Capital account liberalisation and poverty: how close is the link?

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The literature on the theoretical and empirical aspects of the relationship between finance and economic growth is both substantial and extensive. The same cannot be said on the relationship between financial development and poverty reduction—an equally important aspect. In this study, we visit the theoretical arguments and conduct an empirical analysis of the relationship between the capital account dimension of financial liberalisation and poverty for developing countries for the period 1985–2005. In particular, we employ the 'system GMM' technique to test whether capital account liberalisation has helped alleviate poverty, and also whether the extent to which capital account liberalisation affects poverty depends on the quality of institutions. We also use OLS and IV techniques to verify our findings. Our findings indicate that there is no statistically significant relationship between the degree of capital account liberalisation during the period and the poverty rate. Developing countries with higher institutional quality have lower poverty rates, but the effect has low statistical significance. A higher degree of capital account liberalisation is associated with a lower income share for the poor.

Key-words: Capital account liberalisation, Poverty, Quality of institutions, Developing countries
JEL classifications: O16, I32

1. Introduction

The importance of world poverty alleviation cannot be exaggerated. In 2001, there were more than 1 billion people living in poverty, according to the frugal US$1 a day poverty measure (Chen and Ravallion, 2004). There are also dramatic differences in poverty

among countries, even among developing countries. This paper focuses on the financial aspects of poverty alleviation in developing countries and asks whether capital account liberalisation can actually lead to lower poverty. In doing so, this study contributes to the literature by examining, both theoretically and empirically, the relationship between capital account liberalisation and poverty. While financial liberalisation embodies a number of aspects, namely '…the deregulation of the foreign sector capital account, the domestic financial sector, and the stock market sector viewed separately from the domestic financial sector' (Arestis and Caner, 2005, p. 92), in this contribution we will deal with just one aspect, namely the one that focuses on the deregulation of the foreign sector capital account. Thus, we are concerned, in this study, with the relationship between poverty reduction and capital account liberalisation directly. This approach bypasses the intermediate step of examining the relationship between capital account liberalisation and growth; it, instead, directly examines the relationship between liberalisation and poverty.

We focus on developing countries and exclude developed countries from our sample (unlike Beck *et al.*, 2007), because the nature and the extent of poverty in developing countries requires more urgent attention, and because we think that the dynamics of poverty reduction are different in these countries than in developed countries. This is important, especially when cross-country heterogeneity is a major concern. Another reason for focusing on developing countries is that this category of countries opposed the persistent insistence by the International Monetary Fund (IMF) and the US Treasury in the 1980s and 1990s to adopt capital account liberalisation. The economic crises of the late 1990s and early twenty-first century, let alone the August 2009 global financial crisis, which were partly or largely attributable to capital account liberalisation, but also to other forms of liberalisation, reinforced those reservations (Stiglitz, 2004). Thus, it is imperative that we examine closely the problem in hand in the case of developing countries.

The remaining sections of this paper are organised as follows: in Section 2, we begin by discussing the relationship between the financial system/financial development and growth. This discussion of the literature in subsection 2.1 is just background analysis to the subsequent discussion on the relationship between capital account liberalisation and poverty. The latter is undertaken in subsection 2.2, where the theoretical basis of the relationship between capital account liberalisation and poverty is discussed. We then proceed to the empirical investigation and estimation of the relevant relationships. This is undertaken in two steps. The first, in Section 3, describes how we measure capital account liberalisation, poverty and institutional quality. The second step, in Section 4, puts forward the empirical strategy that we follow, the data we utilise for the purposes of estimation, and our findings themselves. Finally we summarise and conclude in Section 5.

2. Theoretical considerations

2.1 Financial liberalisation and poverty

The literature on the theoretical and empirical aspects of the relationship between finance and economic activity is both substantial and extensive. A number of contributions conclude that 'with informed policy choices, finance can be a powerful force for growth' (World Bank, 2001, p. 1). More recently, Demirgüç-Kunt and Levine (2009) have concluded that 'Theory provides sound reasons for believing that the poor disproportionately benefit from financial development. Financial developments that lower the fixed costs of accessing financial services are especially useful to low income individuals, helping them

to pay for education and health care' (p. 38); also that 'While far from conclusive, an accumulating body of empirical evidence—cross-country, cross-country firm level and industry level studies, policy experiments, as well as general equilibrium model estimations—suggests that there is a strong beneficial effect of financial development on the poor' (p. 39). But these are not the only conclusions reached. There is a significant critique of this mainstream position. An important critique is by Stiglitz (2000) who actually explicitly makes a case for why financial liberalisation is bad for growth. Stiglitz (2000) argues that the financial liberalisation thesis is held 'either as a matter of ideology or of special interests, and not on the basis of careful analysis of theory, historical experience or a wealth of econometric studies' (p. 1076). Arestis and Sawyer (2005) review the relevant literature and conclude by pointing to two striking findings (see, also, Arestis and Demetriades, 1997, 1998):

> The first is that over the past thirty years or so, banking crises have been unusually frequent and severe. The magnitude of the crises is clearly indicated by the fact that at least *two thirds* of the IMF member countries experienced significant banking-sector problems ever since the early 1980s (World Bank, 1989). The second important finding is that beyond the financial costs of banking crises for the local economies involved, they have exacerbated downturns in economic activity, thereby imposing substantial real economic costs (Honohan and Klingebiel, 2000; see, also, Arestis, 2004, 2005). (Arestis and Sawyer, 2005, p. 2).

Once the problems just discussed are recognised then intervention is inevitable. This is particularly pertinent in those cases where 'Weak financial institutions may make a country vulnerable to large and sudden changes in short-term flows' (Stiglitz, 2000, p. 1082). It follows, then, that reasonable economic policies along with sound financial institutions being in place, are particularly relevant. Others have emphasised different intervention requirements. The establishment of macroeconomic stability is thought to be a first requirement (Holden and Prokopenko, 2001), although it is not a sufficient condition. Establishing a basis for adequate regulation and supervision of financial institutions is particularly apt in developing and transition countries because of a greater need for building public confidence in the financial system (Ito, 2006). Holden and Prokopenko (2001) also mention the need for financial institutions that are specialised in certain industries or certain types of lending, such as factoring and leasing companies or mortgage finance companies. These institutions are in a better position than large multi-purpose institutions to assess financial and investment plans in their field of expertise. They can help small and medium size enterprises with their financing needs in case commercial banks lend only to large and well-established firms. Further requirements are also highlighted: the importance of strong macroeconomic fundamentals, sound systems of banking regulation and supervision.

Regrettably and surprisingly, the literature on the relationship between financial development and poverty reduction, an aspect of equal importance as that of the nexus between finance and growth/development, is disappointingly small. The relevant studies include those by Stiglitz (2000), Arestis and Caner (2005, 2009), Jalilian and Kirkpatrick (2002), Dollar and Kraay (2002), Jeanneney and Kpodar (2008), Honohan (2004), Beck *et al.* (2007) and Honohan and Beck (2007). The findings of these studies are mixed. Arestis and Caner (2005) report that the growth channel is not the only channel through which financial liberalisation can affect poverty, but that there are two further channels, namely the financial crises channel and the access to credit and financial services channel. Even more recently, Arestis and Caner (2009) suggest a further channel—the income share of labour channel.

Jalilian and Kirkpatrick (2002) test econometrically the relationship between financial development and poverty through the growth channel. Based on the estimation of two equations (a growth and a poverty regression), these authors find that the change in growth of average income with respect to a unit change in financial development is equal to 0.4, and the rate of change in the growth of income of the poor with respect to 1% change in the growth of average income of population is approximately equal to 1. They then conclude that one unit change in financial development leads to a 0.4% change in the growth rate of the incomes of the poor, assuming that there are no direct effects.

A more recent study by Jeanneney and Kpodar (2008) is concerned with financial liberalisation in more general terms. It argues that the standard financial liberalisation effect of the McKinnon (1973) type is directly effective in reducing poverty, as is the more indirect effect via economic growth, with the former found to be empirically stronger than the latter. But there are costs as well. Financial liberalisation promotes financial instability; moreover the poor do not benefit from the greater availability of credit. Ultimately, though, the authors argue that the benefits outweigh the cost for the poor, although no real explanation is provided.

Dollar and Kraay (2002) find that the growth elasticity of the mean of the bottom quintile is practically equal to one and some determinants of growth, such as good rule of law, openness to international trade and developed financial markets have little systematic effect on the income share of the poor (the bottom quintile). What this means in the authors' view is that such factors 'benefit the poorest fifth of society as much as everyone else'. However, a recent study by Foster and Szekely (2008) challenges these results by arguing that the reported elasticities therein do not lie uniformly in the range of one or above; indeed, for the most bottom-sensitive income standards they are not significantly different from zero. The authors conclude that 'This raises doubts about the ability of growth to improve poorer incomes and suggests a role for policies that specifically address distributional concerns' (p. 1165). Honohan (2004) shows that financial depth is associated negatively with poverty. This negative relationship is robust even after taking into account the mean income and the share going to the top income groups. Honohan and Beck (2007) suggest that 'effective finance' provides a 'ladder for the poor to climb' (p. 11) and that financial depth is indeed conducive to poverty reduction, so that 'countries with deep financial system also seem to have a lower incidence of poverty than others at the same level of national income' (p. 12). Bank credit to the private sector is thought to be the best measure of effective finance since 'it captures the degree to which banks are channelling society's savings to productive uses' (p. 21).

There are, though, costs as well (see Honohan, 2004; Beck *et al.*, 2007; Honohan and Beck, 2007). The poor benefit from the banking system's ability to provide more savings opportunities but do not manage to benefit from the greater availability of credit; and to the extent that financial liberalisation affects growth positively, it also affects poverty. However, financial liberalisation promotes financial instability, which hurts the poor who are vulnerable to unstable and malfunctioning institutions.

