Capital account openness and the labour share of income

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This paper investigates the relationship between capital account openness and the share of labour in national income. Employing a new index of financial openness and a cross-country panel of labour shares available from the United Nations System of National Accounts, the author shows a robust negative correlation between the degree of openness and the labour share. Although this effect is not present for low income countries, the direct negative relationship holds for all other subsamples and in the presence of a variety of controls. A plausible explanation is that openness alters the conditions of bargaining between labour and capital. By increasing the bargaining strength of capital *vis-a-vis* labour, increased capital mobility raises rents accruing to capital. Thus, capital account openness may reduce labour's share of income in the firm, and thereby, at an economy-wide level, its share of national output.

Key words: Capital Mobility, Factor Shares, Bargaining, Openness, Labour Share
JEL Classification: E1,E25,F3,J53

1. Introduction

The world has changed. More intense competition, both within and between countries has decreased rents. Financial capital moves around, physical capital relocates. The old view just no longer applies, and the limits of redistribution through the market are much tighter. Trying to appropriate the rents may lead firms to move to emerging markets, or else just go bankrupt. Olivier Blanchard, *Libération*, December 2002.

A significant issue within the political economy of globalisation concerns the distributional consequences of the increased mobility of capital *vis à vis* labour. In the last few years, a common story has developed around this process. A brief précis of this narrative, found both in the popular press (as in Blanchard, 2002, above) and in academic accounts (Rodrik, 1997; Crotty and Epstein, 1995) runs somewhat as follows. In an environment of increased global competition and capital mobility, rents and quasi-rents in production are significantly squeezed. However, in such a world, capital's share of these reduced rents is decisively *increased*, since capital now can seek higher returns from abroad more easily than before, thus enhancing its position in a strategic bargain with labour.

Despite the seeming ubiquity of this narrative, there have been few attempts to test the effects of openness to capital flows on the share of income going to labour at the economy-wide level.[1] Much attention has been focused on the effects of trade integration on wage outcomes (see Slaughter, 2000 for a recent survey), but by contrast, relatively little attention has been paid to assessing capital market integration. Some theoretical studies have operationalised the idea of the strategic bargain in a Nash bargaining framework (Rodrik, 1997; Zhao, 1998; Bughin and Vannini, 1995; Choi, 2001, Mezetti and Dinopoulos, 1991), and there have been some empirically oriented microeconomic studies focused on the issue in the context of US unions (Gaston and Trefler, 1995; Slaughter, 2000; Choi, 2001). The implications for macro-level outcomes, however, remain unstudied. Yet, at the same time, macroeconomists have documented large reductions in the labour share of national income in a few countries over the last two decades (Poterba, 1997, Blanchard, 2002) the era (perhaps not coincidentally) of major increases in capital mobility among other changes. This is an important connection, as many of the accounts of globalisation (for example, Blanchard's statement above) appear to centre on the impacts of capital mobility on the bargaining power of labour as a *whole*, and hence on macroeconomic outcomes. An obvious question suggests itself. Does the hypothesis that capital account openness reduces the share of income going to labour have any empirical traction at the macroeconomic level?

A related question regards how generalisable such a claim is. The bargaining argument (for example, in Rodrik, 1997) makes no evident distinction *per se* between high and low income economies. There are, however, numerous obvious differences between countries in this context. Richer countries possess a constellation of social structures, regulations and institutional frameworks which make a bargaining theoretical argument seem plausible. Even in the absence of a large proportion of formal unions, the organised sector is large, and tacit agreements and political accords between capital and labour as a whole often prevail. By contrast, middle and low income countries possess significantly different labour market conditions. In countries with per capita income even as high as U S $2,000–5,000, social security and unemployment benefits are insignificant. Employment in the unorganised sector is large: current estimates suggest that informal employment comprises about one-half to three-quarters of non-agricultural employment in developing countries (ILO, 2002A, 2002B). Employment in this sector, characterised by lower wages and uncertain legal protections and mandated benefits, is the typical domestic fallback position of the majority of employees in the organised sector.

This paper explores these questions, using panel data from the United Nations National Accounts Statistics Database for over a hundred countries for the period 1972–95. A significant advance in this paper is the use of a new and more nuanced index of capital account mobility developed by Lee and Jayadev (2003). This index follows Quinn (1997) in developing an original measure of openness which codes for the intensity of capital controls.

The analysis presents a central result: controlling for various contemporaneous factors, capital mobility has a direct negative impact on the labour share of income in all samples and sub-samples, except for the low-income country sample. This finding provides support for the argument that openness reduces the bargaining position of labour and the share of income going to labour, but suggests that this effect is concentrated in more developed economies.

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[1] Harrison, (2002) remains the sole exception.

The remainder of this paper is structured as follows. In Section 2, I briefly describe the theoretical linkage between capital account openness and the labour share. Section 3 concerns the data used in this paper. I briefly consider the literature on these effects before turning to the analysis of the data. The final section provides a summary of the results as well as an evaluation of the findings.

2. Labour share and capital mobility

The effect of capital mobility on the distribution of income between labour and capital has been analysed in previous research. Typically, the primary focus has been the effect on factor prices (i.e., the relationship between the wage rate and the profit rate), since it is these variables which are directly affected by the bargaining process (see Rodrik, 1997, for a straightforward example). The crux of these models is that the major effect of increased capital mobility in the context of the bargaining game between labour and capital is to ameliorate the fallback option of capital, since it can now credibly threaten to relocate production abroad. As might be expected, therefore, following the removal of capital controls, the profit rate–wage rate ratio rises. This is the process described in most accounts as in the Blanchard quotation at the beginning of this paper. The implications for the labour share of income from such models is less clear, since the effect on employment from changing factor price ratios is not often considered. Nevertheless, there are plausible ways to model the linkages between capital mobility and the labour share of income.

Harrison (2002), for example, models a bargaining game between labour and capital over excess rents in production. Under a scenario of imperfect competition, the share of excess rents going to labour falls along with the fixed costs of relocating abroad for firms.

Another way to motivate such a linkage is by appealing to the labour economics literature and, in particular, the assumption that the objective of unions is rent maximisation. Under such an assumption, the objective functions of firms include both wage and employment outcomes. Appendix 1 provides such an example. The model is a small extension to that developed by Mezzetti and Dinopoulos (1991). The exercise models capital mobility as the ability to relocate production abroad and uses an imperfectly competitive framework with a very simplified production function to illustrate the effect.

One thing to note in the context of a cross-country study is that the strength of the bargaining effect is likely to depend on the particular economy being studied. In particular, the bargaining effect is more likely to be stronger in developed countries rather than developing countries, for two reasons. First, TNCs in developed countries may be in a better position to relocate abroad. Second, the room to squeeze wages may be lower in developing economies than in developed economies since wages may already be close to subsistence levels.[1] As such, one might expect that the empirical proof of the bargaining effect would be strongest in developed economies.

