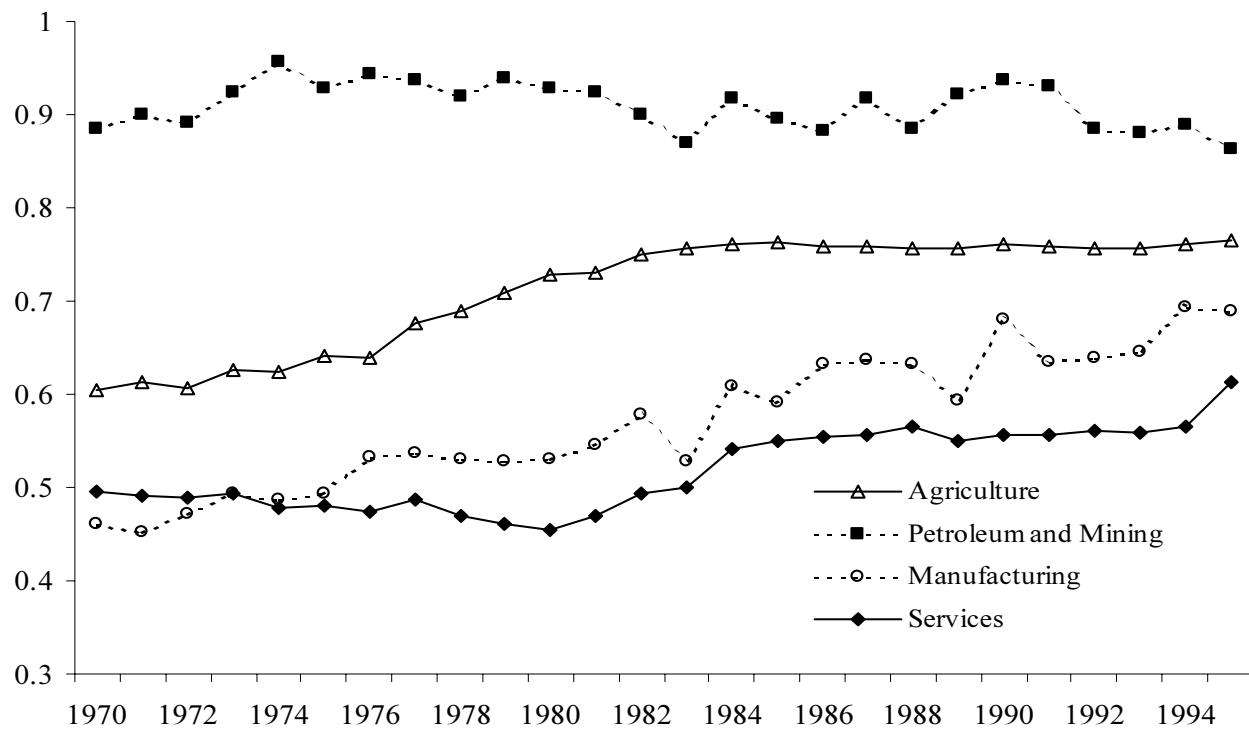
In Figure 3 we show the evolution of the Gini in total incomes under three alternative assumptions about the concentration coefficients in capital and labour income. The thicker solid line shows how income distribution would have evolved if the concentration of capital and labour had been constant from 1971 to 1995. This assumes that all changes in income distribution are between capital and labour (and not within these groups). The thinner solid line shows what would have happened if the concentration of labour income had followed the same trends as the Gini coefficient in labour incomes from Figure 1.⁶ The broken line shows how income distribution would have evolved if the concentration of capital had substantially *fallen* during the period of study (from .95 to .88).

Even under the last, very optimistic assumption, the deterioration in income distribution in Venezuela is significant. Indeed, if our calculations are correct, Venezuela is today one of the most unequal countries in the world, with its 1997 Gini surpassing that of South Africa (62.3) and Brazil (61.8).

⁶ The concentration coefficient in labour income (used in Figure 3) is based on labour earnings ordered by rank in the distribution of *total* income, whereas the Gini coefficient in labour incomes (plotted in Figure 1) orders by rank in the distribution of *labour* income. The thinner solid line in Figure 3 is calculated based on the assumption that these two share the same movements over time.

We turn now to a study of the factors that have influenced the distribution of income between capital and labour. Shifts in the functional distribution of income do not appear to be a result of sectoral reallocation of resources. Figure 4 shows capital shares for four basic sectors of the Venezuelan economy: agriculture, petroleum and mining, manufacturing, and services. The upward trend in capital's share of income is present in all sectors except petroleum and mining (made up almost exclusively of state-owned enterprises). Curiously, the shift appears to be of roughly the same magnitude among the sectors, suggesting that it may be the result of economy-wide changes. Indeed, sectoral reallocations in the Venezuelan economy seem to have contributed, if anything, to lowering the capital share, as resources have been moved out of agriculture and into manufacturing.⁷

FIGURE 4
CAPITAL SHARES BY SECTOR, 1970-95



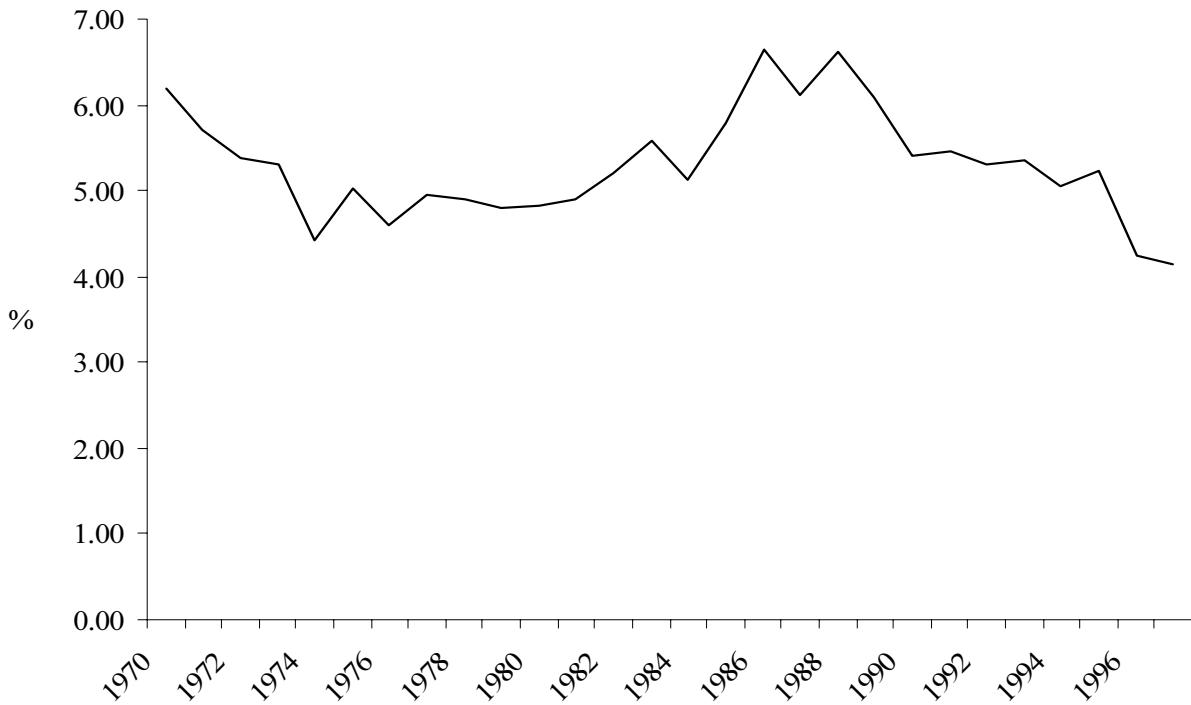
Another possibility is that rising capital shares may be caused by changes in the form of the ownership of firms. Venezuelan national accounts do not distinguish between corporate and unincorporated (family-owned) enterprises; income from unincorporated enterprises is classified completely as operating

⁷ Agriculture tends to display high capital shares because agricultural workers are commonly self-employed, with all their income counting as operating surplus. Venezuelan national accounts statistics do not distinguish the income of corporations from the income of the self-employed.

surplus. This accounting convention makes the capital share in unincorporated enterprises artificially equal to 1. Therefore, shifts of labour from the corporate sector to the unincorporated sector tend to raise the measured capital share even if they have no effect on the real underlying factor distribution of income.

Behind this rising capital share is an unprecedented collapse in wage rates that has not been accompanied by a fall in the rate of return to capital. Figure 7 shows that the wage rate has declined by about 50 per cent over the last 26 years. However, despite substantial swings, the level of the return to capital is roughly the same now as it was at the start of the period.⁸

FIGURE 5
VALUE ADDED IN AGRICULTURE, % OF GDP

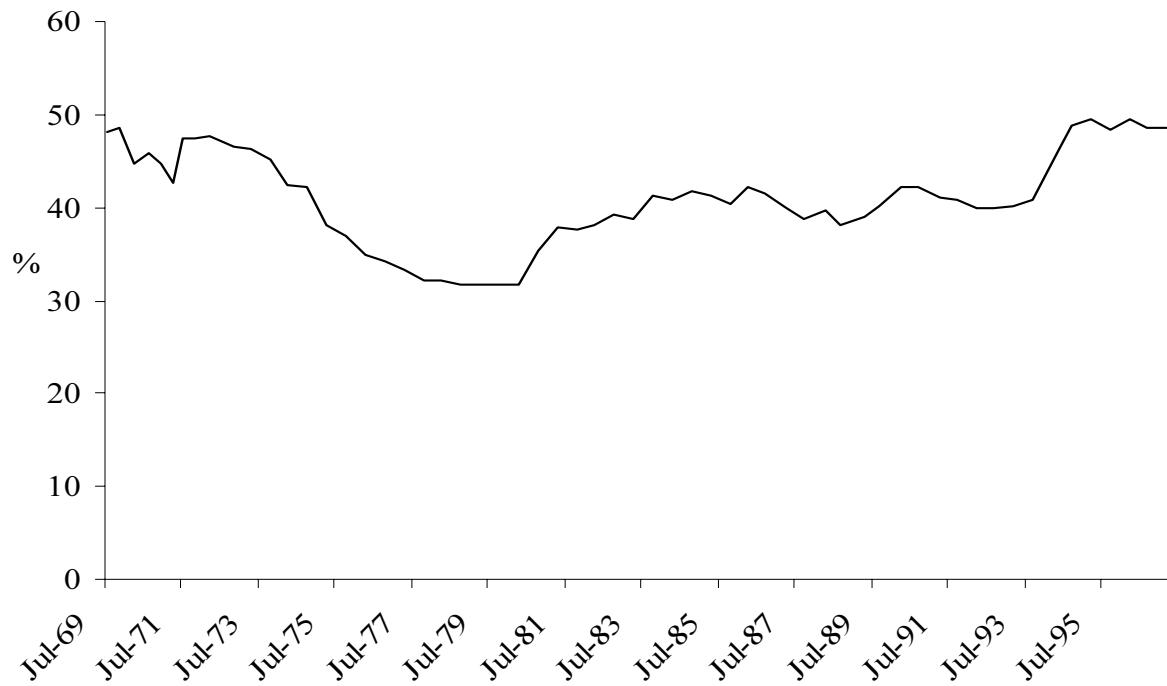


There are two sectoral shifts that could conceivably cause this change in the capital share. One would be a shift from manufacturing and services to

⁸ Such a steep fall in the wage rate seems surprising. Didn't Venezuela have alternative export industries in which it could have started specializing given low wage rates? Rodríguez and Sachs (1999) have suggested that the wage rates necessary to induce non-traditional exports were substantially lower than equilibrium wages during most of the period under study. The problem is compounded by the fact that the economy's comparative advantage changes over time from more to less capital-intensive production. See Rodríguez and Sachs (1999) for a discussion.

agriculture, as the latter is commonly characterized by a higher prevalence of self-ownership. Another would be a shift from the formal to the informal sector, with the informal sector also often characterized by self-employment. Neither of these possible shifts, however, appears to be the underlying cause of changes in the capital share. As we show in Figures 5 and 6, both the agricultural sector and the informal sector have been declining or stable in magnitude relative to the rest of the economy.⁹ Table 2 also shows data on the capital share in manufacturing taken from Rama (1999). The Rama data are based on UNIDO's industrial statistics database, which is put together from plant-level surveys covering relatively large firms, mostly in the formal sector of the economy. Again, even restricted to this sample where self-ownership is nearly absent, we find a consistent rise in capital shares.