2.2 Capital account liberalisation and poverty

Theory provides conflicting predictions concerning the relationship between capital account liberalisation and poverty alleviation. On the one hand, by ameliorating information and transaction costs and therefore allowing more entrepreneurs to obtain external finance, capital account liberalisation improves the allocation of capital, thereby

165 exerting a particularly large impact on the poor. To the extent that financial systems function better as a result of capital account liberalisation, financial services become available to a larger proportion of the population and to the poor. On the other hand, capital account liberalisation and improvements in the financial system primarily benefit the rich and those who are politically connected. Especially at the early stages of capital
170 account liberalisation, financial services, and credit in particular, are limited to the wealthy and connected. A greater degree of capital account liberalisation, then, may only succeed in channeling more capital to the few, but certainly not to the poor. A third view poses the question of a non-linear relationship between capital account liberalisation and income distribution, and more specifically of an inverted U-shaped curve: at the early stages of
175 capital account liberalisation only a few relatively wealthy individuals have access to financial markets. With sustained capital account liberalisation more people can afford to join the formal financial sector and thus more people can enjoy the full benefits. Thus, while the distributional effects of financial deepening are adverse at the early stages of capital account liberalisation, they certainly become positive after a turning point.

180 The relationship between capital account liberalisation and poverty has been examined in the literature by focusing on the relationship between capital account liberalisation and growth with the further assumption that higher growth alleviates poverty, without paying direct attention to poverty. Liberalisation of the capital account is thought to have positive effects on economic growth and thereby on poverty. There are a number of channels through
185 which capital account liberalisation may increase economic growth: through higher investment, as capital flows in to earn higher returns (Prasad *et al*, 2003; see, also, Henry, 2007; Henry and Sasson, 2008); by lowering the cost of capital via improved risk allocation (Prasad *et al.*, 2003); through investment in higher risk but higher return projects with the help of global diversification of risk (Obstfeld, 1994); through increased efficiency and
190 productivity via transfer of technology and managerial know-how (Agénor, 2002; Prasad *et al*, 2003); through increasing incentives, which improve the regulatory and supervisory framework of banking—this is helped by letting foreign banks introduce a variety of new financial instruments and techniques or by increasing competition, which can improve the quality of financial services (Prasad *et al.*, 2003); and through the 'discipline effect', whereby
195 governments are forced to pursue better macroeconomic policies (Stiglitz, 2000).[1]

However, it is just as possible that the 'discipline effect' on governments to pursue better macroeconomic policies brought by capital account liberalisation, may have the opposite effect. It may very well pressurise government to pursue policies that favour capital, or sections of capital, and the wealthy, at the expense of the poor. Furthermore, it is also just
200 as possible that the capital account liberalisation can slow down growth by eliminating country-specific income risk and the impact of this risk on saving. When countries share endowment risk via international capital markets, saving and growth rates can be lower in financial openness than in autarky (Devereux and Smith, 1994). Rodrik (1998), using data on developing as well as developed countries, finds no significant effect of capital account
205 liberalisation on the percentage change in real income per capita over the period 1975–1989. Edwards (2001) observes that the positive relationship between capital account openness and productivity performance manifests itself only after the country in question has reached a certain degree of development. At very low levels of domestic

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[1] A related but different suggestion supports the idea of creating a global pool of reserves out of countries' income with the specific aim to provide more sustained development finance to fight against poverty (Stiglitz, 2002).

financial development a more open capital account may even have a negative effect on
performance. Edison and colleagues (2002) find mixed evidence that capital account
liberalisation promotes long-run economic growth and that the positive effects are most
pronounced among countries in East Asia. A recent study that is concerned with the
relationship between foreign capital inflows and economic growth in developing and
emerging countries is that by Prasad and Rajan (2008). They find a weak relationship at
best. They argue, though, that 'capital account liberalisation may best be seen not just as an
independent objective but as part of an organizing framework for policy changes in
a number of dimensions' (p. 26).

Stiglitz (2000) suggests that capital account liberalisation has negative effects on
poverty.[1] A number of theoretical and empirical arguments are put forward to demonstrate
this conclusion. The proponents of financial liberalisation concentrate on efficiency effects
and ignore distributional consequences. This may be on the premise that once benefits are
large enough they will trickle down to the poor. But, Stiglitz (2000) wonders, does it work
as harmoniously in the real world as claimed by the proponents? Stiglitz (2000) argues on
a number of grounds against it: historical experience provides very little support for these
arguments. Capital account liberalisation has been associated with instability, which has
had persistently negative effects on economic growth and poverty. Stiglitz (2000) provides
a number of arguments to explain this instability: financial and capital markets, the central
function of which is information gathering, are different from markets for ordinary goods
and services; capital account liberalisation allows diversification, which enhances stability
but, as argued, the opposite is the case. There is also the argument that capital account
liberalisation encourages capital flight thereby contributing to the weakening of the
economy. Capital account liberalisation 'may impose costly *constraints* on the ability of
governments to pursue legitimate objectives' (p. 1080). One such legitimate objective is
economic stability. Another may be anti-poverty policies. For example, high interest rate
policy and, in more general terms, restrictive monetary and fiscal policies may be such anti-
poverty policy mix. In the same study threee sets of interventions are recommended:
'restrictions on capital flows, restrictions on capital outflows, and restrictions imposed on
the banking sector' (p. 1083).

In a subsequent study, Stiglitz (2004) is also very critical of the IMF studies on the issue
(as, for example, Prasad *et al.*, 2003). The study concludes by suggesting that

> The IMF should change from pressuring countries into liberalising their capital markets into
> working with countries on how to design interventions in the capital markets which stabilize
> capital flows, or even better, ensure that they move counter-cyclically. It should be working
> harder to address the underlying failures in capital markets, devising ways by which more of the
> risk of interest-rate and exchange-rate fluctuations can be shifted to developed countries and
> international financial institutions. And, in the future, it should rely more on evidence and less on
> ideology in developing its policy agenda" (Stiglitz, 2004, pp. 65–6).

The studies by Jayadev (2007) and Lee and Jayadev (2003) investigate the effects of
capital account openness/liberalisation on the labour share of income. They demonstrate:

> a robust negative correlation between the degree of openess and the labour share. Although this
> effect is not present for low income countries, the direct negative relationship holds for all other
> sabsamples and in the presence of a variety of controls. (Jayadev, 2007, p. 423).

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[1] In this context, Cornia (2003) provides evidence that capital account liberalisation has the strongest
impact on widening inequality within the country concerned; domestic financial liberalisation has the next
most important negative effect on the poor.

This is possibly due to the liberalisation of capital flows, which, through raising rents going to capital, enhances the bargaining power of capital at the cost of labour. The share of labour's income of national income is thereby reduced. Gunter, Taylor and Yeldan (2005) also find negative effects of external liberalisation on poverty (see, also, Singh, 2003).[1] By providing a critique of the standard neoclassical models, and exposing the gaps and partial achievements in the modelling of the capital account liberalisation on poverty, Gunter, Taylor and Yeldan (2005) question the realism of existing approaches to the assessment of the impact on poverty of capital account liberalisation.[2]

Thus, it is not quite clear whether the relationship between capital account liberalisation and poverty is negative as one might expect. The purpose of this paper is to investigate this relationship further through an empirical investigation of the direct relationship between capital account liberalisation and poverty, thereby bypassing the required further assumption that growth and poverty are negatively linked. In this study we are also interested in the relationship between institutional quality and poverty. The literature on institutions has stressed that low-income countries lack a well-developed incentive structure to bring forth productive cooperation (Olson, 1996). Such a structure depends not only on economic policies but also on the quality of the institutional arrangements (see, also, World Bank, 2001). One such arrangement is a legal system that enforces contracts impartially and makes property rights secure over the long run. Another is a system of political structure, constitutional provisions and good enforcement to monitor the extent of special-interest lobbies and cartels. In countries where institutional mechanism, defined in this sense, is not working properly one would expect to see a small group of elites to reap the benefits of growth and liberalisation.

We can easily link poverty to financial liberalisation and institutional quality and build relevant hypotheses, as is undertaken below (see Section 4). Is it the case that financial liberalisation has beneficial effects on the poor in countries where the institutional quality is high and the poor can share the benefits of liberalisation with the rest of the population? Another hypothesis is that increasing financial openness hurts the poor; however, such detrimental side effects can be alleviated, at least to some extent, when good institutions are in place.

3. Measuring poverty, capital account liberalisation and institutional quality

3.1 Measuring poverty

The poverty measure used in this paper is the headcount index, calculated based on a poverty line that is twice the extreme poverty line. In other words, the poverty line is set at US$2.15 per day (US$65.48 per month) in 1993 purchasing power parity (PPP) prices. The welfare indicator used to set the poverty line varies by country, depending on the type of data collected in household surveys. The indicator is income in some countries and expenditures in other countries, as listed in the Appendix to Chen and Ravallion (2004).

[1] Singh and Zammit (2000) demonstrate that capital account liberalisation affects women negatively in the case of the developing countries. Women in developing countries lose more than men in view of the fact that a social security system does not exist to protect them.

[2] Reference should also be made to the work of the 'Bretton Woods Project', created by independent non-governmental organisations in 1995, which 'monitors projects, policy reforms and the overall management of the Bretton Woods institutions with special emphasis on environmental and social concerns' (see http://www.brettonwoodsproject.org/project/about.shtml). The work of this group on poverty issues is very critical of the approach by the IMF and the World Bank, very much along the lines of Stiglitz (2000, 2004) as they are elaborated in the text.

By using this measure, '...(we) include (as poor) all those who would be judged poor by standards more typical of middle-income countries' (Chen and Ravallion, 2004, p. 147). The data source is the World Development Indicators of the World Bank. The poverty data are available from *PovcalNet* at http://iresearch.worldbank.org/PovcalNet/jsp/index.jsp.

The headcount poverty index is an important descriptive tool. Although it lacks some desirable properties, it is easy to understand and interpret. Mainly due to its simplicity, it has become a standard measure in academic and policy work. We use it as our poverty indicator not only because of its simplicity, but also to make our study comparable with other studies that also use this measure.

One disadvantage of the headcount index is that it gives absolutely no sense of the depth and intensity of poverty, whereas the poverty gap index does. For this reason, we also use the poverty gap index as a poverty indicator in this paper. As yet another alternative, we use the income share of the poorest 20% of the population as a measure of poverty. Unlike the headcount index, it is a relative measure of poverty.[1] This measure has been used widely in the development literature (see, for instance, Beck *et al.*, 2007). The data for both the poverty gap index and the income share of the poor are available from the same data source as the headcount index.