The purpose of the model is to isolate and assess the effects of openness on the bargaining process between firms and workers and the resultant effects on the labour share of income. As such, it does not consider other important (and correlated) events which may have strong effects on the bargaining process.

The development of international production networks which allow for the integration of labour from different countries and the growth of global commodity chains both serve to improve the flexibility of firms, production decisions and their bargaining power.

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[1] I am grateful to an anonymous referee for pointing this out.

In addition, other broad changes such as trade liberalisation, labour market reform, the drawing back of the state and industrial deregulation all could serve to alter the bargaining space between labour and capital. Data limitations prevent the testing of some of these factors, although several of these are considered in the empirical section.

3. Data and trends

3.1 Measuring financial openness

Most efforts to identify the presence of capital account restrictions have relied primarily on the annual publication of the IMF *Exchange Arrangements and Exchange Restrictions* which provides details on various regulations on capital account transactions across countries. It has represented the central source for various constructions of financial openness (Quinn, 1997; Rodrik, 1998; Kraay, 1998; Klein and Olivei, 1999; Edwards 2001; Chinn and Ito, 2003). Studies have constantly faced the problem of assessing the degree and intensity of restrictions to the mobility of capital. This is an important problem, since many countries, even those that are relatively developed, have maintained a variety of capital controls with varying intensities, which presumably have different impacts on the variables of interest. Researchers have come up with various responses, ranging from an outright ignoring of the problem (i.e., treating it as a binary indicator) to providing various remedial measures.[1] Quinn's index remains the definitive study in this regard. Quinn codes the intensity of controls in balance of payments using data on statutory restrictions. However, these data are only available for non-OECD countries for four years. Lee and Jayadev (2003) reproduce the methodology, slightly modified, used by Quinn for his analysis of capital account restrictions and apply this to all the countries in the IMF annual report for the period 1972–96. While there are substantial evaluative judgements to be made regarding the qualitative nature of the report, we find that our coding has a 0.97 correlation coefficient with Quinn's index for OECD countries and a 0.91 correlation for the two years in the period for which he provides data for all countries. The strength of these correlations, as well as checks against other data suggests that our measures are reasonable. The details of the coding methodology are in the Appendix.

Figure 1 details the movements in capital account openness over the last two-and-a-half decades using this indicator. Openness has increased in all groups of countries, with the early 1990s being the period of rapid opening up by lower income countries.

3.2 Measuring labour shares

The UN data set is a regularly published and consistent series, based on the system of national accounts, 1968. It is estimated on the basis of surveys of enterprises or establishments and government accounts. I define the labour share of national income as the ratio of compensation of employees to GDP[2] from the table of cost components of GDP.

It is important to note a few issues with the data. While, in theory, the informal sector is to be included in the data, in practice, by their very nature, enterprises from this sector may not be. As such, the overall labour share of income in developing countries is likely to be underreported and may underestimate the labour share in the overall economy.

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[1] Kraay (1998) for example distinguishes only between major periods of change (five years of controls followed by five years of no controls).

[2] This measure of the labour share has recently been used in a few papers (Diwan, 1999, 2001; Harrison, 2002).
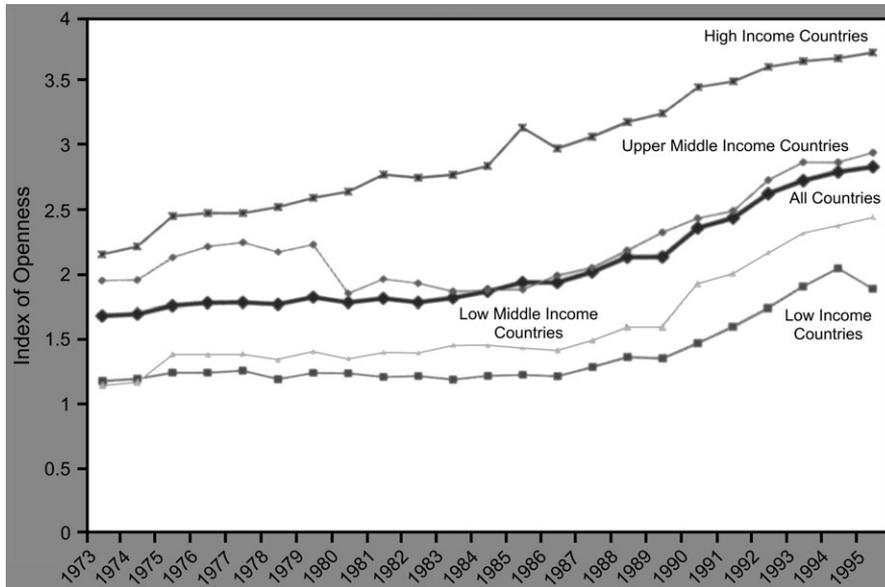
Fig 1: *Capital account openness over time*

Gollin (2002) and Krueger (1999) flag another connected problem. They both note that the earnings of self-employed persons are not included in the series and, as such, their earnings are falsely considered as accruing to capital. Gollin suggests a very simple correction to the series, by making adjustments to the reported operating surplus of unincorporated enterprises, a point which I discuss further in subsequent sections.

Turning to the description of the data, Table 1 depicts the time trend of labour shares by country groupings divided into pre-1980 and post-1980 trends (1980 acting as the rough marker for the period of globalisation and reforms). The table shows a negative time trend across all broad country groupings since 1980. In Western Europe, East Asia, North America and the Middle East and North Africa (MENA) region, labour shares have either remained stagnant or declined during the 1980s and 1990s after rising from 1960 to 1980. In Latin America and Sub-Saharan Africa, negative time trends have persisted through the entire period. The finding is in keeping with the general opinion among researchers of the developed economies (Poterba, 1997; Blanchard, 1997) that the labour share of income has fallen over the last 20 years, especially in Western Europe.

There is also substantial variation in the labour share of income in the data set across countries. Figure 2 provides some evidence for the first point, showing a marked difference between the relative constancy of the US labour share over time and the significantly different trajectories of the labour share in Japan, Nigeria and Saudi Arabia. Both the variance in the data and the negative time trend call into question the appropriateness of a Cobb–Douglas aggregate production function (with resulting fixed factor shares) which underlies many macroeconomic models.