FIGURE 6
SHARE OF WORKERS EMPLOYED IN THE INFORMAL SECTOR, 1969-97
(JULY, %)



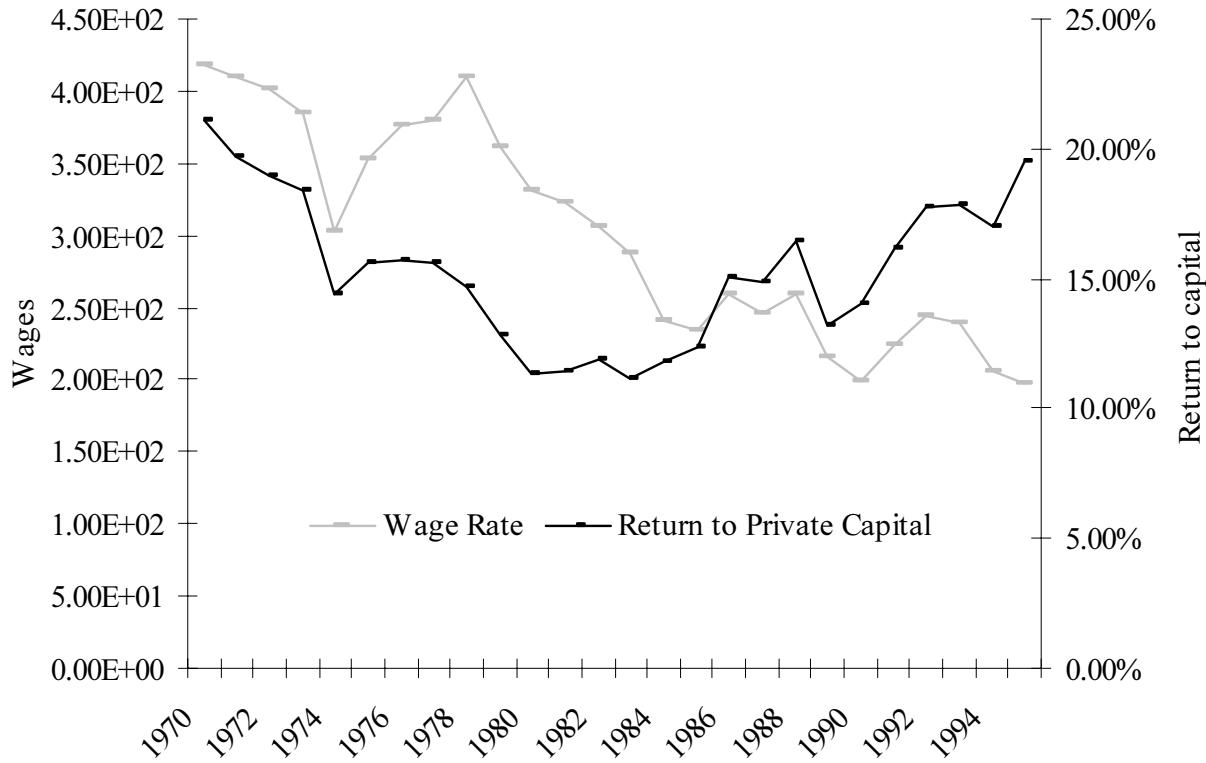
⁹ An alternative way to tackle this issue is by estimating the income of unincorporated enterprises in GDP. We have done this using the coefficients from a regression of capital shares on GDP for 91 countries (see Pineda and Rodríguez, 1999) and assigning 2/3 of the income of unincorporated enterprises to labour's participation. This calculation gives a similar increase in capital's share, from .375 in 1975-80 to .458 in 1990-5.

TABLE 2
MANUFACTURING CAPITAL SHARE IN LARGE FIRMS

| | |
|---------|----------|
| 1960-64 | 71.12881 |
| 1965-69 | 70.46426 |
| 1970-74 | 69.01994 |
| 1975-79 | 72.18646 |
| 1980-84 | 69.81372 |
| 1985-89 | 74.52913 |
| 1990-94 | 81.23277 |

Source: Rama (1999).

FIGURE 7
WAGES AND RETURNS TO CAPITAL, 1970-95



These data are, furthermore, likely to underestimate the increase in capital's share of income because they do not take into account the income held by Venezuelan nationals in offshore assets. In principle, national accounts statistics on factor income from foreign assets owned by residents should give us an idea of how much capital's total income has risen during the period under study. However, the estimation of net factor income from abroad is often problematic in these statistics, which suffer from gross underreporting. The

income on foreign assets reported in GNP statistics is commonly less than 0.5 per cent of GDP.

It is possible to get an alternative estimate of these data through balance of payments statistics. As the current account balance captures the increase in foreign assets held by nationals, we can measure the increase in foreign assets held by *private* nationals as the sum of current account surpluses, plus foreign direct investment, minus the accumulation of publicly held assets (including reserves).¹⁰ Using this procedure, we find that the increase in foreign assets held by Venezuelan nationals was \$57.3 billion over the 1970-97 interval.¹¹ At normal rates of return on international investments, our calculations indicate that the annual income earned by Venezuelans on their holdings of foreign assets in 1997 was \$4.16 billion, or 5 per cent of GDP. In other words, the increase in capital's share of income shown in Figure 2 probably underestimates the actual increase by about 2.5 percentage points of GDP. The capital share inclusive of returns on foreign assets is shown as the broken line in Figure 2.¹²

There is some evidence that the distribution of capital income may itself have become more unequal. Gonzalez and Martínez (1993) have discovered evidence that the concentration of firms increased substantially with trade liberalization in the late 1980s. They find that, in most industries, the number of small and medium firms shrank, and the number of large firms increased substantially. This evidence seems to suggest that income from capital has also become more concentrated.

In the case of the Venezuelan economy, a significant amount of GDP takes the form of oil rents. Therefore, the effective distribution of income may be influenced by what the state does with these rents. The deterioration in the private capital share that we observed above could in principle be offset by a greater progressivity in the distribution of the state's oil rents.

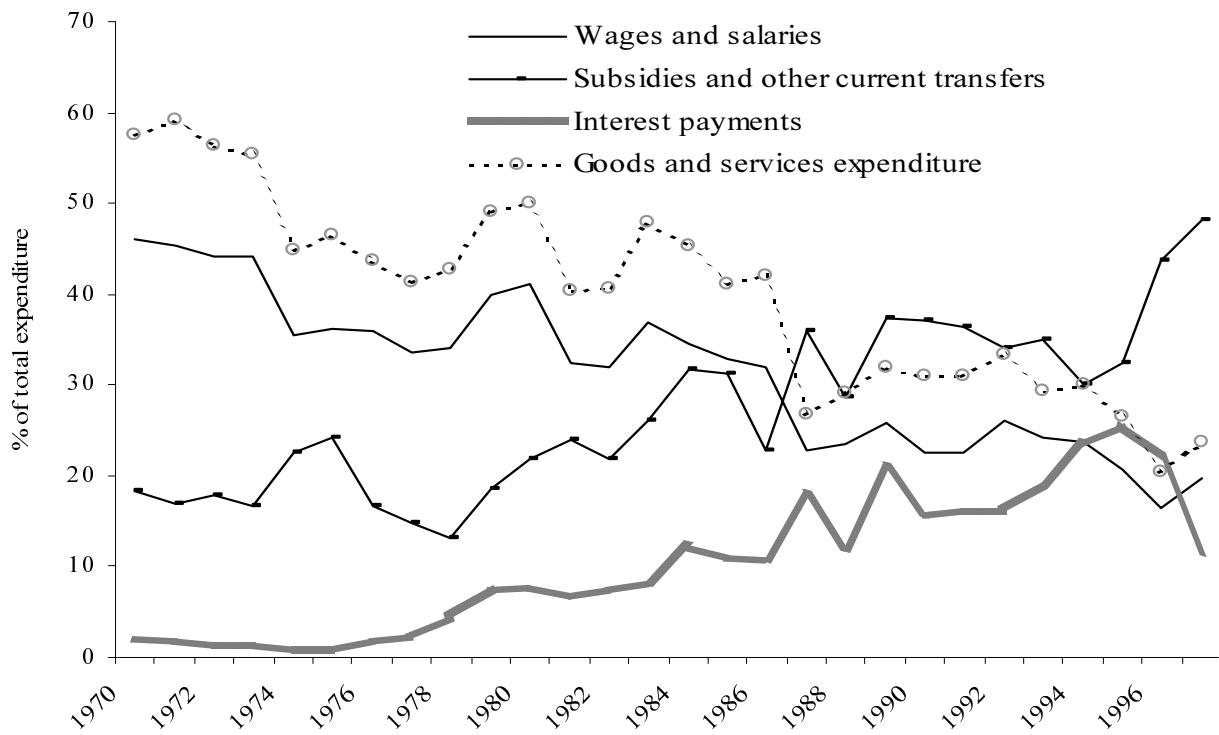
¹⁰ For a discussion of this and other approaches to the estimation of capital flight, see the articles in Lessard and Williamson (1987).

¹¹ Note that this magnitude may underestimate or overestimate the assets held by Venezuelans abroad. The underestimation comes from the fact that it excludes the compounding of the returns that must have been earned after the assets left the country, while the overestimation assumes that there has been no consumption. If consumption is exactly equal to the returns on the assets held (the optimal steady state consumption for an infinite horizon agent, with discount rate equal to the rate of return) then these effects cancel each other out.

¹² We have used the rate on Moody's AAA bonds to impute returns to existing capital.

However, this does not seem to have happened in Venezuela. Figure 8 shows the evolution of the composition of government spending from 1970 to 1997. The redistributive component of the government budget par excellence is wages and salaries. However, the portion of wages and salaries in the government budget fell from nearly half to less than one-fifth over the period studied. Government purchases of goods and services also fell considerably. The factors which experienced the greatest increase were interest payments on internal and external debt, which rose from just under 2 per cent to over 20 per cent of the government budget, and government subsidies and transfers, which rose from roughly 15 per cent to over 30 per cent. This last component of government expenditure is made up mainly of subsidies to state and private enterprises. It also includes transfers to social security, but these comprise roughly 1 per cent of government spending.¹³ The bulk of subsidies and transfers appears to be taken up by subsidies to state-owned enterprises, government-owned financial institutions and private enterprise.

FIGURE 8
COMPOSITION OF GOVERNMENT SPENDING



In sum, Venezuelan statistics tell a story of a considerably worsening income distribution. They also show that this worsening of income distribution has

13 The author's own calculations based on Banco Central de Venezuela (1996), Tables VII.5.2 and VI.11.2.

occurred mainly as a worsening of the distribution between capital and labour. Capital's share of GDP has gone up by about 15 points, marking a substantial shift of economic power from labour to capital.

The rest of the study will concentrate on an attempt to account for these shifts. As the changes in factor shares dwarf any changes in the distribution of labour income, we will focus for the most part on explaining the evolution of the factor shares. In what follows, we look at alternative hypotheses that could explain these changes. In particular, we will argue that, to understand the evolution of these shares, one must understand the reasons for changes in the accumulation of human and physical capital. We study these in Section 3.

III FACTOR SHARES, FACTOR PRICES AND OIL BOOMS

What is behind the trend in the capital share observed in Figure 2? What explains the stable value during the 1970s and the subsequent rise in value during the 1980s? As the capital share is a simple function of the stocks of capital and labour, as well as their returns, it is natural to divide the above question into two questions: How can we account for the evolution of factor prices?, and How can we account for the evolution of factor quantities? We attempt to give answers to these questions below.

3.1 The explanation

3.1.1 *Factor prices*

The obvious place to start looking for an understanding of the determination of factor prices is of course the theory of factor markets. According to the theory of competitive factor markets, there is a one-to-one link between factor prices and factor quantities. Relative factor prices should be high when a factor is relatively scarce, but low otherwise. This is because the return to capital relative to labour (r/w) reflects the ratio of the marginal products and, given diminishing returns, is an inverse function of the capital-labour ratio (K/L). The higher the amount of capital relative to labour, the lower the equilibrium price of capital relative to labour. As we discuss in more detail below, this relation is not specific to competitive factor markets, but can be generalized to other types of market structures. Figure 9 illustrates the intuition for this in a simple diagram. As the capital-labour ratio rises from K_1/L_1 to K_2/L_2 , the relative wage rises from w_1/r_1 to w_2/r_2 . The greater abundance of capital implies a lower marginal product of capital, which implies a lower rate of return to capital, r .