One main problem with the poverty data is sparse coverage, leading to a highly unbalanced panel. Poverty (and inequality) data are collected via nationally representative household surveys, which are conducted from time to time, with varying frequencies across countries. Within the 21-year period that we study in this paper (1985–2005), in 59% of the countries in our sample, such data are available in only five or fewer years. In 95% of these countries, such data are available in only 10 or fewer years. For 17 countries, poverty and inequality data are available in only two of the 21 years. For 15 countries these data are available in only three years. For this reason, we need to follow an empirical strategy that maximises the use of the limited amount of data that we have (see subsection 4.1).

3.2 Measuring capital account liberalisation

We adopt the definition in Kaminsky and Schmukler (2003). The liberalisation of the capital account is captured by the regulations on offshore borrowing by financial institutions and by non-financial corporations, on multiple exchange rate markets and on capital outflow controls. In a fully liberalised capital account regime, banks and corporations are allowed to borrow abroad freely. They may need to inform the authorities but permission is granted almost automatically. Reserve requirements might be in place but are lower than 10%. Also, there are no special exchange rates for either the current account or the capital account transactions; nor are there any restrictions to capital outflows.

In this study, we adopt the capital account openness index, KAOPEN, developed by Chinn and Ito (2002). This index is the first principle component of four binary variables in the IMF's Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) and it takes higher values for more open financial regimes. These four variables are defined as follows: k_1 is the variable that indicates the presence of multiple exchange

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[1] Pogge and Reddy (2005) criticise the way the World Bank estimates absolute poverty and demand that a new methodology is used. They explain in their work that the chosen poverty line is unrelated to any clear conception of poverty; that the measure of purchasing power is misleading and inaccurate; and that extrapolation is made incorrectly from limited data. It is hard to guess to what extent these issues might bias our estimates. In our study, we have chosen to use a relative poverty measure in addition to the two absolute poverty measures.

rates; k_2 is the variable that indicates restrictions on current account transactions; k_3 is the variable that indicates the restrictions on capital account transactions; k_4 is the variable that indicates the requirement of the surrender of export proceeds. One important merit of the index is its wide coverage: it is available for more than 100 countries and for a long time period (1970 through 2005).

As mentioned by a number of authors (e.g. Edison *et al.*, 2002), it is not easy to measure the extent of openness in capital account transactions. By the nature of its construction, the KAOPEN index is considered to be a *de jure* measure of financial openness because it attempts to account for regulatory restrictions on capital account transactions. Hence, this index is different from price-based measures on financial openness, often referred to as *de facto* measures of financial integration. These two types of financial openness measures have their own strengths and weaknesses. However, it is almost impossible not only to rank the supremacy of these measures, but also to distinguish them. One of the drawbacks of the *de jure* measures on financial openness, as Edwards (1999) discusses, is that it is often the case that the private sector circumvents capital account restrictions; thereby nullifying the expected effect of regulatory capital controls, which can be captured by price-based measures. A drawback of the price-based measures, on the other hand, is that they can reflect changes in macroeconomic conditions even if there are no regulatory changes on capital account transactions.

One might argue that a *de jure* measure is a poor indicator of openness in the sense that releasing controls do not necessarily lead to more cross-border transactions. The response to such concerns is that the factors determining the magnitude of capital flows are many. The investment climate in the country, as well as the culture, might influence capital inflows. The policy tool that is most directly related to the regulation of capital account transactions is capital account liberalisation, i.e. eliminating the barriers to allow access. Whether a change in the rules helps increase the magnitude of capital flows is another question. Since this paper focuses on regulatory aspects of capital account openness, we think the KAOPEN index is an appropriate indicator.

The KAOPEN index was used by Chinn and Ito (2002, 2006) in their studies of the determinants of financial development. These researchers found that the rate of financial development, as measured by private credit creation and stock market activity, is linked to the existence of capital controls, and that a higher level of financial openness contributes to the development of equity markets only if a threshold level of institutions is attained, which is more prevalent among emerging market countries.

In Figures 1 to 6 we have graphed the KAOPEN index and the poverty rate for the six World Bank regions merely to get a first impression of their relationship. A quick glance of this simplest possible relationship that can be adduced clearly suggests that it does not appear to be the case that the relationship adheres to the theory that underpins it. It does seem, though, that there is a positive long-run relationship between poverty and KAOPEN in the Eastern Europe region, though nowhere else. Clearly, correlation does not indicate causality. These comments strengthen the proposition that fuller and more systematic investigation is in order. This we undertake below in Section 4.

3.3 Measuring institutional quality

Many of us would agree that institutional quality in a country is essential for its economic performance; however, measuring institutional quality is not easy. Especially when the aim

Fig. 1. *The plots of the KAOPEN index versus the headcount poverty rate (East Asia).*

Fig. 2. *The plots of the KAOPEN index versus the headcount poverty rate (Eastern Europe).*

Fig. 3. *The plots of the KAOPEN index versus the headcount poverty rate (Latin America).*

Fig. 4. *The plots of the KAOPEN index versus the headcount poverty rate (Middle East-N. Africa).*
Note: *The only poverty data for the 2000s are for Jordan (2002) and Tunisia (2000).*
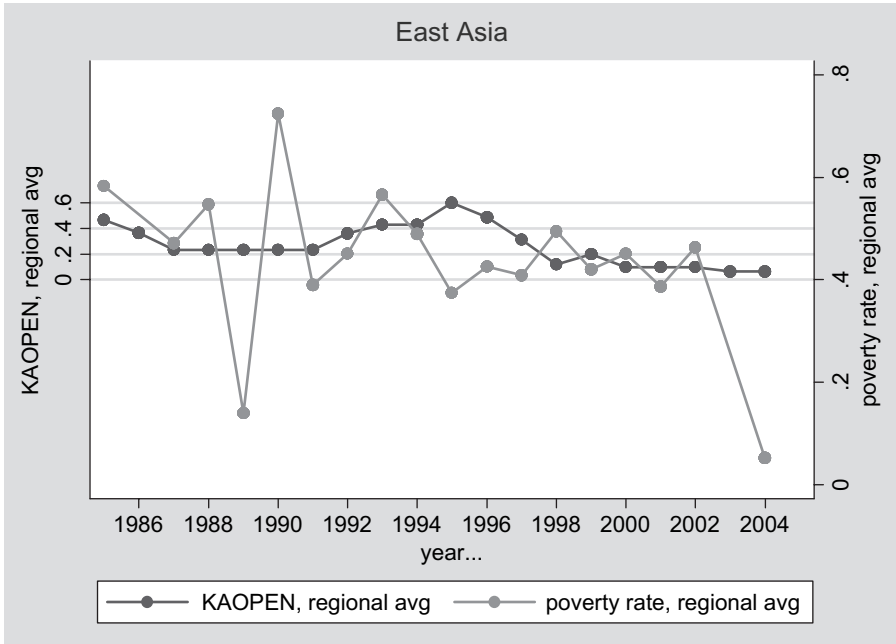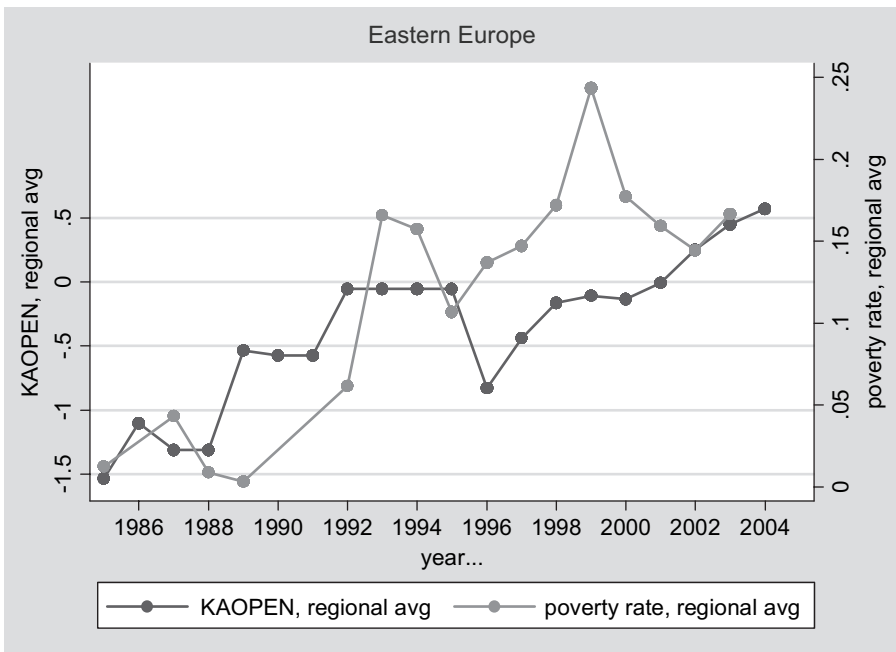
Fig. 5. *The plots of the KAOPEN index versus the headcount poverty rate (South Asia)*.