3.3 Control variables
The model provided above gives some circumstances under which to expect a decrease in the labour share of income following openness. There are, however, numerous other

Table 1. *Time trend in labour shares*

Income group	Pre-1980	Post-1980	Whole period
Low income countries	−0.007★ (5.29)	−0.004★ (-5.09)	−0.003★ (-7.2)
Middle income countries	0.0001 (.51)	−0.001★ (-4.3)	−0.0005★ (-3.9)
High income countries	0.003★ (15.3)	−0.001★ (-8.32)	0.0004★ (4.2)
East Asia	0.002★ (5.6)	0.0005 (1.23)	0.0007★ (3.7)
Middle East and North Africa	0.001★ (4.1)	0.0002 (0.38)	0.002★ (8.7)
Sub-Saharan Africa	−0.003★ (-3.13)	−0.002★ (-4.53)	−0.002★ (-7.1)
Latin America	−0.001★ (-3.92)	−0.003★ (-8.39)	−0.002★ (-13.51)
Western Europe	0.003★ (14.77)	−0.002★ (-11.1)	0.0001 (1.14)
North America	0.003★ (12.15)	0.001 (1.60)	0.001★ (6.92)

t-statistics in parentheses ★ significant at 1%.
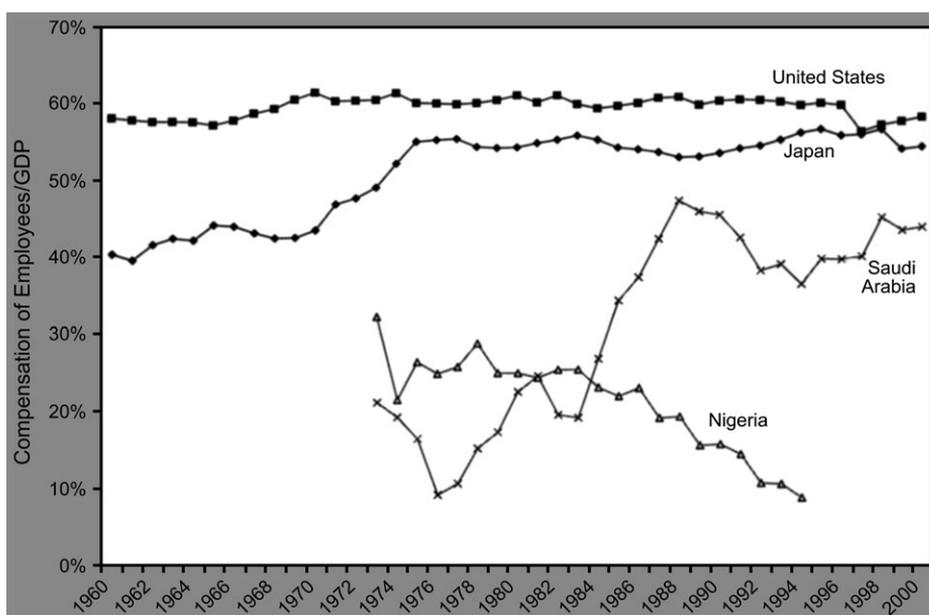
Fig 2: *Labour share trends across countries*

mechanisms which are contemporaneous or otherwise correlated with financial opening which may affect the labour share of income.

Capital account openness is correlated with the level of development, which in turn has strong effects on the labour share. There are numerous possible explanations for this. First, richer countries have higher capital–labour ratios. Neoclassical explanations of changes in labour share sometimes rely on changes in the elasticity of substitution between labour and capital. Poterba (1997), for example, explains the decline in labour share of income in the US in the 1990s as arising out of a production technology which displays an elasticity of substitution that is less than one. If this is the case in all countries, higher (K/L) ratios will

automatically result in lower labour shares of income.[1] Second, in addition to the fact that one may expect to see rising labour shares because of capital accumulation with development, labour shares may be rising because of what can be termed a Kravis–Kuznets process. Both Kravis (1962) and Kuznets (1966) emphasise the process of development and structural change as the major reason behind the increase in wage income to GDP ratios. Among the important structural shifts which occur with increased income are a movement of labour away from agriculture into a position of organised wage labour, demographic changes and urbanisation (which increase the average age of retirement and women's participation in the paid labour force) and the development of organised labour. In the expectation that labour shares rise with the level of development, I use the variable log(GDP per capita) as a control, obtained from the *Penn World Tables* 6.1.

Numerous other deregulatory processes may occur at the same time as financial opening. Perhaps, for the purposes of this analysis, the most crucial concurrent process is trade liberalisation. Theoretically, from the Heckscher–Ohlin model, labour shares will rise in developing (labour abundant) countries and fall in developed (capital abundant) countries with trade integration. In recent papers, using similar data to my own, Ortega and Rodriguez (1999) and Harrison (2002) suggest that this symmetry does not hold, and that there is a negative correlation between trade openness and the labour share of income across all country groupings. They take this to be evidence that trade openness has a negative effect on the bargaining power of labour. Reddy and Dube (2001) provide a general equilibrium theoretical model which predicts the same effect. Both Ortega and Rodriguez (1999) and Harrison (2002), however, use primarily the ratio of actual trade to GDP as a measure of openness. The measure has been criticised on two fronts: first, as confusing *ex ante* and *ex post* openness and, second, as being intrinsically correlated with the income and size of the country (see Rao, 1998B). While there are numerous other indicators of openness in the literature,[2] I use two measures which best capture the intensity of restrictions to trade. The first is the ratio of trade taxes to trade from the world development indicators, and is thus a *de jure* measure of restrictions on trade. The second defines openness as the residual when the trade ratio of a country is regressed on the log of per capita GDP and the log of population (see Rao, 1998B). The logic of this measure is to obtain an indicator of trade integratedness, after purging the indicator of the correlations between trade ratio and economic size. Figures 3 and 4 present the evolution of openness across time by country groupings. Using the trade taxes to trade measure, both middle and low income countries have seen a steep decline in restrictions to trade, while high income countries have reduced restrictions from already very low levels. Using the trade openness residual measure, all country groupings have seen increasing openness, starting from different initial conditions with richer countries being more open to trade at the outset.

Diwan (2001) documents very large reductions in labour share following financial crises. Kaminsky and Reinhart (2000) have found that capital account liberalisation immediately preceded macroeconomic crisis in 18 of 22 cases they study. Another regionally focused cross-country study by Gavin and Hausmann (1996) further bolsters the argument by arguing that openness and lending booms have almost always preceded banking crises in Latin America. Finally, Gourinchas, *et al.* (2001) verify this finding for a different sample of countries. They have confirmed that macroeconomic volatility increases with increasing international capital mobility, which is an important channel whereby openness affects the