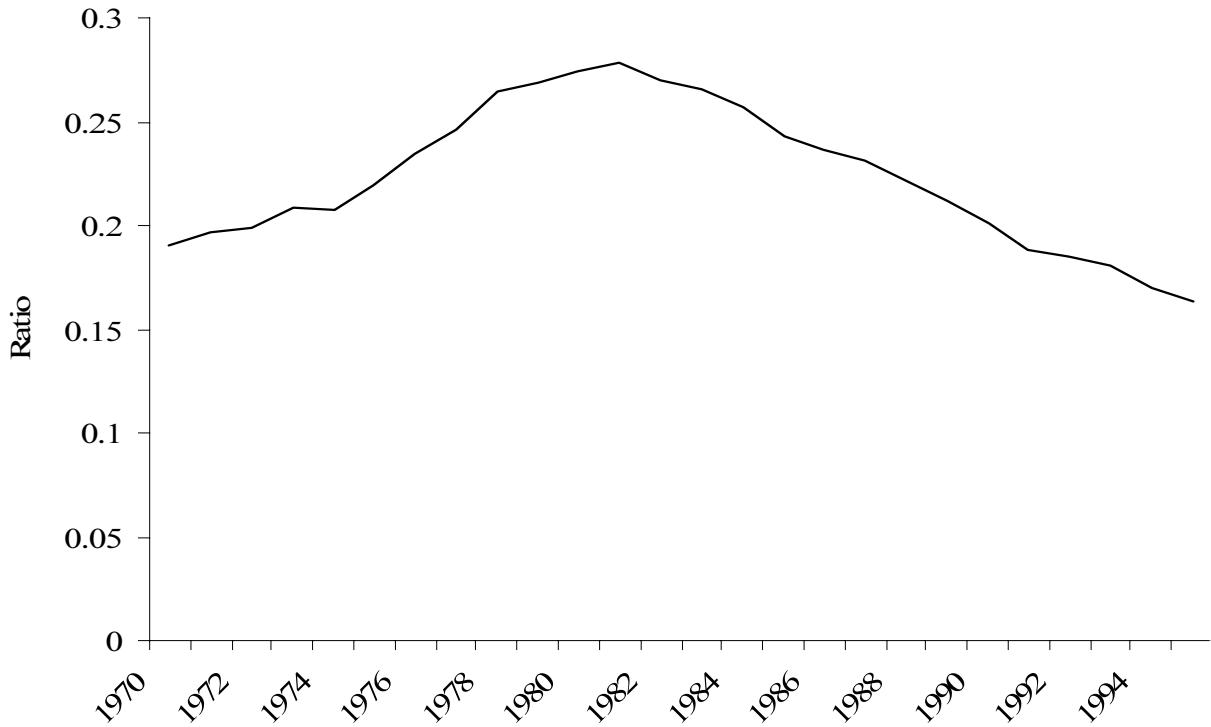
FIGURE 9
EFFECTS OF SHIFTS IN CAPITAL-LABOUR RATIOS ON RELATIVE WAGES

Can we account for the quantitative magnitude of the movements in capital shares through our approach? To answer this question, note that the capital share can be simply written as:

$$\alpha = \frac{rK}{wL + rK} = \frac{1}{1 + \frac{wL}{rK}}$$

and is thus related one-to-one with $(w/r)*(L/K)$. If capital accumulation increases (L/K falls) and (following our argument above) w/r increases, then the movement of factor shares will depend on the elasticity of substitution between capital and labour. For a Cobb-Douglas specification (where the elasticity of substitution between capital and labour is 1), factor shares are constant and are thus unaffected by capital accumulation. If the elasticity of substitution is greater than 1, then factor prices do not move much with changes in capital-labour ratios, and capital's share is increasing in the capital-labour ratio. If it is smaller than 1, then the opposite occurs: factor prices change so much in response to a shift in capital-labour ratios that an increase in the capital stock leads to a fall in capital shares.

FIGURE 10
NON-PETROLEUM CAPITAL STOCK PER WORKER, 1970-96



It thus appears that whether we can account for the movement in capital shares conditional on movements in relative factor quantities depends on the value of the elasticity of substitution between capital and labour.

In the Appendix, we provide a discussion of the empirical evidence relating to the elasticity of substitution between capital and labour in Venezuela. We argue there that there is good reason to believe that the elasticity of substitution between capital and labour in Venezuela is substantially below 1, and we estimate a value of $\sigma = .57$ using data from Venezuela's *Encuesta Industrial*. However, we emphasize that we can only provide rather crude estimates and that a wide confidence interval should be associated with this estimate.

If we accept that $\sigma < 1$, is Venezuela's pattern of capital shares consistent with the evolution of capital-labour ratios? The answer appears to be 'no'. In particular, Figure 10 shows that the capital-labour ratio grew in Venezuela during the 1970s, but has fallen since then. Thus, there should have been a drop in capital's share during the 1970s of approximately the same magnitude as the subsequent rise: something we do not observe.

FIGURE 11
PREDICTED AND HISTORICAL CAPITAL SHARE, 1970-95

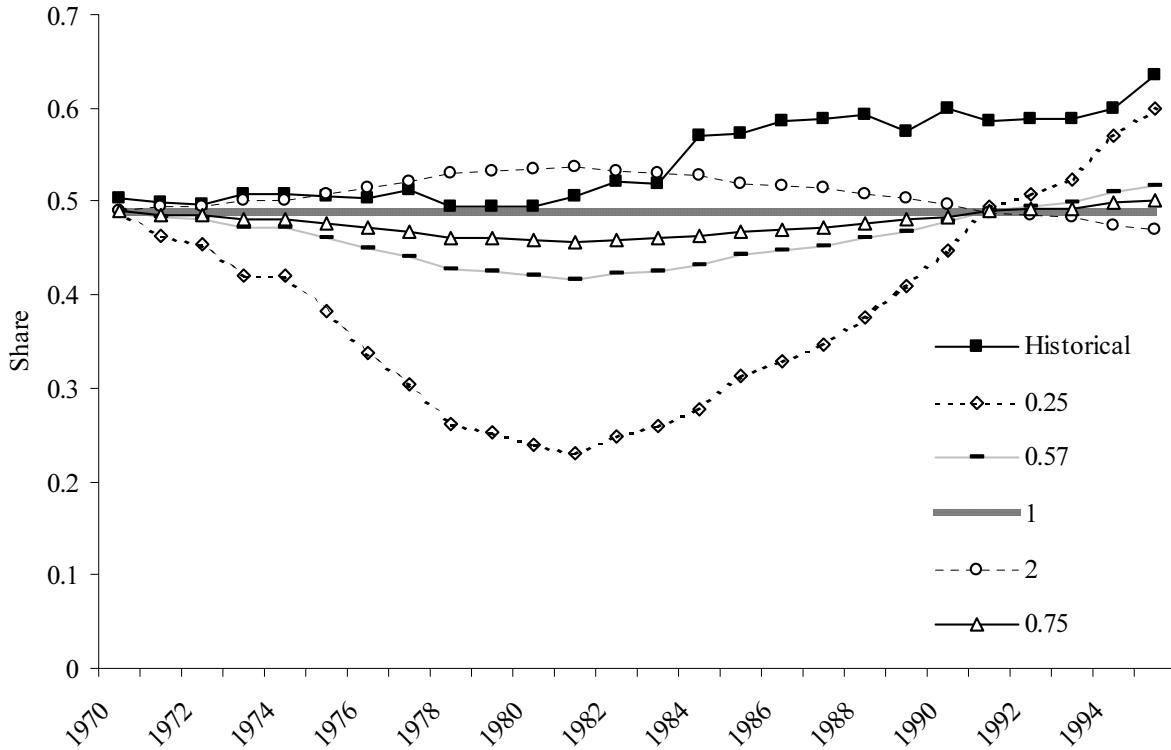


Figure 11 shows more formally why this explanation is unlikely to account for the shifts in factor shares observed in Venezuela during the period under study.

It shows the implied capital shares from a constant elasticity of substitution (CES) production function based on the assumption that the relative wage is equal to the relative marginal products and given the capital-labour ratios in Figure 9. As shown in Figure 11, which plots the capital shares implied by five different possible values for the elasticity of substitution between capital and labour, there is a large unexplained residual in factor shares no matter what the assumed elasticity is. In particular, as we have argued above, it is likely that the value of σ for Venezuela is considerably less than 1. For three possible values consistent with this hypothesis plotted in Figure 11, ($\sigma = .25$, $\sigma = .57$ and $\sigma = .75$), including our preferred estimate derived in the Appendix, capital-labour ratios implied a fall in the capital share that did not occur during the 1970s.

However, it is likely that the underlying data plotted in Figure 10 do not capture adequately the factor ratios relevant for analysing capital shares. In Table 3, we show the evolution of human capital as measured by mean years of schooling between 1960 and 1990. It shows that the mean years of schooling of Venezuelans progressed from 2.53 years in 1960 to 4.89 years in 1990. In particular, they seem to have peaked at 5.37 years in 1985 and to have begun to fall subsequently.

TABLE 3
MEAN YEARS OF SCHOOLING, 1960-90

| | Total | Male | Female |
|------|-------|-------|--------|
| 1960 | 2.530 | 2.990 | 2.059 |
| 1965 | 2.636 | 3.037 | 2.229 |
| 1970 | 2.925 | 3.241 | 2.608 |
| 1975 | 3.769 | 4.049 | 3.491 |
| 1980 | 4.930 | 5.200 | 4.659 |
| 1985 | 5.368 | 5.629 | 5.108 |
| 1990 | 4.891 | 5.002 | 4.779 |

Source: Barro and Lee (1993), with updates provided by Robert Barro.

These data are consistent with those on primary and secondary school enrolments. Primary school enrolment, which had been rising steadily during the 1980s, fell from a peak of 97 per cent in 1986 to 91 per cent by 1996. Persistence to grade five, which had peaked at 91 per cent in 1989, had fallen to 89 per cent by 1995.¹⁴ If these data capture correctly the changes in Venezuelan human capital, they suggest that the increase in the capital-labour ratio shown in Figure 10 from 1970 to 1990 may not adequately capture the ratio of physical to human capital.

¹⁴ Data from World Bank (1999).

In Figure 12 we show the evolution of the ratio of physical to human capital from 1970 to 1995. We proxy human capital by the product of mean years of schooling and the labour force. The ratio of physical to human capital is now seen to be declining steadily during the period under study. This suggests that we may wish to reassess whether the simple facts of capital accumulation can explain what has occurred with capital shares.