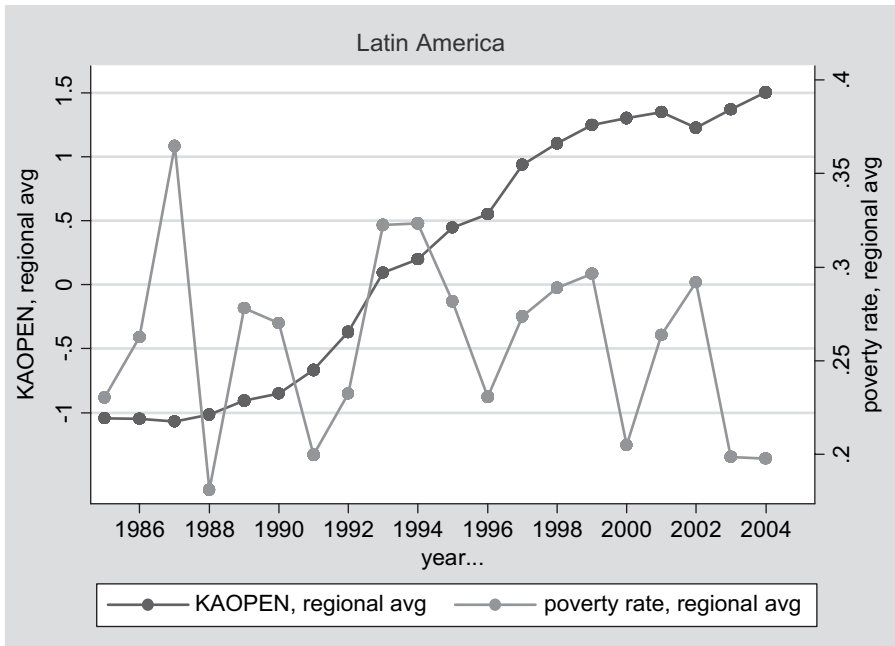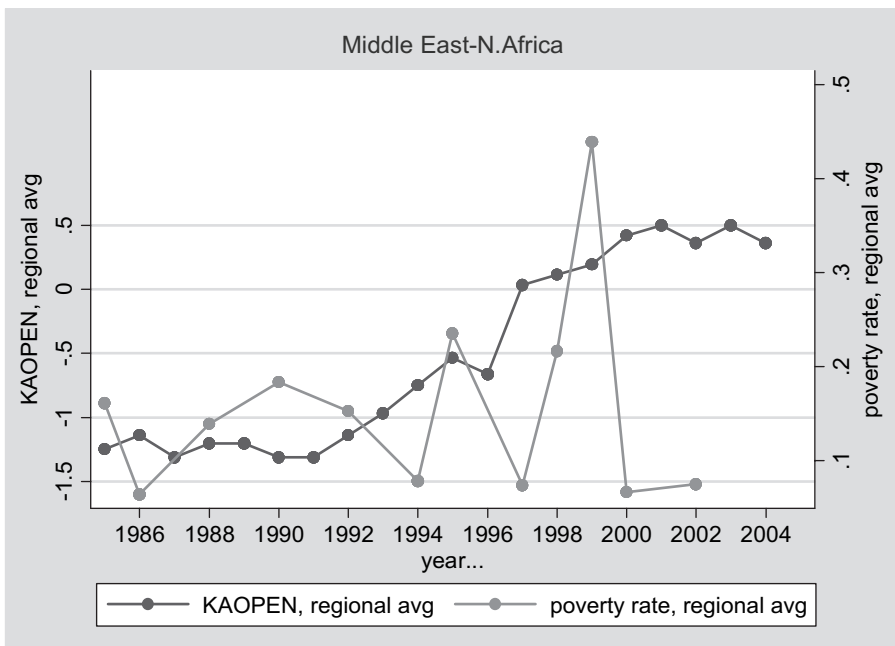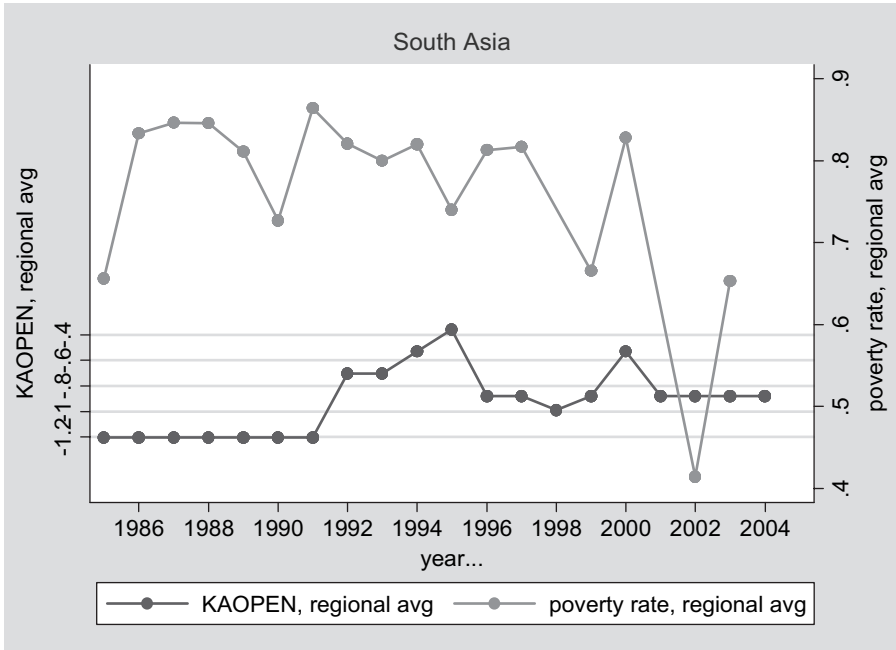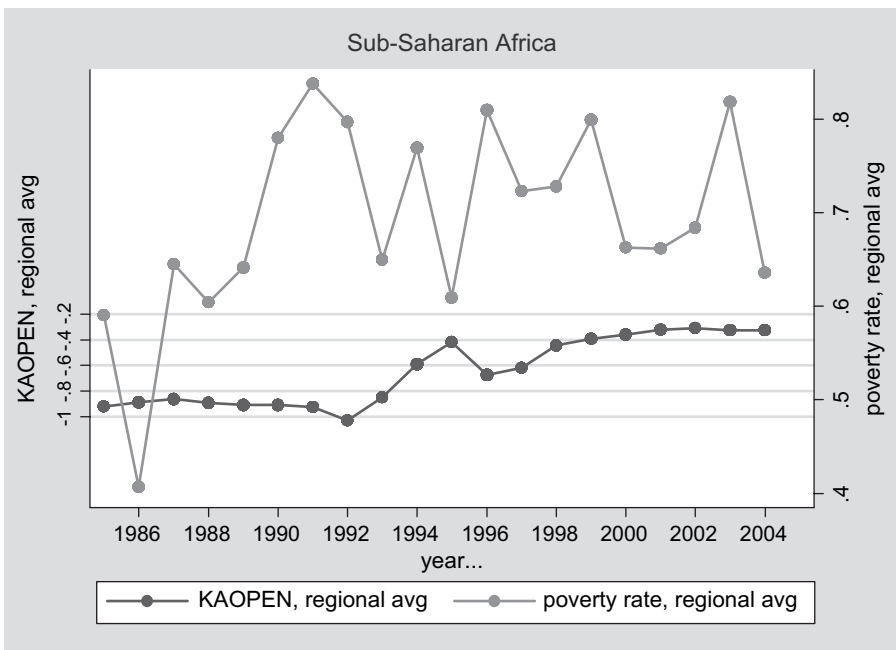**Fig. 6.** *The plots of the KAOPEN index versus the headcount poverty rate (Sub-Saharan Africa)*.

is to understand the effects of institutional quality on poverty reduction, the choice of an appropriate measure becomes a very difficult one.

The institutional quality data that we use come from the PRS Group, a private organisation.[1] This organisation maintains various datasets, one of which is the International Country Risk Guide (ICRG). We pick the following 11 variables that constitute the political risk rating:[2]

(1) 'Government stability', which reflects the government's ability to carry out its declared programme(s) and its ability to stay in office.
(2) 'Investment profile', which measures the factors affecting the risk to investment such as contract viability/expropriation, profits repatriation and payment delays.
(3) 'Internal conflict', an indicator of political violence in the country and its actual or potential impact on governance.
(4) 'External conflict', an assessment of the risk to the incumbent government from foreign action, ranging from non-violent external pressure to violent external pressure.
(5) 'Corruption within the political system'. The most common form of corruption met directly by business is financial corruption in the form of demands for special payments and bribes connected with import and export licenses, exchange controls, tax assessments, police protection or loans. Although our measure takes such corruption into account, it is more concerned with actual or potential corruption in the form of excessive patronage, nepotism, job reservations, 'favour-for-favours', secret party funding and suspiciously close ties between politics and business.
(6) 'Military in politics', a measure of the degree of involvement of the military in politics.
(7) 'Religious tensions', a measure of the degree of domination of society and/or governance by a single religious group that seeks to replace civil law by religious law and to exclude other religions from the political and/or social process or to suppress religious freedom.
(8) 'Law and order', the 'law' sub-component being an assessment of the strength and impartiality of the legal system, while the 'order' sub-component is an assessment of popular observance of the law.
(9) 'Ethnic tensions', an assessment of the degree of tension within a country attributable to racial, nationality or language divisions.
(10) 'Democratic accountability', a measure of how responsive government is to its people.
(11) 'Bureaucracy quality', a measure of the degree of strength and expertise to govern without drastic changes in policy or interruptions in government services.

Higher values of these variables indicate lower risk. These data are available for years 1984–2007 and are therefore appropriate for both panel and cross-country data analyses.

Each component of the political risk rating represents a different dimension of institutional quality. Each may be related in some way to the poverty reduction performance of a country. For instance, in countries where expropriation of private

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[1] Since its founding, PRS has focused on political risk analysis, offering two unique and independent, publicly available methodology models: *Political Risk Services* and *International Country Risk Guide* (ICRG) and many related products and services. For more information, see http://www.prsgroup.com.
[2] We exclude the 12th variable, socioeconomic conditions, as it includes poverty as one of its subcomponents. The other two subcomponents are unemployment and consumer confidence.

foreign investment is a likely event, specific interest groups may be favoured, leading to a situation in which only these favoured groups collect the benefits of economic development. Similarly, in cases where the poor are concentrated in an ethnic group that suffers from discrimination, or if corruption and lack of rule of law lead to the wealthy and well-connected siphoning off most of the gains, the majority may experience stagnant or declining life standards, causing the poverty rate to be high. Therefore, instead of using one single indicator, we have chosen to use the arithmetic average of these 11 variables as our indicator of institutional quality.

One would be tempted to predict higher institutional quality to be correlated with lower poverty rates. However, the case is not trivial. It is possible that an institutional reform would impose high transaction costs on the poor and thus increase the poverty rate, as mentioned by Chong and Calderon (2000A). After the reform, the poor have to learn new mechanisms to survive, as the former mechanisms are no longer useful. Such transaction costs may be high, especially for the poorest and the least educated.