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[1] Rowthorn (1999) provides some empirical evidence that, for most OECD countries, labour and capital display an elasticity of less than one.
[2] Yanikkaya (2003) lists over 20 indicators of trade openness that have been used.
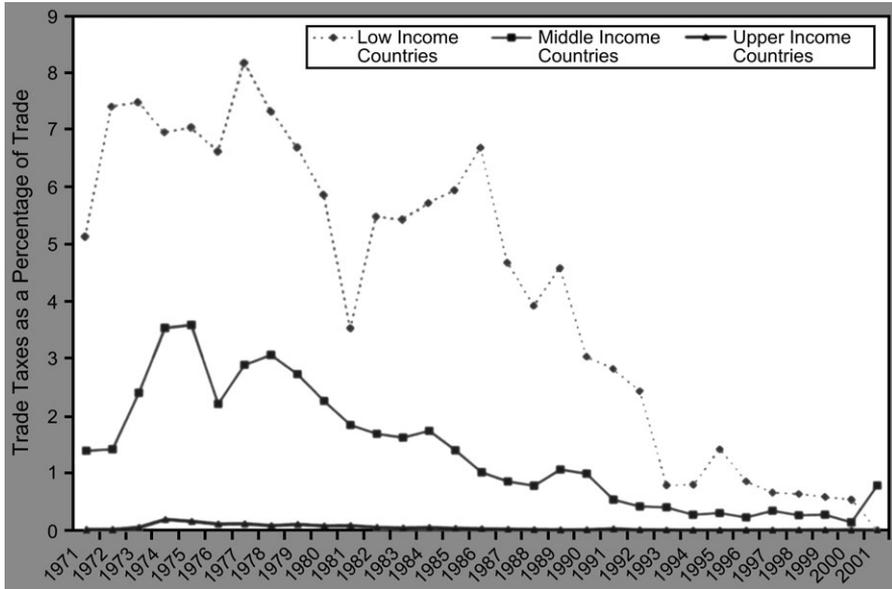
Fig 3: *Trends in trade taxes as a percentage of trade across countries*
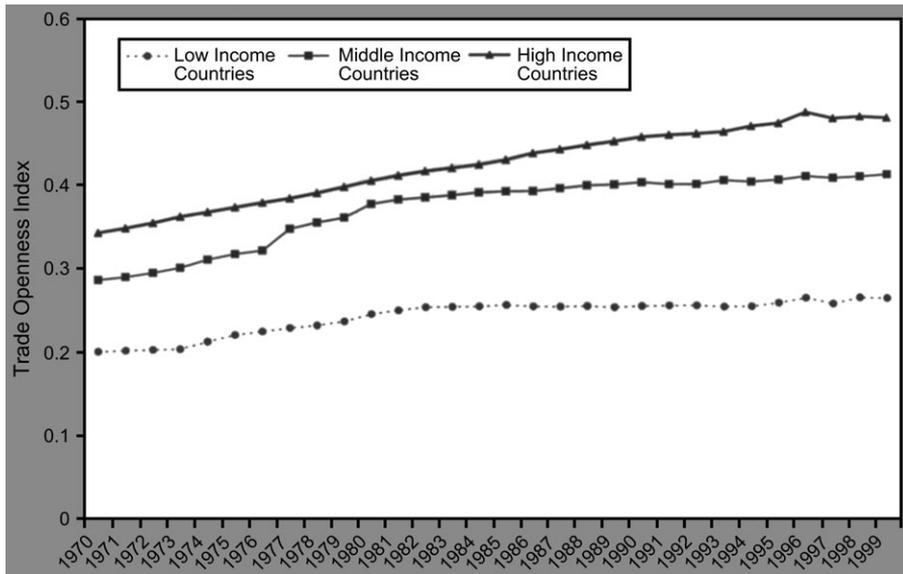
Fig 4: *Trends in trade openness across countries*

labour share of income. In this study, following Frankel and Rose, (1995), I define a crisis as occurring when the nominal external value of the currency falls by more than 20% in a year.

Capital account liberalisation is claimed to constrain government spending (Garrett, 2000; Rao, 1998A; Garrett and Mitchell, 2000). Under this argument, openness is said to

subject governments to market discipline, and thus reduce its role in the economy. Harrison (2002) finds that labour shares are partly driven by changes in government spending and government intervention in the economy in general. Thus, to the extent that government expenditure in the economy is constrained by openness, one would expect to see a fall in the labour share of income. Two measures are used to account for the government's involvement in the economy. First, the government share of GDP (from the *Penn World Tables 6.1*) is used as a proxy for the importance of the government in the structure of the economy and, second, the budget deficit as a percentage of GDP (from the world development indicators) as a measure of short-term spending.

Finally, a control needs to be put in for the interest rate. Following liberalisation of capital flows, the ability and willingness of governments to repress interest rates is weakened, as capital can gain higher returns elsewhere. Data on the real interest rate are obtained from the Global Development Finance CD and World Development Indicators. Missing data are filled in from Easterly *et al.* (1994) Statistical appendix. Table 2 summarises these indicators in the pre- and post-globalisation periods.

In order to test these hypotheses, a panel data estimation with the following simple ordinary least squares (OLS) specification is undertaken

$$LS_{it} = \alpha_0 + \alpha_i + \alpha_1 CAL_{it} + \sum_{j=1}^{\mathcal{J}} \beta_j x_{jit} + \varepsilon_{it}$$

where LS is the economy wide labour share, the variable *CAL* is the indicator of capital account openness, and the vector x_j refers to a set of macroeconomic and structural controls.

4. Estimation results

Table 3 estimates the equation above for all countries. Column (1) assesses the partial effect of capital account openness on the labour share of income controlling for trends and for the level of development for the largest possible sample. In column (2), I introduce trade liberalisation (as measured by the ratio of trade taxes to trade), a dummy for crisis, and the real interest rate. In column 3, I provide the full specification, introducing the government share of GDP and the budget deficit. In column (4), I replace the measure of

Table 2. *Summary statistics*

	Pre-1980	Post-1980	Whole period
Mean labour share[a]	45.4	44.1	44.7
Mean labour share[a]: High Income Group	51.1	49.1	50.1
Mean labour share[a]: Middle Income Group	40.1	38.2	39.3
Mean labour share[a]: Low Income Group	38.2	36.2	37.1
Mean log (GDP per capita)	7.33	8.65	8.08
Mean capital account openness	1.83	2.34	2.19
Mean trade taxes	2.5	0.84	1.34
Mean trade openness	0.29	0.38	0.34
Mean real interest rate	.60	4.9	4.16
Mean government share of GDP	16.3	18.5	17.5
Mean budget deficit	3.84	3.12	3.30

[a]Sample restricted to countries with at least three observations before 1980.