FIGURE 12
CAPITAL PER UNIT OF LABOUR

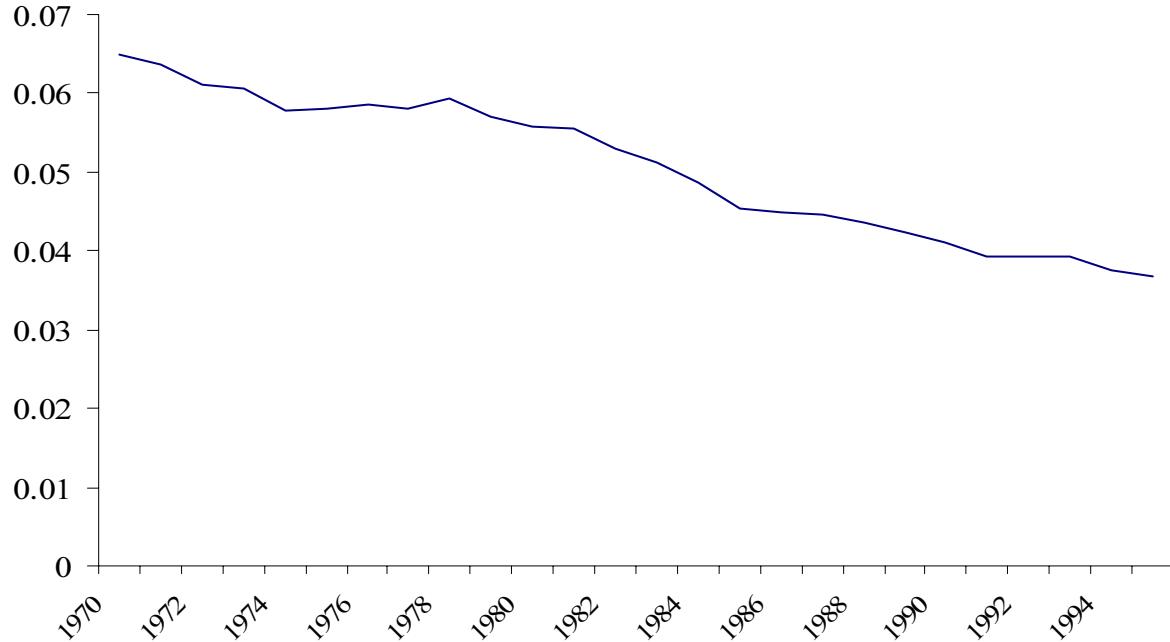


FIGURE 13
PREDICTED AND HISTORICAL CAPITAL SHARES, HK ADJUSTED MODEL

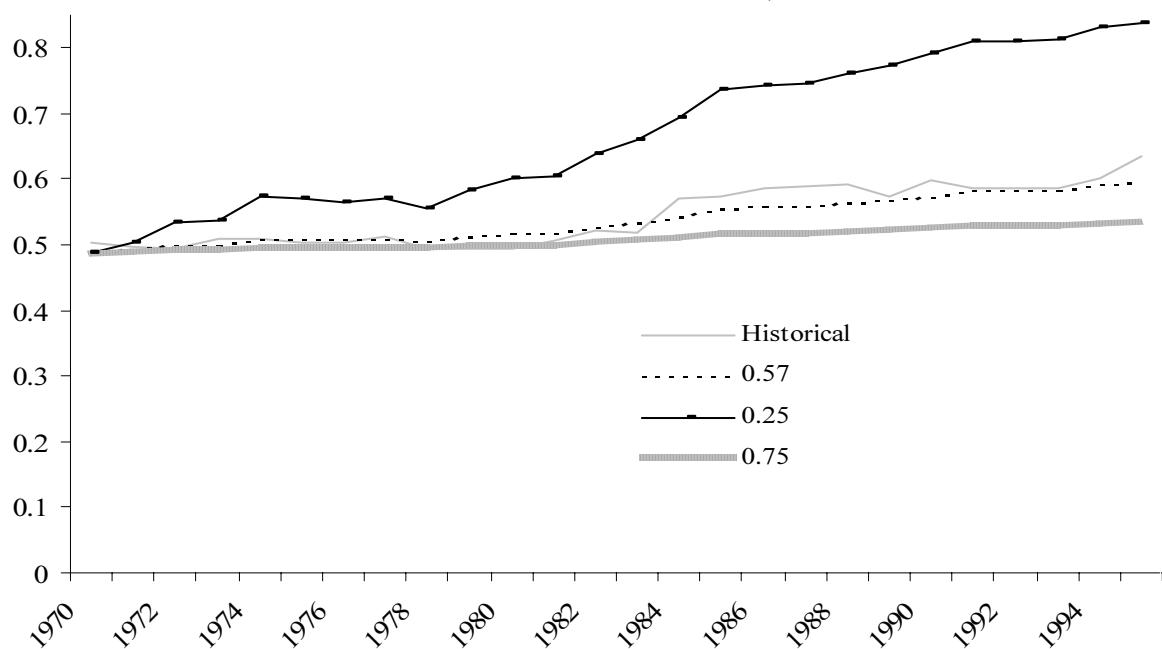


Figure 13 shows the predicted and historical capital shares for three different values of the elasticity of substitution when the relevant ratio of inputs is that of physical to human capital. For a value of $\sigma = .57$, the fit of the model is striking, with the existing ratios of physical to human capital able to account for a substantial part of the observed variation in capital shares. What does Figure 13 establish? To us, it shows that we can explain the evolution of factor shares *conditional on the evolution of the human-to-physical capital ratio* with an elasticity of substitution of roughly one-half. It therefore leaves open the interesting question of how to account for the evolution of the ratio of human to physical capital, a question that we will address below. But, first, we discuss some criticisms of our approach.

3.1.2 Alternative institutional structures

Several reasonable objections can be put forward against the approach sketched above. Perhaps the first one to jump to mind is the critique of the implicit assumption of competitive factor markets, an assumption that seems to be particularly at odds with much of Venezuelan reality. The active participation of unions and business federations in the bargaining process over wages both at the national and at the firm level and the existence of significant market imperfections and of large monopolistic industrial groups, as well as the significant amount of government regulation in the labour and financial markets during the period studied, would seem to contradict a theory that requires the operation of well-functioning competitive factor markets.

It is important to point out that our approach is not invalidated by the existence of non-competitive market structures in the product market. Our assumption that factor returns reflect marginal products will be true when *factor* markets are competitive, but will not be affected by the degree of competition in product markets. Monopolistic and oligopolistic groups in Venezuelan product markets are a reality, but whether these groups bear substantial market power in factor markets is more questionable, given the existence of a highly competitive informal sector, as well as the importance of migration flows from/to other Latin American countries in response to wage differentials.

FIGURE 14
ALTERNATIVE MARKET STRUCTURES FOR THE LABOUR MARKET

Absence of competition in factor markets, however, would still not invalidate our approach. Competitive factor markets are a sufficient condition for our approach to be valid, but not a necessary one. What is crucial for our calculations is that the ratio of factor prices be proportionate to the ratio of factor quantities. This is true when there exist competitive factor markets, but is true under alternative market structures also. In particular, wages are equal to the value of marginal products whenever wages are derived from the labour demand curve. Figure 14a shows that this is the situation in the classical case of competitive factor markets. But Figure 14b shows that it is also the situation in an alternative to a competitive theory of factor markets, namely, the theory of monopoly. If wages are set by a monopoly union, then the union will restrict the amount of available labour so as to increase the average wage. It will drive firms to the level *on the labour demand curve* where profits are maximized. Therefore, both wages and employment can be read off the labour demand curve, and wages will reflect marginal products.

Another theory of labour demand—that of monopsony markets, where one large firm manipulates its level of demand to lower the level of wages—would appear to be more problematic for our hypothesis. This case is shown in Figure 14c, where it is clear that under monopsony the equilibrium wages and quantities cannot be assumed to lie on the demand curve, because the firm has the power to restrict demand so as to push wages to the level on the supply curve that is consistent with profit maximization. However, it can be established that, for the case of a monopsonistic labour market and an isoleastic labour supply curve, observed factor shares will still reflect the ratio of marginal products.¹⁵ The level of wages will be lower than in the competitive case, but only by a factor of proportionality. Factor shares will also be lower, but the effect of an increase in factor ratios on capital shares will be the same, and our calculations above will remain valid.

A further objection that could be posed against our analysis is that it assumes away institutional influences on the capital share, expressing it purely as the result of market interactions. However, we have not argued in this section that the evolution of capital shares can be totally understood as the outcome of market processes; we have only argued that it can be so understood *conditional on existing factor ratios*. We will argue that institutional and political factors have an important role in the determination of factor ratios.

The objection is, however, correct in that we assume away the effect of changes in market structure on movements in the capital share. An alternative

¹⁵ This proof is in an unpublished appendix, available from the author upon request.

interpretation of the observed behaviour in capital shares would point to the deterioration in labour unions' political clout during the 1980s and 1990s, which we discuss in depth in Section 5. We view such a hypothesis as complementary to ours.

Indeed, it is very difficult to tell the difference between cause and effect when discussing labour's loss of political power. On the one hand, falling labour shares are likely to be at least in part caused by the fall in the capacity of labour to mobilize politically. On the other hand, falling labour shares lead to lower labour incomes and, therefore, to a smaller capacity of labour to mobilize economic resources for the political arena.¹⁶ What we do in this section is to identify one reason behind labour's loss of political power—changes in factor ratios that produced falling labour shares—but we recognize that other causes may have led to the fall in labour's capacity for political mobilization, such as exogenously imposed liberalization policies and the broader ideological loss of direction of the Latin American left.

3.1.3 *Factor ratios*

We return now to our main argument. We have discussed above that, with an elasticity of substitution not too different from .5, the observed evolution of capital shares is consistent with the hypothesis that factor prices are proportional to their marginal products, given observed factor ratios. This line of reasoning thus points to the levels of human and physical capital as the variables of interest. If existing patterns in the accumulation of physical and human capital are consistent with the evolution of capital shares, then we should be asking what determines the patterns of human and physical capital accumulation. In particular, why did the ratio of physical to human capital drop so steadily during the 1970-96 period?

Analytically, this question can be separated into two distinct questions. The first one regards the evolution of the stock of physical capital per worker shown in Figure 10. Why did it have an inverted-U behaviour, rising during the 1970s and falling during the 1980s and 1990s? The second one regards the evolution of mean years of schooling shown in Table 3. Why did human capital grow steadily during the 1970s and then stabilize and fall during the 1980s? We now attempt to answer these questions.

¹⁶ Pineda and Rodríguez (1999) develop this explanation in detail. They show for a panel of 91 countries that capital shares are negatively associated with the capacity of the labour sector to pressure for greater amounts of redistribution and investment in human capital.

3.2 Patterns of physical capital accumulation

Suppose a country experiences a boom in natural resources. What is likely to be the effect of that boom on the country's patterns of capital accumulation? To answer, we need a model of the interaction of natural resources and economic growth. The standard Ramsey model is not well suited to study an economy with non-renewable natural resources because all factors of production in this model are assumed to be reproducible. A simple way to incorporate natural resources into the Ramsey model would be to consider them as a stock of resources that can be sold at given world prices and exchanged for investment goods. In such a model, one could study the optimal decisions of factor accumulation and resource depletion and derive the macroeconomic implications.

Rodríguez and Sachs (1999) present such a model. In their interpretation, the economy is identical to that of a Ramsey model, save for one additional decision: how to deplete an existing natural resource. At every moment in time, the economy must decide how much of the resource to extract and sell in international markets and how much to keep for future use, given a technology of extraction.

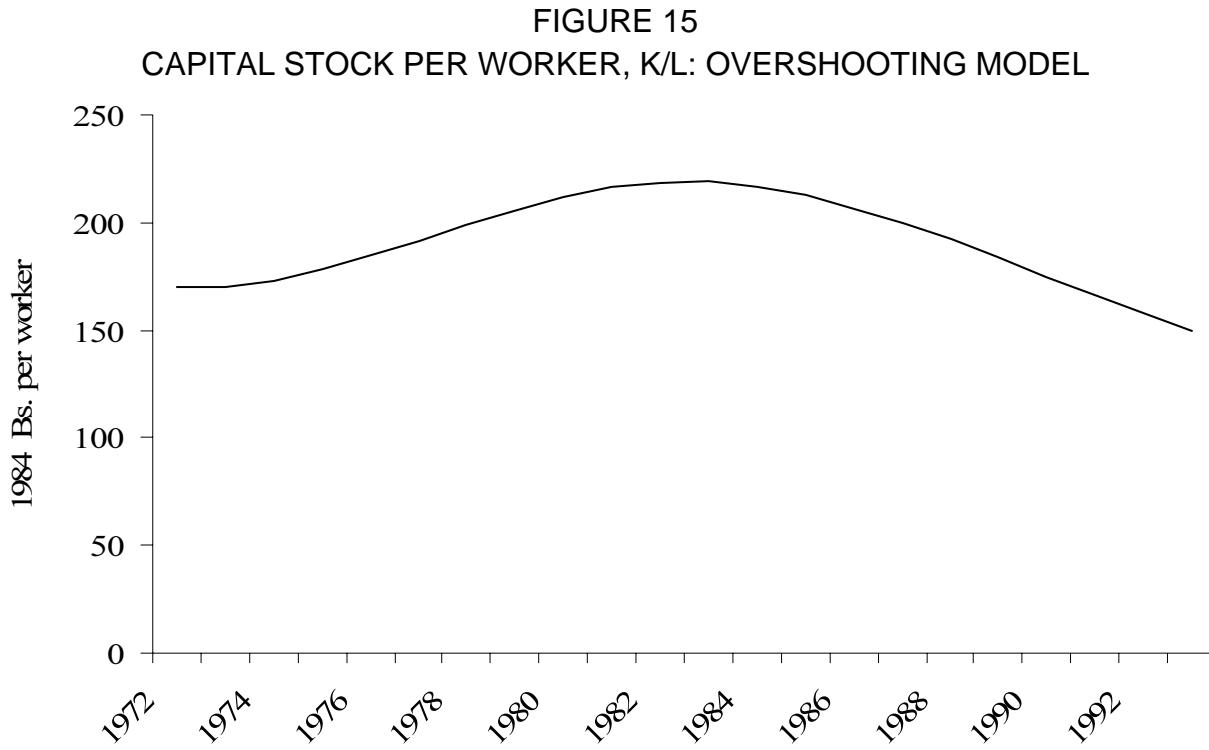
If there are perfect international credit markets, then the optimal decision for the economy is to sell its natural resource internationally and permanently consume the interest on the assets derived from that sale.¹⁷ If this alternative is not open, then the economy will invest the resources internally, generating a boom in production. As it invests them, it forces down the marginal return to capital and therefore provokes a consumption boom.

The key feature of this boom is that it is unsustainable in the long run. Unlike the factors of production of the standard Ramsey model, natural resources cannot be accumulated either exogenously, or through savings decisions. Therefore, they cannot grow at a constant rate in a steady state, as capital and labour do. They can, however, allow the economy to enjoy temporarily high levels of consumption during the transition to the long-run steady states. This is what Rodríguez and Sachs term the 'overshooting' result: as the economy grows, if the stock of natural resources is sufficiently large, then the economy surpasses in finite time its long-run steady state level. However, as time passes, the level of income of the economy must converge to its long-run steady

¹⁷ After investing the sum of resources necessary to augment its capital stock so as to jump to the steady-state level, assuming no adjustment costs.

state.¹⁸ Therefore, the economy converges from above to its steady state, displaying negative growth rates during the transition to this state.

Rodríguez and Sachs use this fact to account for the low growth rates of resource-intensive economies documented by Sachs and Warner (1995), Gelb (1986) and Karl (1997). They also calibrate a dynamic computable general equilibrium model for the Venezuelan economy and show that the economy's growth performance during the boom years is quantitatively accounted for accurately by the overshooting phenomenon.