4. Empirical strategy and evidence

4.1 Empirical strategy

We attempt to answer two main questions in this study. The first is whether the countries with higher levels of capital account openness have lower poverty rates. The second question is whether the effect of capital account openness on poverty depends on the level of institutional quality in the country. The period of investigation for the purposes of this study is 1985–2005. This is entirely determined by the availability of data. It is actually the longest time span for which data exist for most of the variables that are included in our estimable relationships.

We conduct panel data analysis mainly, while we report our findings based on cross-country analysis for comparability. The panel data approach has some important advantages and one disadvantage, when compared with cross-country analysis (Demirgüç-Kunt and Levine, 2008). As a first advantage, with panel data we can make use of both the time-series and the cross-sectional variation in the data. A second advantage is that in the cross-country regression, the unobserved country-specific effect is part of the error term so that correlation between the error term and the explanatory variables results in biased coefficient estimates. Furthermore, if the lagged dependent variable is included among the regressors, which is usually the case in cross-country regressions, then the country-specific effect is certainly correlated with the regressors. To control for the presence of unobserved country-specific effects, the traditional method is to first-difference the regression equation to eliminate the country-specific effect and then use instrumental variables to control for endogeneity. This approach is known to eliminate biases due to country-specific omitted variables.

Another advantage of panel data analysis, and a disadvantage of cross-country analysis, is that the latter model with instrumental variables does not control for the potential endogeneity of all the regressors. Uncontrolled endogeneity can lead to inappropriate inferences on the coefficients of main interest. The panel data approach takes care of the endogeneity problem by using lagged values of the regressors as instruments. The main problem associated with panel data analysis is using data averaged over shorter time periods. This means that estimation results show us shorter-term effects and probably not long-term effects, which should be kept in mind when interpreting the estimates.

To conduct panel data analysis, we estimate a dynamic panel regression model expressed as follows:

$$P_{i,t} = \beta_0 + \beta_1 P_{i,t-1} + \beta_2 KAOPEN_{i,t} + \beta_3 I_{i,t} + X_{i,t}\Gamma + \mu_i + \lambda_t + \eta_{i,t} \qquad (1)$$

where t stands for the period and i represents country, P is the poverty rate, $KAOPEN$ is the capital account openness index and I is the institutional quality indicator. The error term is composed of a country-specific fixed effect, μ_i, a time-specific effect, λ_t, and a time-varying random error term, the last term in equation (1).

The matrix Γ includes various control variables, all of which are taken from the World Development Indicators (WDI) 2007 database of the World Bank:[1]

(1) 'Growth', the per capita growth rate of the gross domestic product (GDP) (in %), is included since we are interested in estimating the direct effect of capital account liberalisation after controlling for the growth effect. This is expected to have a negative sign as countries that grow faster are expected to realise a larger reduction in poverty.

(2) 'Fertility', the fertility rate calculated as the total number of births per woman, which is expected to have a positive sign since larger households are expected to be poorer.

(3) 'Inflation', the inflation rate calculated as the percent annual change in consumer prices; included to control for the macroeconomic environment and is expected to have a positive sign. The poor are less protected against the purchasing power reducing effects of inflation. Moreover, countries with higher inflation rates generally have poor macroeconomic management under which poverty reduction is expected to be less likely.

(4) 'Gini', the Gini measure of inequality. This variable is included since the alleviating effects of growth and liberalisation on poverty are thought to depend on the level of inequality. With a higher level of inequality, and for a given rate of growth, less of the growth is expected to go to raising the incomes of the poor and the smaller the reduction in poverty would be. On the other hand, with higher inequality, the number of households that can potentially be relieved of poverty may be higher and the larger the reduction in poverty would be. Therefore the expected sign of the 'Gini' variable is ambiguous. The Gini measure is based on consumption in some countries and on expenditure in other countries, just like the poverty measures (see subsection 3.1).

(5) 'GovCons', general government final consumption expenditure, taken as a percentage of GDP, and its expected sign is ambiguous since a higher share of government expenditure may or may not reduce poverty, depending on how the expenditure is allocated to different groups in the country.

(6) 'Primary', the primary rate of schooling, included to control for the human capital stock, is expected to have a negative sign since with better education we expect a larger reduction in poverty.

We also included in our regressions the interaction term between the KAOPEN index and institutional quality to test for the existence of a threshold effect. It is possible that the beneficial effects of capital account openness display themselves only after the country reaches a certain level of institutional quality. We find that the interaction term has very low statistical significance in all regressions (not shown in the tables), therefore we conclude that there is no detectable threshold effect.

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[1] This was the most recent version of the WDI when we started this study.

505   In the model in equation (1), if μ_i is correlated with the explanatory variables, then the coefficient estimates are biased. Notice that lagged poverty rate is a regressor and it is correlated with μ_i. To solve the bias problem the country-specific effect can be eliminated by taking the first-difference of equation (1).

$$
\begin{aligned}
P_{i,t} - P_{i,t-1} = &\ \beta_1 \left(P_{i,t-1} - P_{i,t-2} \right) + \beta_2 \left(KAOPEN_{i,t} - KAOPEN_{i,t-1} \right) \\
&+ \beta_3 \left(I_{i,t} - I_{i,t-1} \right) + \left(X_{i,t} - X_{i,t-1} \right) \Gamma + \left(\lambda_t - \lambda_{t-1} \right) + \left(\eta_{i,t} - \eta_{i,t-1} \right)
\end{aligned}
\tag{2}
$$

However, this creates another problem. In equation (2), the error term is correlated with
510   the $\left(P_{i,t-1} - P_{i,t-2} \right)$ term. This can be solved by using the lagged values of the explanatory variables in levels as instruments in the difference equation.

There are two further problems regarding the estimation of equation (1) by differencing. First, the cross-country dimension of the data is lost. Second, if the regressors in equation (1) are persistent over time, then their lagged values are weak instruments for the
515   regression in differences. This can lead to a large bias in estimates. To address these problems, we estimate the regression in differences jointly with the regression in levels using the generalised method of moments (GMM) estimation. The procedure uses lagged levels of the regressors as instruments in the difference equation, and lagged differences of the regressors as instruments in the levels equation. This method, called the 'system
520   GMM' has been proposed by Arellano and Bover (1995) and has been used in many studies (see, e.g., Beck et al., 2000; Jeanneney and Kpodar, 2008).

Another advantage of this method is that we can control for potential endogeneity of all regressors, which is achieved by using the lags of all explanatory variables as instruments, called the internal instruments. The variables that are believed to be exogenous can be
525   specified as additional instruments, which are called the external instruments. In our case, these are the time dummies. To sum up, the main arguments for using the system GMM estimation are that it does not eliminate cross-country variation, it reduces potential biases of the difference estimator in small samples, and it can control for the potential endogeneity of all regressors.

530   When preparing our sample for regression analysis, we divide the 1985–2005 period into five non-overlapping sub-periods. The five sub-periods include years 1985–88, 1989–92, 1993–96, 1997–2000 and 2001–05. All variables in the regression equation are defined as sub-period averages. We follow this strategy in an effort to reduce the number of gaps in the data. As mentioned in subsection 3.1, poverty (and inequality) data are
535   collected via household surveys, which are conducted from time to time with varying frequencies across countries. When we use one year as the cross-sectional unit, the number of observations drops to 31 (in the specification with the smallest number of control variables) and the number of countries to 15. With so many gaps in the data, it is unfortunately not possible to build a balanced panel with a meaningful size. Further-
540   more, sparse data problem is valid not only for the dependent variable, but also for some of the independent variables.

The descriptive statistics of the variables used in the panel data analysis are presented in Table 1. In this table, we can see that the average poverty rate first increased and then decreased from period 1 to period 5. The number of observations increases as we move
545   from period 1 to period 5. Poverty data are available for, at most, 76 countries while KAOPEN, Growth and Fertility data are available for 93 countries at the most. The

Table 1. *Descriptive statistics of the variables used in the panel data regressions (means, standard deviations and sample sizes are reported for each period)*

	Period 1 Mean Std.Dev. N	Period 2 Mean Std.Dev. N	Period 3 Mean Std.Dev. N	Period 4 Mean Std.Dev. N	Period 5 Mean Std.Dev. N	Overall Mean Std.Dev. N
P	0.2919	0.4155	0.3999	0.3831	0.3435	0.3698
	0.3153	0.3169	0.2985	0.2881	0.2748	0.2991
	54	58	73	76	63	324
KAOPEN	-0.8363	-0.7152	-0.2031	0.0949	0.3104	-0.2133
	1.1209	1.1369	1.1122	1.4245	1.4953	1.3616
	69	70	71	93	93	396
I	5.1256	5.5370	5.5731	7.4916	8.2185	4.9753
	1.2400	1.2803	0.9261	1.6822	1.8568	0.9111
	67	69	71	81	81	369
Growth	-0.1752	-0.6846	1.5336	2.1482	1.7246	0.0101
	12.2158	5.8993	4.1855	3.0770	10.9374	0.0799
	73	80	93	93	93	432
Fertility	4.3867	3.9670	3.5529	3.3328	3.0736	3.6633
	1.8145	1.7473	1.7251	1.7163	1.6237	1.7815
	93	93	90	93	93	462
Inflation	121.4045	163.3212	99.0840	16.2619	8.4488	75.7680
	518.2064	592.7131	290.2835	34.2435	12.2302	355.6493
	66	72	90	90	90	408
Gini	36.4480	40.6613	41.6758	41.0592	41.5626	40.4562
	12.2409	10.4482	9.7630	9.0073	8.8932	10.1229
	54	58	73	76	63	324
GovCons	14.0842	14.3313	14.0719	13.7729	14.0872	14.0689
	5.9184	5.1341	4.9145	4.8320	4.9659	5.1209
	77	92	92	92	91	444
Primary		68.9468	76.4639	80.4545	83.5516	78.2915
		25.2976	24.2419	23.1952	20.6222	23.5855
	0	57	67	84	90	298

statistics also show that there is quite a degree of variation in the data utilised so that one should be confident that reasonable estimated relationships should emerge.