Table 3. *Capital account openness and labour share country fixed effects: dependent variable: compensation of employees/GDP*

	(1)	(2)	(3)	(4)	(5)
Trend	−0.003*	−0.002*	−0.001*	−0.003*	−.0004
	(−7.4)	(−4.3)	(−2.1)	(−4.1)	(0006)
Log (GDP per capita)	0.03*	0.01	0.01**	0.17*	−0.0009
	(5.1)	(1.3)	(1.69)	(4.13)	(−0.10)
Capital account openness	−0.01*	−0.006*	−0.01*	−0.005**	−0.07*
	(−3.51)	(−2.17)	(−2.91)	(−1.9)	(−2.23)
Trade taxes to trade		−0.0005	−0.002*		
		(−1.03)	(−3.56)		
Trade openness				−2.0*	
				(−3.76)	
Real interest rate		0.0006*	0.0003*	0.0004*	
		(5.8)	(3.55)	(3.89)	
Crisis		−0.006*	−0.004	−0.005**	
		(−2.03)	(−1.56)	(−1.67)	
Government share of GDP			0.001*	0.001*	
			(4.4)	(4.4)	
Budget deficit			0.002*	0.002*	
			(6.32)	(6.38)	
R^2	0.39	0.20	0.11	0.08	0.14
No.of obs	1,435	894	704	724	704
No.of cross-secs	89	76	62	63	62

t-statistics in parentheses. *Significant at 1%; ** significant at 10%. Note all R^2 reported in this and the following tables are the weighted average of within and between R^2s and need not therefore increase with more observations.

trade liberalisation with the measure of trade openness as a residual. Finally, in column (5) I repeat the estimation from column (1) with the final sample as generated by the full specification, in order to demonstrate that the central result is not overly sensitive to the sample selection. Given the paucity of data for some indicators, adding more independent variables leads to significant reductions in the sample size. As such, the number of degrees of freedom falls and standard errors become quite large, leading to insignificant coefficients. This being said, there are a number of striking results that can be seen.

Columns(1)–(5) present the central result. Capital account openness exerts a significant, direct and negative effect on the labour share of income in all specifications. Increasing the capital account openness index by one unit results in a decline of around one percentage point in the labour share of income, depending on the specification.[1] This central result differs from the finding of Harrison (2002), for whom capital controls only matter when interacting with general government intervention.

Table 3 also shows that factor endowments and accumulation, as proxied by the log of GDP per capita, have a significant positive effect on the labour share of income in most specifications. The variable accounts for a large part of the variance in the sample suggesting that accumulation is a very important variable in determining the labour share of income.

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[1] Harrison (2002), using a dummy measure of openness, also finds a similar impact. In her estimation, capital controls raise the labour share of income by about one to two percentage points.

Introducing the two trade openness variables provides some interesting results. Using the trade-taxes-to-trade indicator, it would appear that trade liberalisation increases the labour share of income. By contrast, using the trade openness residualised measure, there is a directly opposing result: trade openness *decreases* the labour share of income. This apparent contradiction occurs because each measure weights different subsamples more heavily. As is evident from Figure 3, trade taxes as a percentage of trade have been small in high income countries throughout the period in question. As a result, the measure weights the countries which have seen the most significant reversals of labour shares in the post-globalization period the least. Trade openness as a residual measure, by contrast, suggests that the high income economies are the ones which have seen the most trade integration in the last two decades (as can be seen in Figure 4) and weights these countries more strongly. In column (4), replacing the trade taxes measure by the residual measure reduces the impact of the capital account openness variable on the labour share of income by about half, and reduces the value of the *t*-statistics as well (although capital account openness still remains significant). This suggests a strong positive correlation between trade integration and capital account openness. In fact, it is possibly the central reason why Harrison (2002) finds weak effects for capital controls.

Crises enter the model with a negative sign in most instances, but they do not change the coefficient of capital account openness considerably. In the event of the crisis, the labour share of income drops by about 0.5 percentage points, depending on the specification. This result confirms the finding from Diwan (2000).

Real interest rates have statistically small effects on the labour share of income (a one percentage point increase in the real interest rate increases the labour share of income by 0.06 percentage points).

Finally, a larger government presence, whether measured by the government share of GDP or by the budget deficit, affects labour share positively and significantly. However, these effects are small. A one percentage point increase in the government share of GDP results in a 0.01 percentage point increase in the labour share of income. The effect of the budget deficit is similar in size.

It is possible that the threat of capital mobility will adversely affect the labour share of income most strongly in relatively high income countries which possess larger formal sectors, institutionalised bargaining structures and higher wages. In developing countries with larger unorganised sectors, the magnitude of rents being squeezed because of direct bargaining effects will be smaller, given the weak bargaining position that labour has initially. Table 4 tests this idea. Controlling for trend and endowments, I regress the labour share of income on capital account openness by quintile of GDP per capita and by quintile of union density.[1] The table shows evidence of increasingly strong and significant negative correlations between capital openness and labour share as one moves from poorer to richer economies and from less unionised to more unionised countries, a finding that supports the bargaining argument.

In Table 5, I repeat the full specification in Table 3, dividing the sample into high income, middle income and low income countries. As the number of observations drops, the standard errors rise, and some variables become insignificant. Nevertheless, in both high and middle income countries as a whole, capital account openness is associated with statistically significant losses for labour in the presence of all the controls. Interestingly, the effect is stronger in middle income countries on average than in high income countries. For

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[1] Forteza and Rama, 2000 provide data in five year averages.

Table 4. *Quintile groupings by income and union density, controlling for trends and endowments, dependent variable: compensation of employees/GDP*

By quintile of income	1st	2nd	3rd	4th	5th
Capital account openness	0.04	−0.03	−0.016*	−0.018*	−0.018*
	(1.01)	(−1.3)	(−2.14)	(−3.4)	(−6.09)
No. of obs.	77	155	245	393	565
No. of cross-secs	16	27	36	51	40
By quintile of union density	1st	2nd	3rd	4th	5th
Capital account openness	0.02**	0.003	0.001	−0.006	−0.013*
	(1.91)	(0.54)	(0.22)	(−1.6)	(−2.4)
No. of obs.	136	259	195	242	226
No. of cross secs	18	32	28	26	15

t- statistics in parentheses. * Significant at 1%; **:significant at 10%.

Table 5. *Base specification with country groupings, dependent variable: compensation of employees/ GDP*

	High	Middle	Low	High	Middle	Low
Trend	−0.001	−0.0004	−0.004*	−0.001	0.002	−0.019
	(−1.07)	(−0.38)	(−2.8)	(−1.06)	(.2)	(−1.82)
Log (GDP per capita)	−0.02**	0.05	0.0006	0.30*	−0.07	0.76
	(1.7)	(3.6)	(0.02)	(5.14)	(−0.76)	(1.45)
Capital account openness	−0.01*	−0.017*	0.04	−0.008*	−0.012*	0.071
	(−4.13)	(−3.01)	(.97)	(−2.99)	(−2.26)	(1.58)
Ratio of trade taxes to trade	0.005	−0.0001	−0.002*			
	(.88)	(−0.17)	(−2.11)			
Trade openness (residual method)				−4.5*	1.7	−10.1
				(−5.70)	(1.34)	(−1.45)
Real interest rate	−0.0005	−0.0004*	0.001*	−0.004	0.0005	0.001*
	(−0.29)	(3.28)	(3.08)	(−0.85)	(3.5)	(2.95)
Crisis	−0.006	−0.006	−0.001	0.003	−0.004	−0.005
	(0.16)	(−1.23)	−0.15	(0.83)	(−0.85)	−0.50
Government share of GDP	0.0003	−0.0004	0.0045	0.0001	0.0005	.004
	(1.00)	(−0.48)	(5.50)	(0.69)	(3.53)	(5.6)
Budget deficit	0.002*	0.003*	−0.0002	0.002	0.003	−0.003
	(6.5)	(5.1)	(−0.35)	(6.7)*	(4.90)	(−0.41)
R^2	0.11	0.15	0.06	0.06	0.06	0.19
No. of obs.	385	241	78	393	252	79
No. of cross-secs	21	28	13	22	28	13

t- statistics in parentheses *Significant at 1%; **significant at 10%

low income countries, capital account openness appears to play no role in determining labour share, entering with a positive but insignificant sign. An important conclusion may be drawn from Tables 4 and 5: the negative correlation of capital account openness on the labour share of income increases with the level of income of the country.