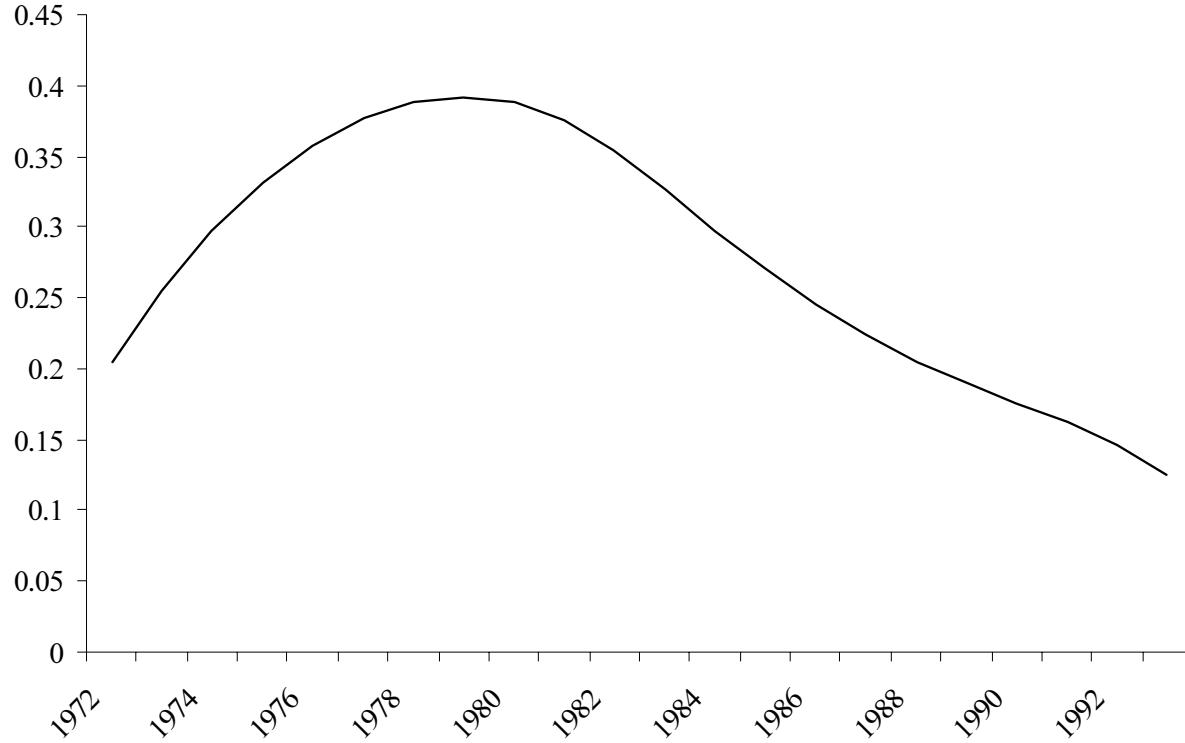


Figures 15 and 16 show the behaviour of the per capita capital stock and investment rates implied by the natural resources model of Rodríguez and Sachs calibrated for the Venezuelan economy in 1972-93. In particular, they show that the boom in capital accumulation can be well accounted for by the overshooting phenomenon: during the early years of the boom the economy accumulates rapidly a capital stock which is unsustainable in the long run. There is nothing non-optimizing about this behaviour: it is completely optimal to try to enjoy the higher utility which natural resources can provide while they last. As the boom advances, the marginal product of capital is pushed down sufficiently low to cause disincentives to further investment. This fact,

¹⁸ With positive population growth, the per capita level of natural resources is zero, and thus its steady state must be the same as that of an economy without natural resources.

combined with the continuous erosion of the natural resources in per capita terms, leads to a fall in the per capita capital stock. As Figure 13 shows, the predicted trends fit well with the historically observed trends in the Venezuelan economy. Therefore, the pattern in physical capital accumulation is perfectly consistent with the predictions of a theoretical model.

FIGURE 16
INVESTMENT RATE, I , IN OVERSHOOTING MODEL



3.3 Patterns of human capital accumulation

As discussed above, an optimizing model with natural resources can account satisfactorily for the evolution of Venezuela's stock of physical capital. However, it is unlikely to account satisfactorily for changes in the accumulation of human capital. Although human capital started falling in 1985, there is nothing in this to approximate the collapse in physical capital. Indeed, the rising capital share is precisely driven by the fact that human capital (years of schooling times population growth) kept on growing, while the physical capital stock remained roughly constant from the early 1980s on (generating a fall in the ratio of physical to human capital). Furthermore, the stock of human capital is likely to react with significant lags to investment in human capital, so that the causes of the deterioration of human capital in the late 1980s are likely to reside in a fall in investment rates during the 1970s or earlier.

FIGURE 17
SOCIAL SPENDING AS A PERCENTAGE OF GNP, 1962-96

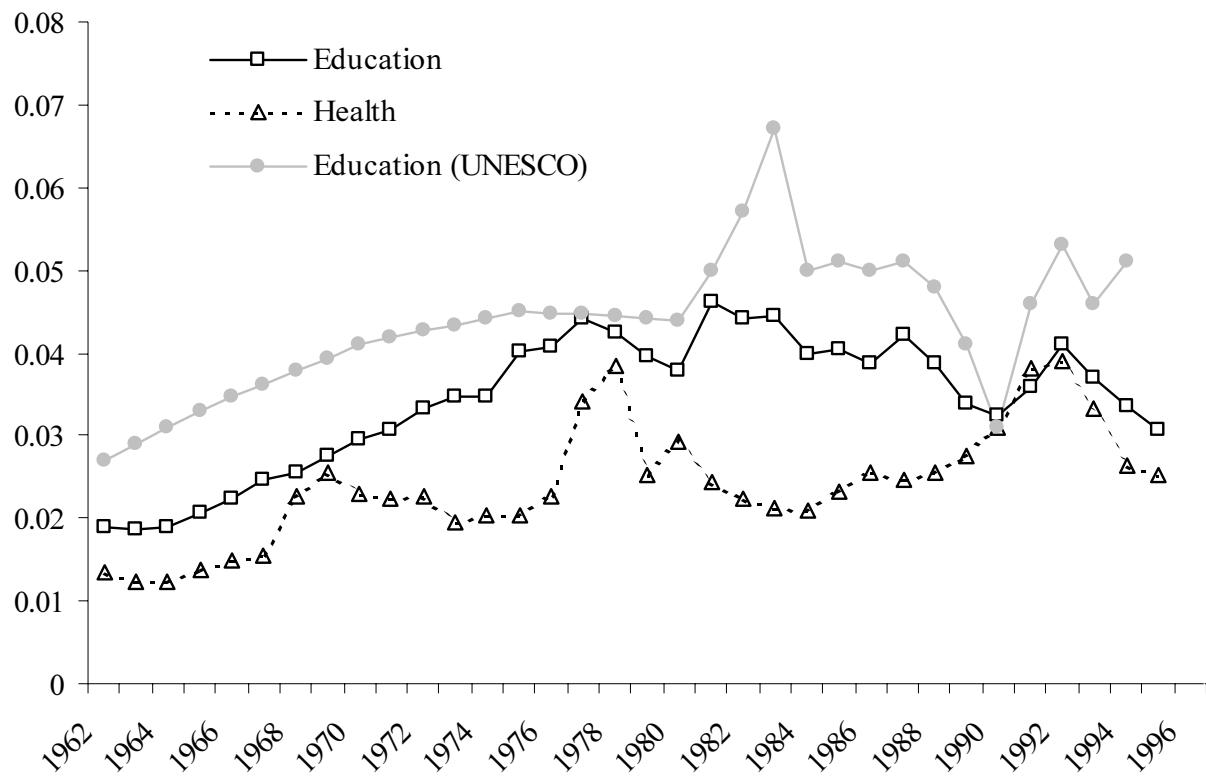


Figure 17 plots the time-series of health and educational spending in GNP from 1962 to 1995. These series show levels of social spending which were, generally speaking, rising during the 1960s and 1970s and stable during the 1980s and 1990s. We plot two series for education, one calculated directly from Venezuelan official statistics and another calculated by UNESCO, both of which coincide in the general pattern of stabilization of social spending in GNP from 1980 on. Figure 17 gives evidence of stabilization in the levels of social spending, but not of a collapse in these levels.

However, Table 4 shows another side of the process. Despite rising rates of investment in human capital during the 1960s and 1970s, the amount of resources that were being devoted to primary and secondary schooling was actually declining.¹⁹ During this period, the fraction of GNP devoted to tertiary education more than doubled. In other words, spending may have stabilized, but it also became more regressive.

¹⁹ 1975 is the last year for which there are separate data on primary and secondary schooling. The data show that primary schooling as a share of GDP fell from 1.84 per cent in 1970 to 1.13 per cent in 1975.

TABLE 4
SPENDING ON EDUCATION AS A % OF GNP, BY LEVEL (UNESCO)

| | Primary and secondary | Tertiary | Non-distributed | Total |
|------|-----------------------|----------|-----------------|-------|
| 1970 | 2.59 | 1.12 | 0.37 | 4.08 |
| 1975 | 2.21 | 2.01 | 0.08 | 4.30 |
| 1980 | 1.91 | 2.07 | 0.24 | 4.23 |
| 1994 | 2.04 | 2.40 | 0.19 | 4.63 |

Source: UNESCO (1999) Education Spending Data File, Electronic File.

There is sketchy evidence that something similar may have happened in the health sector. Despite the increased spending in health shown in Figure 17, the number of hospitals per 100,000 people fell from 3.2 to 2.8 from 1970 to 1989, and the number of beds per 100,000 people declined from 310 to 247. The percentage of population with safe water rose from 75 per cent to 89 per cent of the total from 1970 to 1989 and then dropped to 79 per cent by 1995, while the percentage with access to sanitation followed a similar pattern, rising in the 1980s to 92 per cent only to drop to 72 per cent by 1995. Malnutrition prevalence, as measured by the percentage of children under 5 whose height is less than two standard deviations from the median US population, went from 4.6 per cent in 1987 to 14.9 per cent in 1997. Therefore, despite constant levels of investment in human capital as a percentage of GNP from the 1970s on, indicators of health performance have weakened considerably, suggesting that there has been an increase in the inefficiency of health provision. This inefficiency could arise, as in the education sector, because higher amounts of spending are being deviated towards upper income groups. They could also arise because of increased rent-seeking in the health sector. Whatever the reason, what is clear for our purposes is that there was a collapse in the levels of effective investment in human capital that fueled the decline in human capital observed during the late 1980s.

An alternative hypothesis is that much of the fall in the stock of human capital was driven by the effect of macroeconomic policies. Lustig (1999) and Behrman, Duryea and Szekely (1999) have recently found that macroeconomic crises have long-run impacts on the stock of human capital. In particular, strong macroeconomic contractions raise levels of malnutrition and lead to substantially lower school enrolment rates. The result can be negative long-lived or even permanent effects on the stock of human capital.

Feedback effects may exist from the deterioration in the capital share to investment in human capital. Given the high correlation between ownership of

human and of physical capital, it may well be the case that those who own the most human capital also own the most physical capital. However, higher investment in human capital—especially in primary education—would lead to an expansion of the human capital of individuals who have little human capital. This could have a strong negative effect on the value of the human capital of those who already have high levels of human capital. Therefore, these elites would see their interest in restricting the ownership of human capital, and a higher share of *physical* capital in GDP may give them the upper hand in the political process by raising the economic resources that they have to influence politics. Such an interpretation would be consistent with the pattern of deterioration in human capital accumulation (more investment in tertiary, less on secondary and primary), as well as the increase in the labour Gini coefficients observed in the late 1990s.