Our panel has a short time dimension, but the number of cross-sectional units is large. We should mention that the estimation technique that we use (the GMM) was designed especially for data with these characteristics.

4.2 Empirical results

In Table 2 (and later in Tables 3, 4 and 5), we report the *p*-values of the Arellano–Bond second-order autocorrelation test applied to the residuals in differences (see Roodman, 2006, for more information). This test checks for the existence of first-order autocorrelation in $\eta_{i,t}$. If the $\eta_{i,t}$ terms in equation (2) are serially correlated of order 1 then, for instance, $P_{i,t-2}$ is endogenous to the $\eta_{i,t-1}$ in the error term in differences, making $P_{i,t-2}$ an invalid instrument. In such a case, one needs to use deeper lags as instruments. The *p*-values of the Arellano–Bond test are quite high, which means that we cannot reject the null hypothesis that there is no autocorrelation. Therefore, there is no need to restrict

Table 2. *System GMM coefficient estimates and p-values (in parentheses). Dependent variable: headcount index*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
P^0	0.948***	0.976***	0.788***	0.785***	0.710***	0.700***	0.760***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
KAOPEN	0.010	0.009	0.010	0.011	0.013*	0.013	0.013*
	(0.131)	(0.115)	(0.199)	(0.171)	(0.099)	(0.103)	(0.093)
I	-0.010	0.004	-0.056**	-0.059*	-0.051*	-0.053*	-0.043**
	(0.654)	(0.858)	(0.037)	(0.055)	(0.080)	(0.071)	(0.027)
Growth		-0.744	0.323	0.412	0.554	0.610	-0.0670
		(0.118)	(0.474)	(0.433)	(0.295)	(0.291)	(0.116)
Fertility			0.029	0.030	0.058**	0.060**	0.011
			(0.116)	(0.127)	(0.027)	(0.024)	(0.685)
Inflation				0.000	0.000	0.000	0.000
				(0.699)	(0.687)	(0.728)	(0.609)
Cini					-0.005*	-0.005*	-0.003
					(0.076)	(0.080)	(0.270)
GovCons						-0.001	-0.005
						(0.819)	(0.200)
Primary							-0.001
							(0.318)
Number of obs	173	172	170	170	170	170	141
Number of countries	67	67	67	67	67	67	65
Number of instruments	35	44	57	57	61	61	56
Arellano-Bond	0.342	0.422	0.212	0.175	0.19	0.189	0.873
Hansen test	0.597	0.404	0.372	0.355	0.467	0.434	0.527

Notes:
1. All regressions include a constant. Asterisks show statistical significance of the parameter estimates at: *10%; **5%; ***1%.
2. The countries whose data are included in these regressions are Argentina, Armenia, Bangladesh, Belarus, Bolivia, Brazil, Bulgaria, Burkina Faso, Chile, China, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ghana, Guatemala, Honduras, Hungary, India, Indonesia, Iran, Jamaica, Jordan, Kenya, Latvia, Lithuania, Madagascar, Malawi, Malaysia, Mali, Mexico, Moldova, Mongolia, Nicaragua, Niger, Nigeria, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Senegal, Slovenia, South Africa, Sri Lanka, Thailand, Trinidad and Tobago, Tunisia, Turkey, Uganda, Ukraine, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe. In three cases poverty data are available separately for the urban and rural areas (China, Indonesia and India). These are treated as different observations.
3. The estimates are obtained by using the one-step system GMM estimation technique implemented by the 'xtabond2' command in Stata, version 9.2. The 'xtabond2' command allows the researcher to choose various options. We chose the orthogonal deviations option to maximise the sample size. Therefore, the estimated system of equations is composed of the levels equations, and the level equations transformed by orthogonal deviations. Since the estimation procedure assumes that errors are correlated only within countries and not across them, and since contemporaneous correlation is probably the most likely form of cross-country correlation, we included time dummies to remove time-related shocks from the error term. The use of time dummies is highly recommended (see Roodman, 2006), as it makes this assumption more plausible.
4. We used two sets of instruments. The first set includes traditional instrumental variable (IV)-style instruments, which are the time dummies. The second set includes the GMM-style instruments, in which each lag of the instrumented variable acts as an instrument.

the instruments to deeper lags. In the same table, we also report the *p*-values of the Hansen test of over-identifying restrictions. With high *p*-values, the test fails to reject the null hypothesis of the validity of the instruments, which clearly suggests that the instruments are valid. The existence of too many instruments has been shown to cause problems

565 (Roodman, 2006). Although there is no clear guidance on how many is too many, Roodman (2006) recommends a rule of thumb, which says to keep the instrument count below the number of countries. To establish that, we restricted the lags used in the instruments in our regressions as necessary.

We obtain system GMM estimates by employing the 'xtabond2' command in Stata
570 version 9.2. One useful feature of this command is that it implements the 'forward orthogonal deviations' transformation, which works as follows: instead of subtracting the previous observation from the current one, it subtracts the average of all future available observations of a variable. Regardless of the number of gaps in the data, this transformation is computable for all observations except the last for each country, so it
575 minimises data loss. And since lagged observations do not enter the formula, they are valid as instruments. This method, in addition to the strategy of using period averages, is very helpful in making full use of the data in our case, since poverty data are notoriously sparse and taking differences would leave us with a very small sample size to work with (Roodman, 2006).

580 Our estimates are presented in Table 2. We find that the initial level of poverty has a positive sign and is statistically highly significant. A higher level of institutional quality is associated with lower poverty rates, and the effect is statistically significant in most regressions. A one-point increase in the institutional quality indicator reduces poverty rate by about a half percentage point.

585 We also find that countries with more liberalised capital account regimes have higher poverty rates. This is a striking result. Although the effect is not statistically significant in all specifications, it is in some. Our findings on the effect of 'Growth' on poverty are mixed. The sign of this variable changes in different specifications; the effect is not statistically significant. We expect economic growth to reduce poverty in the long run. Our GMM
590 estimates are based on four 4-year sub-periods, and one (2001–2005) 5-year sub-period, which are probably too short to represent the long run. In the short run, the poverty reducing effect of growth may not be as clear. Another possibility is that the relationship between growth, poverty and capital account liberalisation is more complex than the way it is handled here. The other control variables in the regression have the expected signs in
595 general, but they have low statistical significance.

To summarise, we have found evidence to support the claim that developing countries with better quality institutions have been better at reducing their poverty rates. There is some evidence that developing countries with more open capital accounts have higher poverty rates. However, the coefficient of interest is not statistically significant in many
600 regressions, therefore we cannot make any strong claims. What is important is that we have not found any evidence to verify that capital account openness helps developing countries to reduce poverty rates, based on our analysis and our assumptions.

4.3 Further robustness checks

4.3.1. Panel data regressions. To make sure that our findings are not specific to the poverty
605 measure that we adopt, we try two alternative measures, namely the poverty gap and the income share of the poorest 20% of the population. Whilst there does not seem to be an objection to using the income share of the poorest 20% as a robustness check, a word of caution should be added in terms of this poverty measure. Strictly speaking, this is not a poverty measure; rather, it is an inequality measure weighted (entirely) toward the

Table 3. *Robustness check: system GMM coefficient estimates and p-values (in parentheses). Dependent variable: poverty gap*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
P^0	0.63892***	1.0041***	0.81463***	0.8123***	0.75463***	0.75713***	0.76649***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
KAOPEN	0.69851	0.52555	1.31326**	1.3474**	0.88391*	0.88128*	1.04603
	(0.365)	(0.268)	(0.034)	(0.037)	(0.073)	(0.079)	(0.122)
I	-3.4186*	0.26482	-2.9522*	-3.1116	-2.0618	-2.0497	-1.8236
	(0.063)	(0.832)	(0.100)	(0.116)	(0.244)	(0.253)	(0.225)
Growth		-29.319	25.5526	29.837	36.2101	35.3854	30.0513
		(0.184)	(0.490)	(0.470)	(0.420)	(0.459)	(0.422)
Fertility			1.56632	1.6116	2.92234*	2.90823*	0.52803
			(0.212)	(0.223)	(0.061)	(0.062)	(0.677)
Inflation				0.0012	0.00087	0.00091	-0.008
				(0.750)	(0.793)	(0.796)	(0.277)
Gini					-0.1758	-0.174	-0.1531
					(0.300)	(0.312)	(0.293)
GovCons						0.01512	-0.2735
						(0.944)	(0.343)
Primary							-0.1538
							(0.233)
Number of obs	173	172	170	170	170	170	141
Number of countries	67	67	67	67	67	67	65
Number of instruments	43	48	57	57	61	61	61
Arellano-Bond	0.123	0.302	0.276	0.225	0.181	0.184	0.824
Hansen test	0.162	0.493	0.273	0.189	0.337	0.334	0.475

Notes to Table 2 apply.

relatively poorest quintile of the population. With this word of warning in mind, we repeat the system GMM estimations for this alternative measure.

Our new results are reported in Tables 3 and 4. Based on the signs of the coefficient estimates of the KAOPEN variable, we can say that a higher degree of capital account liberalisation is associated with a higher poverty gap and a lower income share of the poorest 20% of the population. This effect is statistically significant only in some specifications in Table 3, but in most specifications in Table 4. To compare with the results reported in Table 2, there is now stronger evidence that capital account openness is not good for the poor in developing countries. However, the association between institutional quality and poverty is weaker than when the headcount ratio is used as the dependent variable.

As another robustness analysis, we question whether a particular region is determining the results. To answer this question, we exclude the regions from the regressions one by one. We pick the specification that includes the most regressors. Table 5 presents our findings. Compared to the results in column 7 in Table 2, it is evident that we lose the statistical significance of the KAOPEN variable when we exclude Eastern European or Latin American countries. Moreover, we lose the statistical significance of the institutional quality indicator when we exclude Latin American countries. This is to some extent due to a sizable reduction in the sample size. These findings may also suggest that there are different dynamics at work in different regions. This issue should be investigated further in later work as better data become available.