Table 6 considers various other specifications and extensions of the base model. In addition to capital and trade liberalisation, there have been major changes in labour markets over the last two decades. Factors such as unemployment, union coverage and labour productivity are clearly important to understanding outcomes for the share of income going to labour versus capital. Unfortunately, obtaining consistent and comparable annual time series data on labour market conditions across countries, and especially for lower and middle-income countries, is extremely difficult. One way to address this is by looking at the partial effect of capital account openness on the labour share controlling for some of these variables for the OECD countries where these data are available and comparable.

In column (1) of Table 6, I repeat the base specification but add variables for trade union membership (data from the OECD statistical database), for the unemployment rate (from the world development indicators) and for labour productivity (defined as the growth of real GDP per worker from the *Penn World Tables 6.1*). Although the effect of capital account openness on the labour share is both smaller and weaker in the presence of these controls, it is still seen to exert a negative effect on the labour share.

Table 6. *Extensions to base specifications*

	(1)	(2)	(3)	(4)	(5)
Trend	−0.004★	−0.005★	−0.003	−0.002★	−0.003★
	(−6.2)	(5.2)	(−0.65)	(−3.16)	(−7.9)
Log	0.09★	0.05★	0.006	0.04★	0.07★
(GDP per capita)	(7.5)	(−4.52)	(.43)	(3.4)	(8.7)
Capital account openness	−0.004★★	−0.01★	−0.01★★	−0.01★	−0.009★★
	(−1.8)	(−3.3)	(−1.75)	(−2.61)	(−1.92)
Trade taxes to trade	0.003	0.00001	−0.001	−0.002★	−0.002★
	(0.29)	(0.0)	(−1.5)	(−2.35)	(−2.31)
Real interest rate	−0.0001	−0.0003	0.0001	0.0004	0.0003
	(−0.25)	(2.25)	(.15)	(1.5)	(1.3)
Crisis	0.001	0.01★	−0.02	−0.04★	−0.04★
	(0.51)	(3.8)	(−1.50)	(−3.00)	(−3.00)
Government share of GDP	0.0008★	0.00004	0.001	0.002★	0.002★
	(3.51)	(0.12)	(.54)	(4.2)	(4.39)
Budget deficit	0.002★	0.002★	0.002★	0.001★	0.001★
	(8.4)	(4.55)	(2.78)	(2.28)	(3.39)
Unemployment	−0.31				
	(−5.7)				
Trade union membership	0.12★				
	(6.01)				
Labour productivity	−0.31★				
	(−9.4)				
R^2	0.24	0.53	0.02	0.36	0.47
No.of obs.	289	338	195	638	638
No.of cross secs	20	21	64	61	61

t- statistics in parentheses. ★significant at 1%; ★★significant at 10%
(1) Sample restricted to OECD countries (2) Dependent variable: (compensation of employees plus Labour income component of operating surplus of unincorporated enterprises)/GDP; (3) Five year Averages; (4) Instrumental variables, one lag, fixed effects; (5) Instrumental variables, 2SLS, random effects.

As noted before, as the SNA classifies payments to unincorporated enterprises as accruing to operating surplus and capital, labour share as measured by national accounts is likely to be truncated and thus is a low estimate of the 'true' labour share. Gollin (2002) shows that divergences in labour's share are reduced if labour's share is expanded to include self-employment income. He also suggests several simple corrections by making adjustments to the national income on the reported operating surplus of unincorporated enterprises. One such correction treats the operating surplus of unincorporated enterprises as comprising the same mix of labour and capital income as the rest of the economy. If this is the case, adding the labour income component of the operating surplus of unincorporated enterprises to the compensation of employees from private incorporated enterprises and the government accounts will make the labour share closer to the true value. While the adjustment is relatively crude, it permits the use of the same data to assess the effects of including self-employment.

In column (2) of Table 6, I repeat the exercise using the Gollin adjustment. Making this correction results in a sharp drop in the sample size (to one-sixth of its original size), and it now consists of primarily higher income countries which do report the data. Again, very strikingly, the negative effect of capital account openness on the labour share remains significant.

How long-lived is this effect? If capital account openness does reduce the labour share directly, is it the effect a temporary shock, or does it change the political configuration between labour and capital more profoundly, resulting in longer-lasting outcomes? In order to assess this, column (3) of Table 6 repeats the exercise using five-year averages for the period in question (1972–96). All variables are averaged over five-year intervals, and run with OLS estimations. Strikingly,the five-year averages display remarkably consistent coefficients for the effect of capital account openness on labour share, suggesting that these effects remain over at least the medium term. The coefficients for some of the controls, by contrast, become insignificant.

Establishing causality in a cross country framework is difficult, as there are few convincing instruments available. Nevertheless, as a minimal check, a final instrumental variable exercise is conducted in columns (4) and (5) of Table 6. The specification addresses a potential problem with the estimates reported above, i.e., that the independent variables and the error term are correlated and perhaps jointly determined. All variables except the trend variable are instrumented with first lags and reported with both a pure fixed effect model and a 2SLS random effects model. Strikingly, all the variables are robust to the use of IV techniques and their point values are more or less the same.

4.1 Robustness issues

In addition to the estimations presented here, several other robustness checks were undertaken. Some of these may be worth mentioning. The fundamental results remained unchanged. Several other independent variables for which theoretical reasons could be constructed were tried, including trade to GDP ratios, measures of financial openness from Beck *et al.* (2000), the nominal exchange rate (from the IMF international financial statistics) and a measure of labour market rigidity from Rama and Artecona (2001).[1] In almost all specifications the central negative correlation between capital account openness and the labour share of income remained unchanged. The results also do not change when

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[1] Forteza and Rama (2000) use the sum of the ILO and other labour standards indicators from Rama and Artecona (2001) as an indicator of the 'thickness' of its labour code, and hence for the degree of labour rigidity as stated on paper.

one uses another adjustment measure from Gollin (2002).[1] I also used another proxy for the informal sector—the urban population as a fraction of total population—from the world development indicators. The results remain robust to its inclusion. A remaining question is the choice of time period. Because our capital account openness index is made for the period from 1972 to 1996, our sample is restricted to that time. However, the 1960s were a period of greater capital controls and higher labour shares, and the late 1990s have seen increasing capital account openness and diminishing labour shares. As such, the inclusion of these periods, were the data available, would most likely to strengthen rather than weaken these results.