In sum, a mix of economic and political factors seems to account for the evolution of the observed factor ratios. On the economic side, a great part of the trends in physical capital accumulation appear to be a natural consequence of the resource boom. But this cannot explain the whole story without appealing to the behaviour of human capital accumulation. The stock of human capital grew steadily until the mid-1980s and has fallen since; this fall appears to be linked to the waning capacity of the political system to keep up a sufficiently high level of progressive human capital accumulation, perhaps due to changes in the political clout of the groups with an interest in human capital accumulation.²⁰

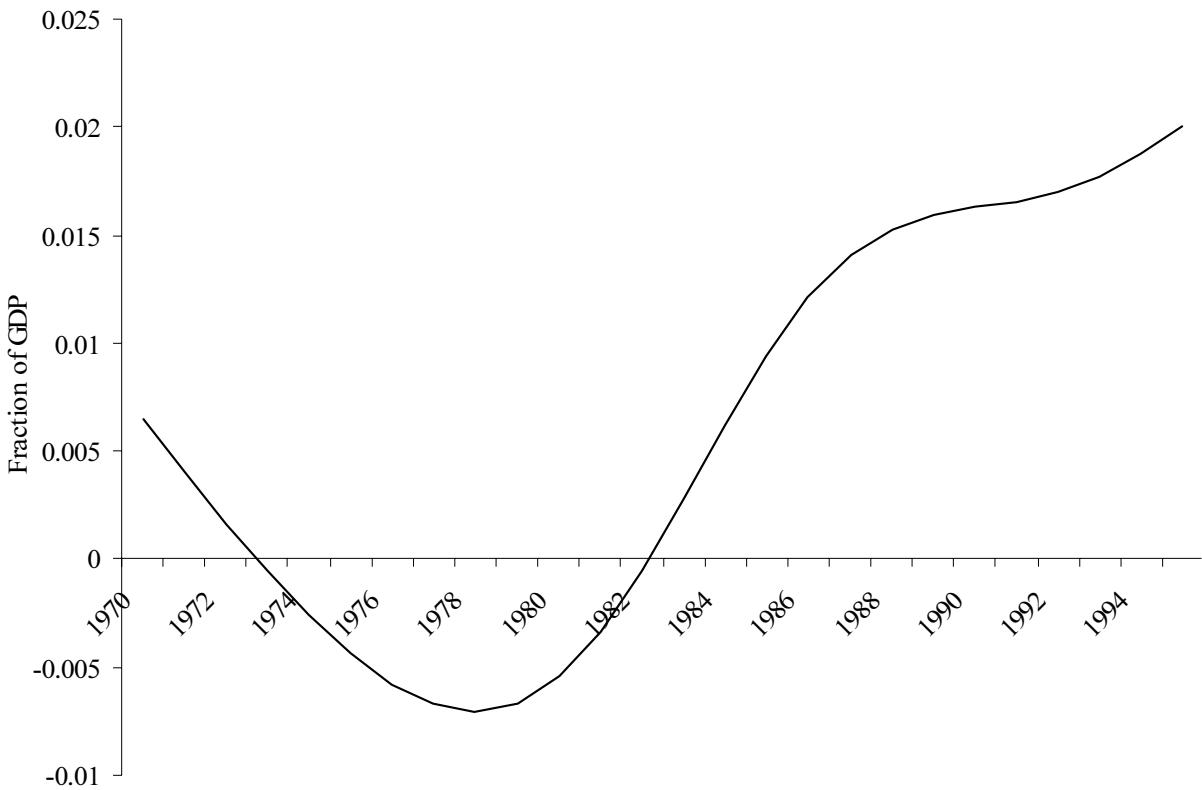
²⁰ How can our story be made consistent with the evolution of wage inequality observed in Figure 1? Shouldn't we expect similar patterns to those observed in capital shares to appear in the evolution of wage inequality? Isn't the fact that wage inequality is basically trendless over the period of study inconsistent with our analysis? Most existing evidence suggests that the elasticity of substitution among different types of labour is substantially higher than that between capital and labour. For example, for the US, the consensus is that the long-run near constancy of capital shares is consistent with an elasticity of substitution between capital and labour of 1. This is also the value derived by most empirical estimates of this elasticity (see for example Blanchard, 1997). However, estimates of the elasticity of substitution between skilled and unskilled labour put it at around 1.4-1.5 (see Katz and Murphy, 1992; Johnson, 1997), much higher than that between capital and labour. The fact that the elasticity of substitution between capital and labour is lower than that between skilled and unskilled labour is quite intuitive, as we would expect substitutability to be easier among different types of labour than it would be between labour and another factor of production.

If the Venezuelan elasticity of substitution between skilled and unskilled labour is higher than that between labour and capital, it may not be far from 1. Indeed, a very simple back-of-the-envelope calculation would add the difference between the two elasticities for the US (0.4-0.5) to our preferred estimate for Venezuela (0.57) to get an estimate of the elasticity of substitution between skilled and unskilled labour of .97-1.07. This value is very close to 1. If this is an accurate estimate, factor shares between skilled and unskilled labour are likely to be invariant to relative endowments, making the lack of trend in labour Ginis perfectly compatible with our explanation.

IV OTHER INFLUENCES ON INCOME DISTRIBUTION

In the previous section, we argue that the evolution of the factorial distribution of income could be well understood by the changes in the patterns of accumulation of human and physical capital. But even in the most favourable scenario for our hypothesis, there is a substantial amount of residual inequality left unexplained. In Figure 18 we show the long-run variations in capital shares that cannot be explained by our model (that is, the difference between the historical behaviour and that predicted by our model under our preferred estimate of $\sigma = .57$). Since our focus is not accounting for cyclical variations in inequality, we have filtered this residual by a Hodrick-Prescott filter, a standard method in the business-cycle literature for separating permanent from cyclical variations in a time-series. As the figure shows, there is an unexplained upward drift of about three points of GNP in capital shares between 1980 and 1995. By far the largest component of this occurs between 1980 and 1987, whereas a further rise occurs between 1987 and 1995.

FIGURE 18
UNEXPLAINED VARIATION IN CAPITAL SHARES: LONG-RUN COMPONENT



4.1 1980-7: macro policy and capital flight

The early 1980s saw a shift in macroeconomic policy regimes from the expansionary approach of the 1970s towards a highly contractionary stance. Whether this shift was warranted or not is an unsettled issue: supporters argue that it was necessary to restrict growing inflation, whereas opponents counter that a continuation of the improving income distribution of the 1970s could make growing wages consistent with a stable aggregate demand.²¹ The natural by-product of the induced recession was a fall in the availability of profitable investment opportunities (note the falling profit rate during the early 1980s in Figure 7). Given the low level of the real interest rate (except for a short attempt at financial liberalization, interest rates were controlled at real negative levels until 1989), this substantially reduced the incentives to maintain assets in domestic currency. Persistent budget deficits also fueled rational expectations of devaluations, which further reduced expected returns to bolívar-denominated assets.

The result of the combination of these factors was a high incentive to move deposits to offshore bank accounts. Indeed, half of Venezuela's capital flight for the 1970-95 period occurred between 1979 and 1983. During those four years, capital flight summed to \$28.2 billion, or 37 per cent of fuel exports. It is clear from Figure 2 that the increase in the component of capital's share of GNP deriving from income on foreign assets occurred mostly during this period. Thus, it appears that a non-negligible part of the deterioration of Venezuela's income distribution can be attributed to the combination of persistent devaluations, low real interest rates and low profit rates that was maintained during the regime of capital account convertibility of the 1980s.

A relatively inequitable consequence of the buildup of foreign assets held by Venezuelan nationals is the flip-side: the accumulation of foreign debt held by the Venezuelan government. Estimated at \$35.5 billion, Venezuela's external debt is smaller than the \$57.3 billion held by Venezuelan nationals. However, the limited capacity of the Venezuelan state to tax assets held by Venezuelans abroad implies that the burden of the repayment of the Venezuelan external debt falls principally on those who do not own foreign assets.

From the policy standpoint, a number of interpretations of this outcome are possible. The Washington consensus view is that low real interest rates lead to capital flight; the recommended solution to this dilemma is to engineer

²¹ Gumersindo Rodríguez (1981) and Juan Pablo Pérez Alfonso (1976) are two examples of the different positions in this debate.

monetary-induced contractions and high real interest rates. This was indeed the solution followed by Venezuelan administrations from 1989 on. However, recessions tend to lower profit rates, inducing capital flight, and high *nominal* interest rates can cause high budget deficits. These two reasons are at least part of the explanation why capital inflows did not permanently resume in the post-1989 period despite high real interest rates.

A non-Washington consensus view of this policy dilemma is that the trade-off between economic expansion (through low interest rates) and capital account balance (through the interest-parity condition) holds *only as long as capital account convertibility is in place*. If there are restrictions on capital outflows, a country can choose a monetary policy that is consistent with domestic expansion without worrying about the consequences to the capital account.²²

The fact that a good number of countries (among which South Korea, Chile and Malaysia) were able to maintain capital account convertibility restrictions during the postwar period and engineer a sustained process of economic growth illustrates the fact that these restrictions can be a useful instrument in maintaining domestic economic growth financed with domestic investment. Rodrik (1997) has recently shown that countries with capital account restrictions do not seem to pay a cost in terms of economic growth and may actually enjoy substantial benefits in terms of reduced volatility. Indeed, the sole fact that a capital-scarce developing country systematically becomes a capital exporter is indicative of the existence of market failures under which free capital markets are unlikely to lead to optimal outcomes. The non-Washington consensus view would imply that, if Venezuela had been willing to impose restrictions on capital account convertibility during the 1980s, it could also have averted a significant part of the deterioration of its distribution of income.

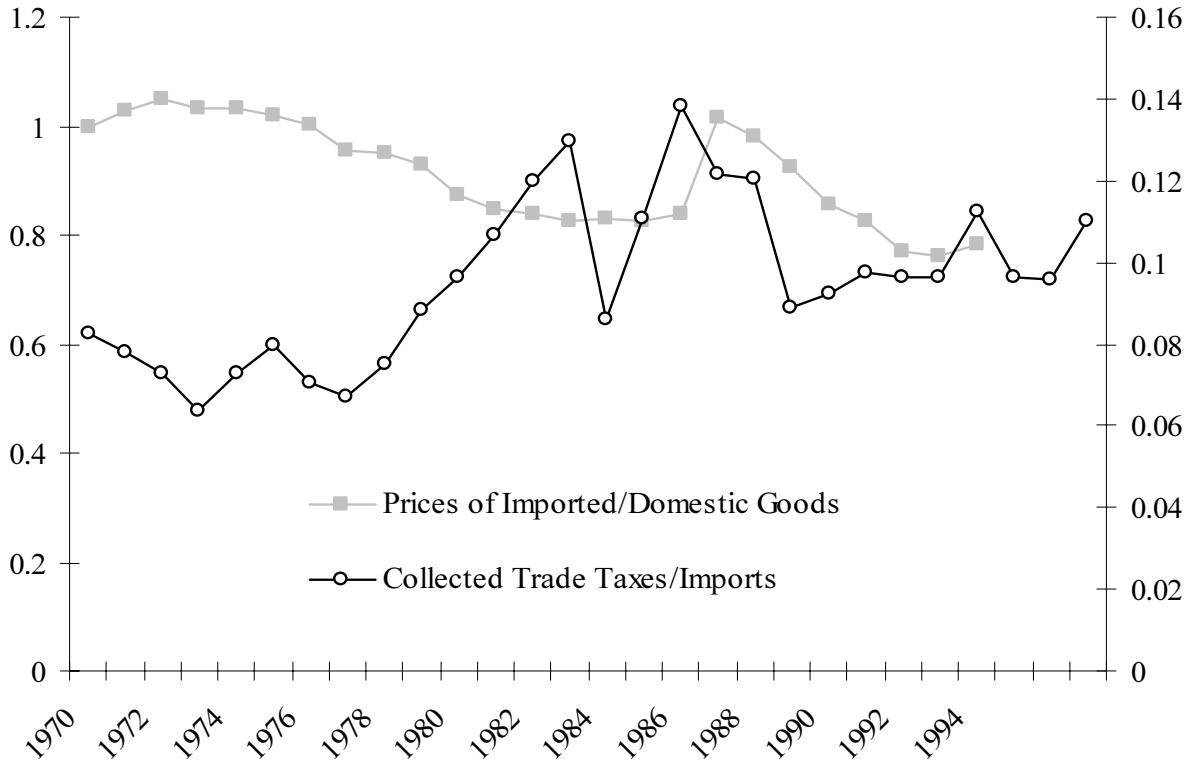
4.2 Trade reform

Trade policies can have distributive effects because of their impact on relative prices. If an economy liberalizes international trade, then the possibility of importing some goods at lower prices should make the internal prices of import-competing goods fall. The conventional economics wisdom asserts that,

²² A traditional view is that this dilemma can be solved when exchange rates are flexible, as the rate of devaluation will adjust to ensure that the no-arbitrage condition holds. Even though this is true in theory, as Calvo and Reinhart (1999) have recently pointed out, it is seldom true in practice, given that devaluations are used by agents as signals of policy-makers' credibility.

in labour-abundant economies such as that of Venezuela, trade liberalization should lead to a drop in the relative price of import-competing capital-intensive goods and therefore to a rise in real wage rates.²³ Trade liberalization should thus lower capital's share of income. This conventional wisdom has been questioned in a number of studies which have failed to find an effect of trade liberalization on factor shares in developing countries. If anything, these studies tend to find that income distribution deteriorates in many developing countries as a result of greater openness.²⁴

FIGURE 19
INDICATORS OF PROTECTION, 1970-97



For the 1970-97 period, Figure 19 shows the evolution of collected trade taxes over imports, a crude measure of commercial policy. It shows a rise in the level of protection during the late 1980s, followed by a modest drop after liberalization. We also show another indicator of trade policy, the ratio of prices of imported goods to the prices of nationally produced goods at the wholesale level. The evolution of commercial policy over time (whether

²³ This is assuming both capital and labour are mobile across industries. If there are specific factors, then the return to the mobile factor will depend on the weight of importables and exportables in the aggregate price level.

²⁴ See Harrison and Revenga (1999) and further references in Reddy and Dube (1999).

measured by relative prices or by average tariffs) shows a decline in indicators of protection from 1987 on, which actually coincided with an *increase* in labour's share during that period.