Table 4. *Robustness check: system GMM coefficient estimates and p-values (in parentheses).*
Dependent variable: income share of the poor

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
IncShare^0	0.957***	0.895***	0.908***	0.889***	-0.109	0.023	0.145
	(0.000)	(0.000)	(0.000)	(0.000)	(0.414)	(0.842)	(0.126)
KAOPEN	-0.136	-0.186*	-0.199**	-0.223*	-0.185**	-0.173***	-0.130*
	(0.337)	(0.091)	(0.034)	(0.093)	(0.011)	(0.009)	(0.077)
I	-0.038	-0.138	-0.070	-0.118	0.045	0.067	-0.050
	(0.858)	(0.531)	(0.772)	(0.577)	(0.851)	(0.731)	(0.793)
Growth		5.309	6.903	9.680	-1.811	1.999	1.148
		(0.282)	(0.279)	(0.117)	(0.674)	(0.537)	(0.704)
Fertility			0.029	0.126	0.116	0.089	0.094
			(0.817)	(0.509)	(0.337)	(0.422)	(0.526)
Inflation				0.000	0.001	0.000	0.001
				(0.755)	(0.170)	(0.518)	(0.043)
Gini					-0.270***	-0.238***	-0.212***
					(0.000)	(0.000)	(0.000)
GovCons						-0.036	-0.020
						(0.207)	(0.437)
Primary							0.007
							(0.399)
Number of obs	145	144	143	143	139	139	121
No.countries	62	62	62	62	60	60	59
No.instruments	35	44	53	50	39	44	53
Arellano-Bond	0.777	0.785	0.731	0.741	0.622	0.527	0.131
Hansen test	0.423	0.512	0.392	0.729	0.971	0.765	0.741

Notes:
1. All regressions include a constant.
2. The countries whose data are included in these regressions are Albania, Argentina, Armenia, Bangladesh, Belarus, Bolivia, Brazil, Bulgaria, Burkina Faso, Chile, Colombia, Costa Rica, Cote d'Ivoire, Croatia, Dominican Republic, Ecuador, Egypt, El Salvador, Estonia, Ethiopia, Ghana, Guatemala, Guyana, Honduras, Hungary, Indonesia, Iran, Jamaica, Jordan, Latvia, Lithuania, Madagascar, Malaysia, Mexico, Moldova, Mongolia, Morocco, Nicaragua, Niger, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Romania, Russian Federation, Senegal, Slovenia, South Africa, Sri Lanka, Thailand, Trinidad and Tobago, Tunisia, Turkey, Ukraine, Uruguay, Venezuela, Vietnam, Zambia, Zimbabwe. In one case (Indonesia) poverty data are available separately for the urban and rural areas. These are treated as different observations.
   Notes 3 and 4 to Table 2 apply.
5. To keep instrument count below the number of countries, we used two period or deeper lags of the regressors as instruments.

4.3.2. Cross-section regressions. To conduct a cross-country analysis, and thereby explain the change in poverty, we specify our model as follows:

$$P_i^T = \beta_0 + \beta_1 P_i^0 + \beta_2 KAOPEN_i + \beta_3 I_i + X_i \Gamma + \varepsilon_i \tag{3}$$

or, equivalently,

$$P_i^T - P_i^0 = \beta_0 + (\beta_1 - 1) P_i^0 + \beta_2 KAOPEN_i + \beta_3 I_i + X_i \Gamma + \varepsilon_i. \tag{3'}$$

We include the initial poverty measure as a regressor for two reasons. First, poverty rates usually change very slowly and, second, having such a regressor helps control for the country-specific factors that explain poverty in that particular country. The matrix Γ includes various control variables as before. In this case, it includes, among others, the natural logarithm of initial per capita income 'ln(Y)' and region dummies. All other variables in this matrix are expressed as their period averages and are defined as in subsection 4.1.

Table 5. *Robustness check: regional influences system GMM coefficient estimates and p-values (in parentheses). Dependent variable: headcount index*

	(1)	(2)	(3)	(4)	(5)	(6)
P^0	0.825***	0.638**	0.562***	0.659***	0.660***	0.719***
	(0.000)	(0.014)	(0.007)	(0.000)	(0.001)	(0.000)
KAOPEN	0.020	0.007	0.015	0.023	0.024*	0.023*
	(0.101)	(0.607)	(0.392)	(0.109)	(0.080)	(0.058)
I	-0.086**	-0.079**	0.012	-0.076**	-0.087**	-0.115***
	(0.018)	(0.018)	(0.781)	(0.046)	(0.021)	(0.004)
Growth	0.869	-0.390	-1.067	-0.103	0.476	0.102
	(0.493)	(0.615)	(0.441)	(0.908)	(0.580)	(0.898)
Fertility	0.021	0.036	0.058	0.054	0.029	0.000
	(0.386)	(0.421)	(0.211)	(0.182)	(0.360)	(0.570)
Inflation	0.000	0.000	0.001	0.000	0.000	0.000
	(0.418)	(0.819)	(0.169)	(0.676)	(0.553)	(0.512)
Gini	-0.002	-0.004	-0.005	-0.005	-0.002	-0.002
	(0.565)	(0.438)	(0.405)	(0.106)	(0.437)	(0.601)
GovCons	-0.007	-0.012	-0.011	-0.007	-0.008	-0.009
	(0.243)	(0.108)	(0.109)	(0.296)	(0.224)	(0.145)
Primary	0.001	-0.001	-0.003	0.001	-0.001	0.000
	(0.490)	(0.760)	(0.346)	(0.714)	(0.775)	(0.868)
Number of obs	119	114	89	132	127	124
No.countries	57	50	45	61	60	52
No.instruments	31	31	31	31	31	31
Arellano-Bond	0.625	0.542	0.893	0.593	0.789	0.501
Hansen test	0.621	0.722	0.902	0.917	0.631	0.863

Notes:
Notes 1–4 to Table 2 apply.
5. The system GMM estimates in columns (1)–(6) were obtained by excluding one region from the regression at a time. In column (1) East Asian countries were excluded; in (2) Eastern European; in (3) Latin American; in (4) Middle Eastern; in (5) South Asian; in (6) Sub-Saharan Africa countries were excluded from the regression.
6. To keep instrument count below the number of countries, we used three period or deeper lags of the regressors as instruments.

Equation (3) is estimated first by ordinary least squares (OLS). We report the estimates and the *p*-values of these estimates (in parentheses) in Table 6. We find that, as expected, initial poverty rate is positively related to the end-of-period poverty rate. It is also statistically highly significant in the regression. Moreover, a higher level of institutional quality is associated with a lower level of poverty. A one-point increase in the institutional quality indicator reduces poverty rate by about a half percentage point. However, the effect has low statistical significance in many regressions. Although the coefficient estimate of the KAOPEN index takes a negative value in most regressions, meaning that higher openness is associated with lower poverty, its effect has very low levels of statistical significance in the regressions. It is true that none of the KAOPEN coefficients is remotely significant. The average growth rate is statistically highly significant with the expected sign. The effect of growth is more pronounced in cross-country analysis than in the panel data analysis, and this is as expected since the cross-country analysis is based on 21-yearly averages, while the latter is based on four- or five-yearly period averages of the variables. The Gini index is statistically highly significant with a negative sign, meaning that in countries with a higher

Table 6. *OLS regression coefficient estimates and p-values (in parentheses). Dependent variable: headcount index*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
P⁰	0.591	0.451	0.726	0.676	0.670	0.665	0.586	0.713	0.663
	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
KAOPEN	-0.005	0.003	-0.010	-0.009	-0.004	-0.006	-0.001	-0.148	-0.106
	(0.695)	(0.830)	(0.406)	(0.506)	(0.719)	(0.565)	(0.925)	(0.137)	(0.252)
I	-0.096	-0.079	-0.050	-0.043	-0.031	-0.042	-0.036	-0.055	-0.031
	(0.001)	(0.024)	(0.135)	(0.215)	(0.339)	(0.212)	(0.338)	(0.130)	(0.340)
KAOPEN*I								0.026	0.019
								(0.107)	(0.255)
ln(Y)		-0.082							
		(0.251)							
Growth			-0.025	-0.023	-0.023	-0.023	-0.020	-0.024	-0.023
			(0.008)	(0.012)	(0.048)	(0.023)	(0.056)	(0.014)	(0.064)
Schenrol			-0.001						
			(0.380)						
Inflation					0.000				0.000
					(0.431)				(0.370)
Fertility					0.033	0.031			0.035
					(0.140)	(0.050)			(0.110)
GovCons					-0.003				-0.004
					(0.501)				(0.318)
Gini					-0.006	-0.005			-0.005
					(0.003)	(0.002)			(0.003)
Primary					0.000				0.000
					(0.959)				(0.907)
East Asia dummy							0.096		
							(0.172)		
Eastern Europe dummy							0.080		
							(0.004)		
Latin dummy							0.046		
							(0.187)		
South Asia dummy							0.207		
							(0.036)		
Sub-Sah.Africa dummy							0.315		
							(0.000)		
R-squared	0.8242	0.8377	0.8519	0.8548	0.8882	0.8848	0.9093	0.8585	0.891
Number of obs.	46	46	46	46	46	46	46	46	46
Ramsey's Reset	0.0633	0.0102	0.0929	0.14	0.5688	0.6251	0.5803	0.4348	0.765

Notes:
1. All regressions include a constant. In all regressions, standard errors are robust to the presence of arbitrary heteroskedasticity.
2. The countries included in the cross-country regressions are Argentina, Bangladesh, Bulgaria, Belarus, Bolivia, Brazil, Chile, China, Cote d'Ivoire, Colombia, Costa Rica, Dominican Republic, Estonia, Guatemala, Honduras, Croatia, Hungary, Indonesia, India, Jamaica, Jordan, Kazakhstan, Sri Lanka, Lithuania, Latvia, Moldova, Mexico, Mali, Nigeria, Pakistan, Panama, Peru, Philippines, Poland, Romania, Russian Federation, El Salvador, Thailand, Tunisia, Turkey, Uganda, Ukraine, Uruguay, and Venezuela. In two cases (China and India) poverty data are available separately for the urban and rural areas. These are treated as different observations.

level of inequality, as measured by the Gini index, poverty reduction has been larger during the 21-year period that we analyse. A higher fertility rate is associated with higher poverty rates. The interaction effect (*KAOPEN* ⋆ *I*) is statistically insignificant, therefore we cannot detect any threshold effect. The education-related controls as well as the 'Inflation' and 'GovCons' variables are also statistically insignificant.