5. Conclusion

Economists have paid relatively little attention at the macroeconomic level to the impacts of capital mobility on the rents going to labour. The empirical results from this paper suggest that these effects are significant, robust and therefore merit serious attention. Overall, capital account openness is an important correlate of the observed decline in labour shares in many countries over the last two decades. The evidence is thus consistent with the claim that capital mobility can have significant negative effects for the bargaining power of labour as a whole. However, these negative effects are not generalisable across all country groups and appear to increase with the level of income. The opening up of capital accounts has the strongest negative impact on the labour share in developed countries. Middle-income countries as a whole also tend to see a negative correlation between labour share and capital account openness. For the poorest countries, however, the empirical analysis in this paper did not provide evidence to suggest that the bargaining channel plays a central role in explaining falling labour shares. Structural differences between countries clearly remain important in outcomes for labour. Finally, the negative correlation between openness and the labour share of income persists through the medium term in the overall country sample.

A couple of cautionary points are to be noted. First, economists have criticised cross-country panel data as being fraught with problems of data and analysis as well as lacking robustness. That said, if data collection methodologies are consistent over time within countries and if theoretically important relationships are being tested, such analyses can be useful and suggestive of further lines of exploration. Second, the empirical strategy pursued in this paper assesses the direct negative bargaining effect as a residual effect, after controlling for various processes. To be sure, as the model suggests, there are strong theoretical reasons for believing in this effect, but it is still possible that the capital account openness variable is proxying for some other (unseen and unmeasurable) institutional change in the political economy. For example, it is conceivable that having liberalised, the state is constrained to act in favour of the interests of capital.[2] If it is the case that capital openness is a signal for more profound changes in the institutional structure of the economy, this is an interesting avenue for further research.

[1] In essence, this adjustment assumes that all the operating surplus of private unincorporated enterprises is self-employment income.

[2] Dunn (2000, p. 152) for example, argues the following in the case of the UK: 'In retrospect Mrs. Thatcher's most decisive political act was the complete dismantling, at the very beginning of her first term of office as Prime Minister, of all controls over capital movements into and out of the economy. What this did was to establish a space of political competition between capital and organized labour in which, in the end, the latter could only lose, and in which it was relatively simple to present its predestined loss as un-equivocally in the interest of the population at large.'

In addition, there is still a paucity of research on this topic at the level of country case studies.[1] The results of a cross-country study such as this highlights broad trends, but may obscure within-country differences which may be crucial and interesting. Further research, especially for developing economies, should provide more information with which countries not yet completely liberalised can assess the manner in which capital mobility may affect their distributions of income and the welfare of their citizens.

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[1] Some notable studies are Choi (2001) and Bronfenbrenner (2000), who more carefully assess the ways by which mobility is affecting the bargaining game between owners of capital and labour in the US, or Yeldan (2002), who analyses the changes in distributional incomes by class in Turkey.

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Appendix 1: A wage bargaining model

Mezzetti and Dinopoulos provide a very simple framework in which firms produce according to a very simple production function

$$F(L) = L \tag{1}$$

The function is linear for the sake of simplicity and the results do not change as long as the function is well behaved (i.e., $F_L > 0$). Mezzetti and Dinopoulos's (1991) framework does not include an argument for capital, and capital mobility is equivalent to firm mobility or the ability to relocate production abroad.

There is imperfect competition facing the firm so that the revenue function for the firm and the profit function of the firm are as follows

$$R = P(L)L \tag{2}$$

and

$$\pi = P(L)L - \omega L \tag{3}$$

where ω is the wage rate and $P(L)$ is the inverse demand function facing the firm.

Consider now the problem of bargaining over wage and employment between a representative labour union and the firm. The bargaining game is assumed to follow Nash's cooperative solution and is hence efficient in the sense that all equilibria occur on the contract curve.

In the event of a breakdown in negotiations, the firm is assumed to be able to obtain a return from relocating production abroad equal to ρ. This return however is reduced by the presence of capital controls in the home country, in the foreign country, or both. Capital mobility can be parameterised simply by ϕ where ϕ is bounded in the interval and thus the fallback position of the firm is $\phi\rho$. Thus the threat point of the firm is given as

$$\pi = P(L)L - \omega L - \phi\rho \tag{4}$$

Unions care both about employment and wages, and thus the objective function of the union is of the form

$$u(\omega, L) = L^{\gamma}(\omega - \omega_c)^{\theta} \tag{5}$$

where ω is the negotiated wage, ω_c is the fallback wage, γ is a measure of the weight the union places on employment, while θ is the equivalent measure of the weight placed on wages. It may be noted that this objective function encompasses the paradigmatic case of 'rent maximisation' corresponding to $\gamma = 1$ and $\theta = 1$, which has been of considerable interest in the labour economics literature, as well as allows for differing weights on employment and wages.

Assuming that the exogenously given bargaining power of the union is α (and thus the corresponding power of the firm is $(1 - \alpha)$, α [0,1]) we obtain the generalised Nash product as follows

$$\Omega = [P(L)L - \omega L - \phi\rho]^{1-\alpha}[L^{\gamma}(\omega - \omega_c)^{\theta}]^{\alpha} \tag{6}$$

Differentiating this with respect to w and L, we obtain

$$\Omega_\omega = 0 \Leftrightarrow \alpha\theta[P(L)L - \omega L - \phi\rho] = (1 - \alpha)[L(\omega - \omega_c)] \tag{7}$$

and

$$\Omega_L = 0 \Leftrightarrow \alpha\gamma[P(L)L - \omega L - \phi\rho] = (1 - \alpha)[\omega - (P + P_L L)] \tag{8}$$

The Nash bargaining locus can be obtained by rearranging (8) so that

$$\omega = \lambda P + (1 - \lambda)(P + P_L L) - \lambda\phi\rho/L \tag{9}$$

where $\lambda = (\alpha\gamma)/(1 - \alpha + \alpha\gamma)$

Equation (9) shows, as is to be expected, that the negotiated wage under a regime of a threat point is lower than without it (by the amount of the last term on the right hand side. The negotiated wage is thus a weighted average between the inverse demand curve P and the marginal revenue curve $(P + P_L L)$, less a penalty from the threat of relocation.

The more bargaining power the firm has, the closer the wage will be to the inverse demand curve, and the less the power, the closer the wage is to the marginal revenue curve.