The fact that trade liberalization coincided with an increase in the capital share is suggestive that traditional, Stolper-Samuelson effects may not be present in the Venezuelan case. Rodrik (1997) and Reddy and Dube (1999) have suggested that trade may have an effect on income distribution which goes beyond the conventional Stolper-Samuelson effect. These authors show that, by raising the elasticity of the derived demand for labour, international trade lowers the bargaining power of labour and thus affects equilibrium wages negatively. Therefore, trade liberalization can easily lead to a deterioration of income distribution even in labour-abundant countries. This is indeed consistent with the Venezuelan experience and points again to the reduced bargaining power of labour as a key factor in the evolution of Venezuelan inequality.

4.3 Financial crises

An additional factor which appears to have had an effect on Venezuelan inequality was the financial crisis experienced by the country during the mid-1990s. Between 1994 and 1995, a run on the banking sector precipitated one of the worst banking crises in Latin American history. The cost of banking sector bailouts have been estimated at 13 per cent of GDP in 1994 and an additional 4 per cent of GDP in 1995. An effect of the crisis was a total collapse in domestic credit creation. By 1996, the total domestic credit provided by the banking sector had fallen to 19 per cent of GDP from above 30 per cent before the crisis. One could expect two impacts of this on the capital share. First, it would lead firms to substitute away from capital-intensive activities. This reduction in the use of capital would, given the estimates of the elasticity of substitution discussed above, lead to a rise in capital's share. Second, it could lead capital-intensive firms to experience a greater bankruptcy rate, with labour-intensive firms surviving loan-reliant capital-intensive firms. The latter effect would lower capital's share.

The evidence from manufacturing data points to a predominance of the former effect. Tables 5 to 7 show value added per worker (a measure of capital intensity) and gross production and capital shares in manufacturing by establishment size during the banking crisis years. Table 5 shows that, generally, capital intensity is strongly related to size: large firms tend to be very capital intensive. Table 6 shows that, even though there was some movement of production from the more capital-intensive large firms to labour-intensive firms

in the aftermath of the banking crisis, it was not substantial. A possible explanation for this is that large capital-intensive firms were also likelier to have access to international credit markets and therefore were able to weather the storm from the collapse in financial intermediation more easily. Indeed, whatever reallocation there was appears to have occurred between medium and small-sized firms and very small firms. However, Table 7 shows that the price effects on capital were extremely high: capital shares rose by 5 percentage points on average in 1996, with the rise being largest (12 points) in small firms. Therefore, it appears that the collapse in financial intermediation may have caused a significant rise in the return to capital, leading to a substantial increase in capital shares from 1993 to 1996.

TABLE 5
VALUE ADDED PER WORKER IN CONSTANT 1984 BS, 1993-6

| | Average | Large | Medium | Small | Very small |
|------|----------|----------|----------|--------|------------|
| 1993 | 2,314.09 | 3,214.60 | 1,101.31 | 902.78 | 640.67 |
| 1994 | 2,168.84 | 3,034.07 | 1,153.40 | 899.53 | 602.33 |
| 1995 | 2,659.94 | 3,789.34 | 1,387.16 | 932.71 | 654.51 |
| 1996 | 2,673.86 | 4,150.50 | 1,345.40 | 944.74 | 640.89 |

Source: OCEI (1996).

TABLE 6
GROSS PRODUCTION IN MANUFACTURING AS %OF TOTAL, 1993-6

| | Large | Medium | Small | Very small |
|------|-------|--------|-------|------------|
| 1993 | 82.17 | 5.68 | 6.51 | 5.64 |
| 1994 | 81.61 | 5.75 | 6.81 | 5.83 |
| 1995 | 81.11 | 7.54 | 6.07 | 5.27 |
| 1996 | 81.61 | 5.45 | 6.25 | 6.69 |

Source: OCEI (1996).

TABLE 7
CAPITAL SHARES IN MANUFACTURING, 1993-6

| | Total | Large | Medium | Small | Very small |
|------|-------|-------|--------|-------|------------|
| 1993 | 0.800 | 0.824 | 0.672 | 0.648 | 0.625 |
| 1994 | 0.817 | 0.842 | 0.734 | 0.679 | 0.625 |
| 1995 | 0.847 | 0.870 | 0.775 | 0.695 | 0.640 |
| 1996 | 0.896 | 0.913 | 0.835 | 0.800 | 0.764 |

Source: OCEI (1996).

What was the ultimate cause of the 1994-5 financial crisis? The literature on banking crises is far from providing an unambiguous answer to the question of what causes financial crises, and explanations range from self-fulfilling prophecies to high interest rates and financial liberalization. An additional

factor may have been present in the Venezuelan case. As pointed out above, financial sector liberalization led to a substantial rise in interest rates from 1989 on. Indeed, the deposit rate rose to above 30 per cent from 1989 on, and the real interest rate became substantially positive in the early 1990s. Meanwhile, the amount of domestic credit in GDP shrank by more than 15 percentage points. It is apparent that higher real interest rates led to a contraction in the amount of credit and to a concentration of investments in high-return, high-risk projects (as indicated by the rise in the return to capital seen after 1989 in Figure 7), making the banking sector much more vulnerable to negative aggregate shocks and banking runs.

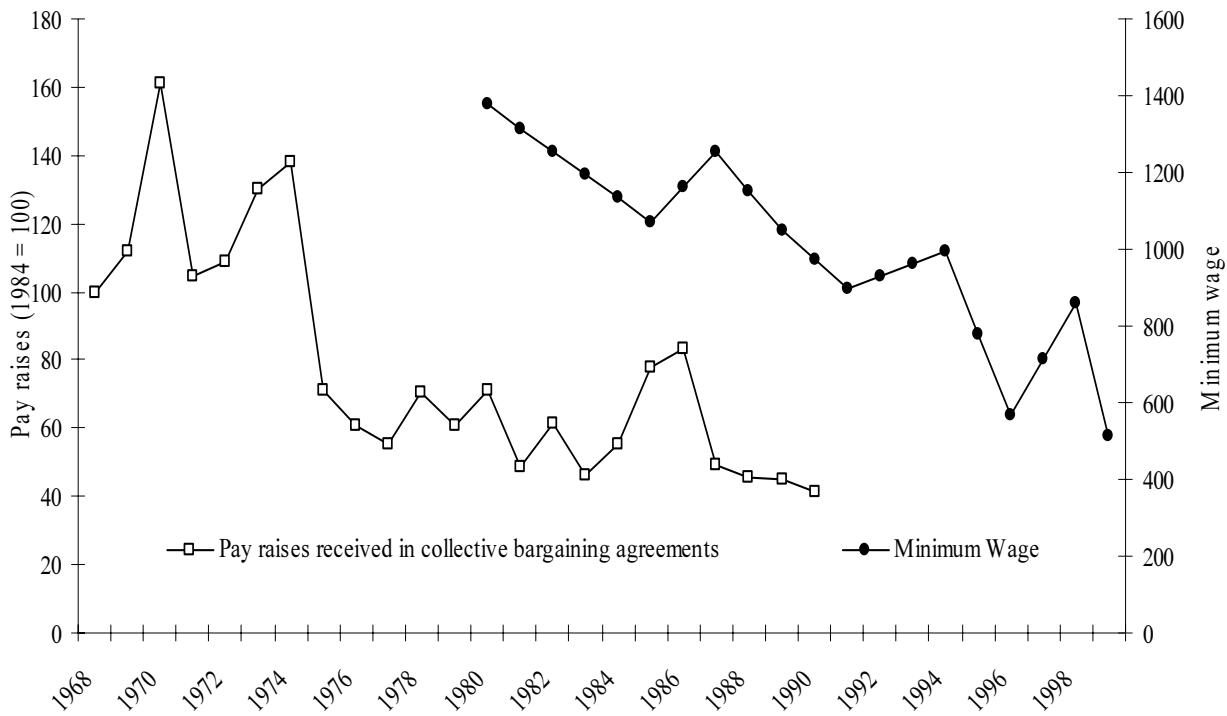
V LABOUR'S LOSS OF POWER AND THE POLITICAL ECONOMY OF INEQUALITY

The above analysis points repeatedly to the importance of understanding the shifts in the political influence of the Venezuelan labour movement. We have discussed the feedback effects that exist between the deterioration of labour shares and labour's political power: lower labour shares can lead to diminished political clout of labour, but a weaker labour movement has a limited capacity to bargain for higher shares of output. Furthermore, many of the policies that may have an impact on inequality—such as trade liberalization—also have a consequent effect on labour's bargaining power.

The evolution of the Venezuelan labour movement reveals that it became increasingly marginalized as income distribution deteriorated. From the beginning of the democratic period in 1958, the Confederación de Trabajadores de Venezuela (CTV) enjoyed a good relationship with the Acción Democrática (AD) party. AD and, to a lesser extent, the center-right COPEI party followed a corporatist-populist model of government in which bargaining over general levels of wages was carried out at the national level between business and workers' federations, mediated by the government. The favourable relationship between AD and the CTV started to change during the 1970s, when the CTV began to lose representation in AD, and AD's share of CTV delegates dropped from 70 per cent in the 1960s to an average of 46 per cent in the 1970s. At the same time, work stoppages rose from an average of 30 per year during the 1960s to 175 during the 1970s (Roxborough, 1995). This trend was somewhat counteracted by the Pérez administration's passage of important labour legislation protecting workers and the generally tight labour markets of the mid-1970s. But the trend towards a loss of power of labour was accentuated during the 1980s.

Figure 20 shows two indicators of labour's political power. The first is the average pay raises achieved by workers in collective bargaining contracts, and the second is the real value of the government-mandated minimum wage.

FIGURE 20
LABOUR'S LOSS OF POLITICAL POWER



The trends shown in Figure 20 are reinforced by other data on the political organization of labour. The rate of unionization in Venezuela was 33 per cent in 1975, but had fallen to 22 per cent by 1990 and 17 per cent by 1997 (ILO, 1998). The yearly number of officially registered labour disputes, however, actually grew from less than 200 to 264 by 1994, revealing a labour movement that was increasingly alienated and marginalized from the decision-making process. By the late 1990s, the CTV had been challenged by alternative labour unions which did not have the traditional linkage to existing parties.

These patterns strengthen our argument that there has been a mutually reinforcing relationship between the rise in the capital share and labour's loss of bargaining power. It is extremely difficult to sort out cause and effect in this process, however. Did the deterioration in income distribution lead to a lower capacity of labour to exercise political power? Or was labour's falling political clout the cause of increased income distribution? Venezuela's example shows that these two stories both appear to capture an element of the truth.

VI CONCLUDING COMMENTS

During the past 25 years, Venezuela has experienced a deterioration in the factorial distribution of income of tremendous proportions. We estimate that labour's share of GDP went down by roughly 15 percentage points during the 1970-96 period. Meanwhile, the distribution of labour income remained somewhat stable. In this study we have concentrated on accounting for the increase in Venezuela's factor shares. We show that the increase can be traced back to the coupling of a collapse in the ratio of physical to human capital that occurred from the 1970s with a low elasticity of substitution in production between capital and labour. We also argue that other factors can be identified as having a negative influence on inequality, namely, the policy of repeated devaluations of the currency, trade liberalization and the financial crisis of 1994.

The effects of low elasticities deserve some comment, as they are rather perverse. With low elasticities of substitution, accumulation of a factor of production gives rise to a fall in the rate of return so large as to cause the share of product to decline. This means, for example, that the greater amounts of human capital generated by investment in education and health can actually lead to a decrease in labour's share. It must be clear that this does not necessarily mean that labour will be worse off. Since human capital is an input into the production function, then output will also grow. Labour will have a smaller share of a larger pie.²⁵ But it is possible to construct perverse scenarios in which the elasticity of substitution is so low that labour is indeed absolutely worse off. The fact that greater accumulation of human capital leads to a fall in labour's share given low elasticities of substitution implies that sustaining human capital accumulation can be politically very problematic. When investment in human capital raises the stock of human capital, capital's share goes up. The more economic resources in the hands of capital, the greater the political resources capital can muster. Therefore, the power of labour relative to capital can wane precisely as the result of low elasticities of substitution, coupled with human capital accumulation. This increase of the economic and political power of capital can easily help capital lobby for a reduction in the resources that the state devotes to those with less political power.²⁶

²⁵ Another reason why the outcome may favour labour is that, if the investment is financed by a proportional or progressive tax, then labour will pay little of the cost, but appropriate most of the direct benefits.

²⁶ Using cross-country panel data, Pineda and Rodríguez (1999) find that labour's power to pressure for redistributive policies and subsidies to human capital accumulation is negatively related to capital's share of income.

Low elasticities of substitution are indicative of rigid production processes with few opportunities for changing techniques. They may be due to lack of technological options or strict regulation of the production process. If factor price equalization holds and the economy is perfectly open, then elasticities of substitution are irrelevant: internationally determined factor prices determine the capital share, and an increase in human capital leads, one to one, to an increase in labour's share. However, the Venezuelan economy appears to have been neither open, nor subject to the factor price equalization theorem during the period under examination. It rather appears to have been a completely specialized economy, in which factor shares were determined solely by the interaction between capital accumulation and relative rates of return that we have considered in this paper. It is the coupling of extreme specialization in oil and rigid production processes that can lead to the perverse distributive effects that we have seen. Our study suggests that policy initiatives aimed at improving income distribution in Venezuela must take these structural characteristics of the economy seriously.