In column (7) of Table 6 we report the estimates of the regression that includes region dummies. There are six regions, as specified by the World Bank, namely East Asia, Eastern Europe and Central Asia, Latin America and the Caribbean, Middle East and North Africa, South Asia, and Sub-Saharan Africa. The Middle East and North Africa dummy is the excluded one in the regression. The coefficient estimates for these dummy variables reflect regional differences that remain in poverty rates even after controlling for many country-specific characteristics. All of these dummy variables enter the regression with a positive sign. The Eastern Europe, South Asia and Sub-Saharan Africa dummies are statistically significant at 4%, with the rest being statistically insignificant. The introduction of the region dummies reduces the coefficients of other controls in absolute value, but does not change our conclusion regarding their statistical significance.

In Table 6, we report, along with the number of observations, the R-squared statistic, and the *p*-value of Ramsey's RESET test for possible specification error. The null hypothesis for this test is that the powers of the fitted values of the dependent variable have no significance in the regression, which is rejected in the specification in columns (1)–(3) at 10% significance. It appears that the first three specifications have too few controls, but the rest are not misspecified, and we should, thus, have confidence in the linear specification.

Although we have specified the regression equations in such a way as to minimise endogeneity, it is still possible that capital account openness is endogenous to poverty. One could construct the argument that countries that have high poverty rates would be more willing to experiment with financial market liberalisation than countries that are doing well in this respect. This would lead to an endogeneity bias in our estimates. In order to control for possible endogeneity of the KAOPEN variable and the interaction term ($KAOPEN_i$ ⋆ I_i), we use instrumental variables (IV) estimation. Various instruments, such as the legal origin of the country (Beck *et al.*, 2000), government budget surplus, lagged per capita GDP and regional dummies (Chong and Calderon, 2000B) have been used for financial development. We know of no instruments for financial or, in particular, capital account liberalisation. It is not clear to us whether the instruments mentioned above are uncorrelated with the error term in our regressions, therefore we choose to use a different instrument set. The instruments that we use are the deviations of KAOPEN and the interaction term between KAOPEN and I from their region-specific means.[1] Our instruments have high correlation with the endogenous variables by construction and low correlation with the error term, under the condition that the degree of correlation of shocks to poverty in a country with KAOPEN index is similar to their correlation with KAOPEN index in other countries within the region.

The IV estimation results are presented in Table 7. The statistical significance of the KAOPEN variable is very low. This variable does not become significant when we control for its possible endogeneity. Its sign varies in different specifications. As in the OLS results, a higher level of institutional quality is associated with a lower level of poverty. A one-point

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[1] The instrument is defined as the deviation of variable X from its region-specific mean, expressed as $X_i^M = X_i - \frac{1}{R}(\sum_{i=1}^{R} X_i)$, where X_i^M is the instrument and there are R countries in the region that country i belongs to. These instruments have high correlation with the endogeneous variables and low correlations with the error terms by construction.

Table 7. *Instrumental variables (IV) regression coefficient estimates and p-values (in parentheses). Dependent variable: headcount index*

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
P⁰	0.592***	0.435***	0.722***	0.667***	0.670***	0.664***	0.726***	0.667***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
KAOPEN	0.008	0.015	0.002	0.003	0.001	-0.002	0.045	-0.049
	(0.548)	(0.222)	(0.869)	(0.807)	(0.953)	(0.858)	(0.722)	(0.592)
I	-0.101***	-0.081**	-0.056*	-0.048	-0.033	-0.044	-0.055*	-0.033
	(0.000)	(0.012)	(0.070)	(0.129)	(0.248)	(0.147)	(0.073)	(0.245)
KAOPEN*I							-0.008	0.009
							(0.726)	(0.576)
ln(Y)		-0.092						
		(0.157)						
Growth			-0.024***	-0.022**	-0.023**	-0.023**	-0.024***	-0.023***
			(0.007)	(0.011)	(0.026)	(0.012)	(0.007)	(0.030)
Schenrol				-0.001				
				(0.283)				
Inflation					0.000			0.000
					(0.329)			(0.300)
Fertility					0.032)*	0.031**		0.033**
					(0.097	(0.030)		(0.081)
GovCons					-0.003			-0.004*
					(0.440)			(0.319)
Gini					-0.006***	-0.005***		-0.006***
					(0.000)	(0.000)		(0.000)
Primary					0.000			0.000
					(0.898)			(0.980)
Number of obs	46	46	46	46	46	46	46	46
R-squared	0.8211	0.8352	0.8493	0.8525	0.8878	0.8845	0.8443	0.89
Durbin-Wu-Hausman p-value	0.0024	0.005	0.0025	0.0034	0.0734	0.1343	0.0127	0.1945
1st-stage results:								
Instrument 1 **(Partial R)**	0.9186	0.9188	0.9176	0.92	0.9516	0.9505	0.6502	0.8911
Instrument 2 **(Partial R)**							0.6713	0.9006

Notes:
Notes 1 and 2 to Table 6 apply
3. Instruments: deviations of KAOPEN and (KAOPEN*I) from their region-specific means as explained in the text.
4. The first-stage results show Shea's 'partial R-squared' measure of instrument relevance that takes intercorrelations among instruments into account (when there is more than one instrument).

700 increase in the institutional quality indicator reduces poverty rate by about a half percentage point. However, the effect has low statistical significance in many regressions. The average growth rate is statistically highly significant with the expected sign. Evidently, the IV estimates are not drastically different from the OLS estimates.

In Table 7, along with the coefficient estimates and their p-values, we report the p-values
705 of the Durbin–Wu–Hausman test for endogeneity. The null hypothesis of this test suggests that OLS estimation of the equation would yield consistent estimates; that is, any endogeneity associated with the regressors would not have deleterious effects on OLS estimates. A rejection of the null indicates that the effect of the endogenous regressors on the estimated relationship is meaningful, and instrumental variables techniques are
710 required. As can be seen in Table 7, the p-values of this test range from 0.24% to 19.44%. It thus follows that the null hypothesis can be rejected in most, but not all, cases. Although this means that the IV method should be used, OLS and IV estimates are very similar in magnitude. Therefore, for practical purposes, we may conclude that either set of equations can be used.

715 We also report in Table 7 under the 'first-stage results' heading the partial R-squared statistic from the regression of the endogeneous variables on all exogenous variables. The R-squared values are high, which indicates that our instruments are appropriate in the sense that they are very highly correlated with the endogeneous variables.

5. Summary and conclusions

720 In general terms, theory provides conflicting predictions concerning the relationship between capital account liberalisation and poverty alleviation. On the one hand, capital account liberalisation improves the allocation of capital, thereby exerting a large positive impact on the poor. To the extent that capital account liberalisation helps create better-functioning financial systems, financial services become available to a larger proportion of
725 the population and to the poor. On the other hand, it is likely that liberalisation and improvements in the financial system primarily benefit the rich and those who are politically connected. At the early stages of capital account liberalisation, financial services, and credit in particular, are limited to the wealthy and well connected. We have shown in subsection 2.2 that a number of arguments have been put forward by a number of
730 contributors to show that the situation of the poor may actually be harmed following capital account liberalisation. An important further implication, and one that relates directly to the focus of the paper, is that even if capital account liberalisation leads to higher growth, it is an open question whether liberalisation will lead to better living conditions for the poor.

735 We have used dynamic panel econometric methods and data for developing countries to test whether capital account liberalisation influences poverty. We thereby hope to have thrown some light on the conflicting theoretical issues identified above through new empirical evidence. Interestingly enough, the existing empirical evidence, such as exists, is as conflicting, if not more so, than the theory, and extremely sparse at the moment.

740 To summarise and to compare the results of our analyses, we can say that the evidence we have collected so far does not support the hypothesis that more open capital account regimes help alleviate poverty in developing countries. When the headcount ratio is used as the dependent variable, almost all estimates of the coefficient of the openness variable are statistically insignificant. What is noteworthy, however, is that developing countries with
745 more open capital account regimes are more likely to have higher indices of poverty gap;

moreover the effect is significant in most specifications. If we believe that the poverty gap index is more informative than the headcount ratio, then this result is quite telling. Similarly, capital account openness is associated with a lower income share of the poorest 20% of the population. Again, this effect is statistically significant in most specifications.

The poverty reducing effect of economic growth is more pronounced in the cross-country regression than in the panel data regression, as expected. There is some evidence that developing countries with higher quality institutions are better at reducing poverty, but statistical support for this claim is weak, both in cross-country and in panel data analyses.

In summary, this paper proposes a way to directly test a question that has considerable policy importance. All regression results reported in Tables 2–7 suggest that capital account liberalisation is not associated with a significant decrease in the poverty rate or an increase in the income share of the poor. In fact, liberalisation of the capital account increases poverty according to our estimates. We do not find evidence for a threshold effect of liberalisation. Our findings indicate also that good institutions, proxied as explained above, are associated with a decline in poverty. Furthermore, in our estimated relationships we tried to control for the possibility of endogeneity of the capital account liberalisation variable as well as the other explanatory variables. Endogeneity does not present any problems in our final results.

These findings are in fact not surprising when we think about the living conditions of the poor in developing countries. These people are mostly unskilled self-employed people, working on their extremely small-sized farms, or as artisans or small-scale entrepreneurs in shops or homes. The main constraints they face are marketing, credit, insurance and infrastructure. Such needs often require competent domestic policy-making and cannot be expected to be fulfilled by foreign investors. Moreover, if the needs of these people are not met, capital account liberalisation may increase their vulnerability by leaving them open to intense competition from people from the outside world. The financial crisis of August 2007 and the subsequent spread of it in the rest of the economy does not augur well at all for the poor, especially so in the developing world. The conclusions of this contribution become even more relevant and timely.

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