The labour share of income in the firm is $wL/PL = w/P$. Denoting the labour share by S, we have

$$S = (\lambda P)/P + (1 - \lambda)(P + P_L L)/P - \lambda\phi\rho/PL \tag{10}$$

which implies that

$$S_\phi = -\lambda\rho/PL < 0 \tag{11}$$

so the labour share of income declines with an increase in capital mobility.

Appendix 2: An index of capital account openness

Researchers have long been aware of the problem of using simplistic dummies such as the binary variable from the International Monetary Fund annual report on exchange restrictions. As a result, some have made efforts to construct continuous measures for the intensity of capital account controls. Among these, the index created by Quinn (1997) remains the first, and most popular. Quinn's index makes careful use of the text of the IMF report to code an index with a value from 0 to 4 with a scale of 0.5.[1] His coding rules for capital receipts and payments is as follows.

If approval is rare and surrender of receipts is required, then $X = 0$.
If approval is required and sometimes granted, then $X = 0.5$.
If approval is required and frequently granted, then $X = 1$.
If approval is not required and receipts are heavily taxed, then $X = 1.5$.
If approval is not required and receipts are not taxed, then $X = 2$. (Quinn, 1997, p. 544).

Based on this rule, he presents the following examples of coding in his paper (Quinn, 1997). According to his rules, the capital account openness index has a value of 1 for India in 1979 for example, while the US has a value of 4 and Sweden has 3.

India
Capital: Payment
Residents are prohibited, except with Reserve Bank permission, from engaging in any transaction which increases beyond 49 the non-resident share of business outside India, and they are also prohibited, except with Reserve Bank permission, from holding, acquiring, transferring, or disposing of immovable property outside India. Furthermore, Reserve Bank approval is required for residents exporting Indian securities to any place outside India and

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[1] Quinn also constructs the index for current account restrictions, exchange rate restrictions, acceptance of IMF article VIII and multilateral agreements to get a composite measure of openness

transferring Indian securities to non residents (IMF, 1980 report, p. 196). Indian nationals are not normally granted any exchange facilities for emigration purposes (p. 197).

Comments: Approval required, rarely granted.
Score: 0.5
Capital: Receipts

All proposals for direct investment in India, with or without equity participation, are reviewed by the Foreign Investment Board. The General or specific approval of the Reserve Bank is necessary for the continuance of commercial, industrial, or trading activities in India or companies incorporated abroad, or with more than 40 per cent non-residents interest (p. 191). (Details of conditions for continuation of business in India provided, including equity dilution formulas. pp. 195–61.) In exceptional cases, companies that do not meet these criteria but have developed skills or use technologies not indigenously available, may be permitted a more than a 40 per cent foreign participation. Branches of foreign companies other than airlines, shipping companies, and liaison offices must in all cases become Indian companies (p. 196).

Comments: Approval required for all direct investments. Extensive and pervasive indigenous equity requirements. Some 'national interest' investments permitted outside guidelines.
Score: 0.5

United States
Capital: Payment
Incoming or outgoing capital payments by residents or non-residents are not subject to exchange controls. In addition inward and outward direct or portfolio investment is generally free of any other form of approval (IMF, 1980 report, p. 424).

Comments: Essentially free.
Score: 2.0

Capital: Receipts
Incoming or outgoing capital payments by residents or non-residents are not subject to exchange controls. In addition inward and outward direct or portfolio investment is generally free of any other form of approval (p. 424).

Comments: Free.
Score: 2.0

Sweden
Capital: Payment
Direct investment abroad by Swedish residents requires individual authorization, which normally is granted only if the investment is considered likely to promote exports or otherwise to benefit the balance on the current account, regardless of the return on the investment. Residents do not need authorization to sell portfolio holdings of foreign securities to non residents. The purchase of both listed and unlisted securities by residents from non residents requires authorization. As a rule, such authorization is not granted (p. 385).

Comments: Approval required for direct investments; some capital payments and capital sales permitted.
Score: 1.0

Capital: Receipts

Table A2.1. *Correlation matrix between Quinn, IMF and Lee–Jayadev index for OECD countries*

	Quinn	IMF	Lee–Jayadev
Quinn	1	.67	.97
IMF	0.67	1	0.71
Lee–Jayadev	0.97	0.71	1

Foreign direct investments in Sweden require authorization, which normally is given, provided that not more than 50 per cent of each individual investment (investments below SKr 5 million excepted) is financed with domestic credit. Residents are permitted to receive capital receipts from abroad only upon approval of the Rijksbank (p. 384). Permission is needed for the issuance of bonds and shares in Sweden by non-residents; bond issues in favour of other Scandinavian countries and [the World Bank] have been admitted (p. 385).

Comments: Approval required for all large and many small nonresidents financial activities. Some approvals denied.
Score:1.0 (Quinn, 1997, pp. 541–4).

Although this index is limited in not being disaggregated adequately between various types of flows and various taxes on these flows (a practice that the IMF has begun to take in reports subsequent to 1996), it remains the most reliable. Many recent studies use this index and, in doing so, suggest that the measure picks up more variation and is more accurate than a simple dummy (Edwards, 2001). Unfortunately, this index is made public only for a select number of years. For OECD countries, the data are available for all years from 1958 to 1997, while data are available for the rest of the sample only for 1958, 1972, 1982 and 1988. Moreover, the coverage of countries is only 70 countries in total.

In Lee and Jayadev(2003), we reconstruct a Quinn-like index, reviewing the IMF report following the same methodology for a large sample of countries. We use the following coding rule, which is slightly more developed (using more information from the IMF) but very similar to Quinn's original index.

If approval is rare and surrender of receipts is required, then $X=0$.
If approval is required in most parts and sometimes granted, then $X=.5$
If approval is required in some parts and frequently granted, then $X=1$
If license or any regulation exist in most parts, then $X=1$
If approval is not required and receipts are not heavily taxed, then $X=1.5$.
If approval is required in only few parts and usually granted, then $X=1.5$
If license or any regulation exist only in a few parts, then $X=1.5$
If approval is not required and receipts are not taxed, then $X=2$
If regulation doesn't exist in almost all parts, then $X=2$.

This methodology was used to code data from 1972 to 1996 for more than 130 countries in the IMF report. Given that the IMF data are qualitative, we added certain criteria which are available in the report. Since the index involves certain judgement calls, we used three separate coders to check for consistency.

Table A2.1 represents the correlation matrix between our measure, that of Quinn and that of the IMF. The last of these is a binary measure of openness available from the IMF annual reports (see for example, Murshid and Mody, 2002) As can be noted, we have a very high correlation between our index and that of Quinn's for the OECD countries (0.97) and a lower but large correlation between our index and that of Quinn for the non-OECD countries. For the overall sample, the correlation coefficient between Quinn's index and ours is 0.91. Much of the variation derives from our added criteria.