Rigid production processes are not independent from industry structure. Production that is highly concentrated in a reduced set of industries is likely to exhibit more economy-level rigidities than one that has a widely diversified base, because a great part of economy-wide substitution takes the form of substitution among industries. In particular, a broad set of export industries would probably have allowed Venezuela to overcome its problem of low elasticities of substitution. Providing an answer to the question of why Venezuela was unable to diversify its production is outside the scope of this study.²⁷ It is, however, suggestive that high concentration in energy-intensive industries is precisely the specialization that Venezuela is pushed to by the forces of comparative advantage. In other words, Venezuela's high participation in world trade—given its skewed structure of comparative advantage—may precisely be one of the causes of its low elasticities of substitution.

Low elasticities of substitution are, however, only part of the story. Even after one takes into account the effect of boom-bust cycles on income distribution through changes in factor ratios, one is left with a substantial deterioration of the factorial distribution of income of about 3 percentage points in GDP during the 1980s and 1990s. In Sections 4 and 5 we argue that these changes can be traced back to policy choices, including trade liberalization, the maintenance of capital account mobility and contractionary monetary policies, as well as labour's loss of bargaining power. These policy and institutional changes—all

²⁷ However, see the discussion in note 10.

favoured by the Washington consensus view—appear to have considerably exacerbated Venezuela's deterioration in income distribution.

APPENDIX: ELASTICITY OF SUBSTITUTION BETWEEN CAPITAL AND LABOUR

Regrettably, we have been unable to find direct estimates of the elasticity of substitution between capital and labour for the Venezuelan economy. Below, we provide a crude estimate, but existing empirical work on other economies can allow us to put reasonable bounds on this magnitude. Betancourt and Clague (1981) estimate elasticities of substitution for 17 industries using UNIDO data for France, India, Israel, Japan, and Yugoslavia. Their estimates range from .12 to 1.31, with a weighted average of .92. The estimates of Pigott and Whalley (1985) for a tax model of the United Kingdom average .83.

However, these studies have focused on samples of predominantly industrialized economies, and estimates for developing countries tend to be smaller in magnitude. For example, Bautista (1981) estimates an elasticity of substitution between capital and labour of .21 to .26 for the Philippines, and Behrman (1972) estimates it to be between .32 and .36 for Chile. Furthermore, the estimates of elasticities between other factors of production that exist for Venezuela tend to point towards low values. In a study of highly indebted economies, Hentschel (1992) estimates elasticities of substitution between imported and domestic capital goods and intermediates for 12 countries, including Venezuela. His estimates average .45 (for intermediate goods) and .93 (for capital goods). The Venezuelan values, however, are .38 and .19, respectively. In Hentschel's sample, Venezuela has the second lowest elasticity of substitution between imported and domestic capital goods and the third lowest elasticity of substitution between imported and domestic intermediates. These estimates are characteristic of rigidities in the production process that are indicative of a possible lack of substitutability between capital and labour. An elasticity of substitution substantially lower than 1 appears to be appropriate, given these considerations.

Our crude empirical estimates confirm this intuition. We have estimated the elasticity of substitution for Venezuelan firms using data on value added per worker and real wages from the Oficina Central de Estadística e Informática's *Encuesta Industrial* from 1984 to 1988. Our data consist of annual observations on these variables for size groups of industries. We estimate the following equation (see Behrman, 1972 for a derivation):

$$\ln \frac{VA}{L} = \alpha_0 + (1 + \lambda) \ln \left(\frac{VA}{L} \right)_{-1} + \lambda \sigma \ln \frac{W}{P} + \lambda \sigma \rho t$$

where VA represents value added, L denotes employment, W wages, P the price level, t is a time dummy, and the parameters to be estimated are the adjustment coefficient, λ , and the elasticity of substitution, $\sigma = 1/(1 + \rho)$. We estimate this equation in the OCEI panel using fixed effects to control for idiosyncratic industry group characteristics. The result of our estimation procedure is given by:

$$\ln \frac{VA}{L} = -23.6 + .543 \ln \left(\frac{VA}{L} \right)_{-1} + .262 \frac{W}{P} + .013t$$

(-1.28) (3.87) (1.94) (1.45) $n = 48$, $R^2 = .9995$

with t-statistics in parentheses. The implied σ is .573. Note that this is higher than the firm-based estimates discussed above for developing countries because it is a sector-level elasticity of substitution; therefore, substitution arising from recombination among sectors is possible. This estimate must, however, be taken with caution. It is important to note that it is only significantly different from zero at the 10 per cent level of significance, and it is not significantly different from 1.²⁸ However, coupled with the preceding discussion, it is suggestive that Venezuela's elasticity of substitution may be lower than 1.

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28 The p-value is 15 per cent.

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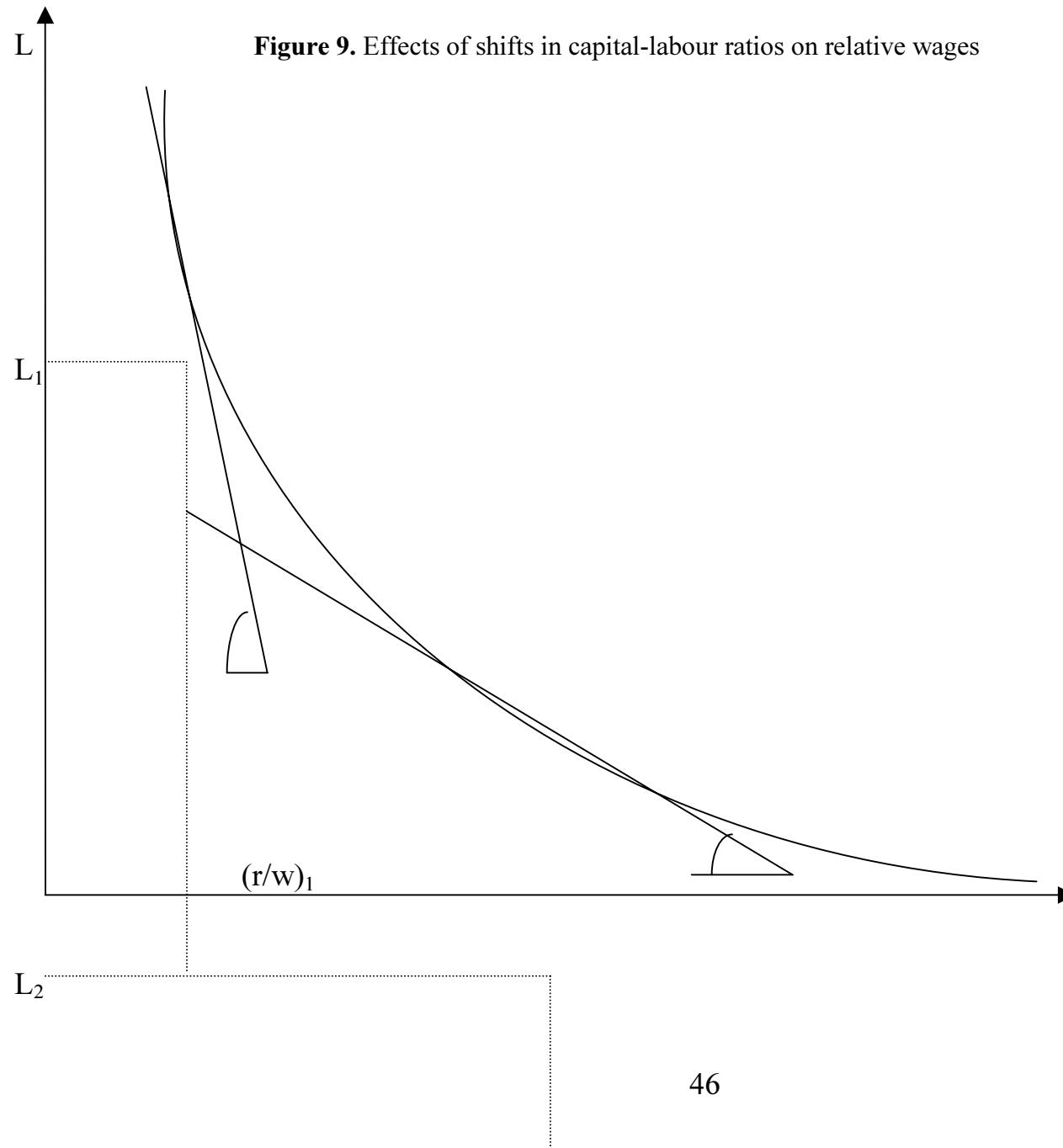
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TABLE 1
GINI AND CONCENTRATION COEFFICIENTS

| | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 | 1979 | 1980 |
|---|---------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Gini in labour incomes | 0.47650 | 0.46846 | 0.46042 | 0.45238 | 0.44434 | 0.43630 | 0.42410 | 0.40720 | 0.40044 | 0.38839 |
| Gini in total incomes | | | | | | | | | | |
| Concentration coefficient in labour income | | | | | | | | | | |
| Concentration coefficient in capital income | | | | | | | | | | |
| Gini in total income, assumption 1 | 0.59356 | 0.58977 | 0.59331 | 0.58241 | 0.58304 | 0.57951 | 0.58221 | 0.56838 | 0.56217 | 0.55601 |
| Gini in total income, assumption 2 | 0.57881 | 0.57761 | 0.58401 | 0.57551 | 0.57886 | 0.57796 | 0.58463 | 0.57647 | 0.57263 | 0.57060 |
| Gini in total income, assumption 3 | 0.61456 | 0.61161 | 0.61708 | 0.60605 | 0.60813 | 0.60552 | 0.61116 | 0.60067 | 0.59492 | 0.59116 |
| | 1981 | 1982 | 1983 | 1984 | 1985 | 1986 | 1987 | 1988 | 1989 | 1990 |
| Gini in labour incomes | 0.38078 | 0.37253 | 0.38008 | 0.41135 | 0.40569 | 0.40908 | 0.39776 | 0.39998 | 0.38713 | 0.38093 |
| Gini in total incomes | | | | | | | | | | |
| Concentration coefficient in labour income | | | | | | | | | | |
| Concentration coefficient in capital income | | | | | | | | | | |
| Gini in total income, assumption 1 | 0.56229 | 0.57552 | 0.57855 | 0.61585 | 0.61681 | 0.62531 | 0.62434 | 0.62738 | 0.61265 | 0.62568 |
| Gini in total income, assumption 2 | 0.57899 | 0.59396 | 0.59459 | 0.62156 | 0.62404 | 0.63141 | 0.63344 | 0.63580 | 0.62501 | 0.63899 |
| Gini in total income, assumption 3 | 0.59853 | 0.61277 | 0.61174 | 0.63832 | 0.63906 | 0.64485 | 0.64503 | 0.64553 | 0.63257 | 0.64490 |
| | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | | | |
| Gini in labour incomes | 0.38416 | 0.37858 | 0.37523 | 0.43162 | 0.41723 | 0.43147 | 0.43811 | | | |
| Gini in total incomes | | | | 0.65786 | 0.64674 | 0.63377 | 0.62618 | | | |
| Concentration coefficient in labour income | | | | 0.28235 | 0.26064 | 0.25601 | 0.26366 | | | |
| Concentration coefficient in capital income | | | | 0.87815 | 0.86846 | 0.85071 | 0.83436 | | | |
| Gini in total income, assumption 1 | 0.61848 | 0.61813 | 0.62491 | 0.65785 | 0.64673 | 0.63377 | 0.62617 | | | |
| Gini in total income, assumption 2 | 0.63134 | 0.63244 | 0.63967 | 0.65785 | 0.64673 | 0.63377 | 0.62617 | | | |
| Gini in total income, assumption 3 | 0.63522 | 0.63441 | 0.63973 | 0.65586 | 0.64673 | 0.63377 | 0.62617 | | | |

Notes and sources: from 1971 to 1978, the Ginis are from UN (1981), with the data for 1972 to 1975 coming from a linear interpolation. After 1978, the Gini in labour incomes is calculated directly from the OCEI Households Survey (the observations are heads of families). The Gini in total incomes is calculated scaling capital income reported in the 1994-97 surveys so that the fraction of capital income equals capital's share in GDP. The ordering in total incomes is then used to calculate the concentration coefficients in capital and labour incomes. The last three rows are then calculated according to the following assumptions. Assumption 1: Concentration coefficients in capital and labour income take their 1994 values for 1971-1993. Assumption 2: The concentration coefficient for capital income falls from .95 to .88 from 1971 to 1994. Assumption 3: The concentration coefficient for labour income's percentage year-to-year changes is equal to that of the labour Ginis.



(r/w)₂

K₁

K₂

K

Figure 14. Alternative market structures for the labour market

