Department for International Development

UKaid from the British people

© AMISOM Public Information

WHAT POLICIES AND INTERVENTIONS HAVE BEEN STRONGLY ASSOCIATED WITH THE TRANSLATION OF GROWTH INTO REDUCTIONS IN INCOME POVERTY?

DFID SYSTEMATIC REVIEW, JULY 2016

The authors of this report are:

Edward Anderson, Maria Ana Jalles d'Orey, Maren Duvendack, Lucio Esposito. (School of International Development, University of East Anglia, Norwich, NR4 7TJ, United Kingdom.)

Funding

This is an independent report commissioned and funded by the Research and Evidence Division in the Department for International Development. This material has been funded by UK aid from the UK Government, however, the views expressed do not necessarily reflect the UK Government's official policies.

Acknowledgments

We are grateful for excellent research assistance in the literature screening process from Ines Afonso Roque Ferreira, Anthony Amoah, Victoria Zevallos Porles, and also from Paramita Muljono and Borja Perez-Viana in the further literature search and data extraction. We are also grateful for helpful comments from members of our External Advisory Board during the process of conducting the review, including Peter Lloyd-Sherlock and Hugh Waddington. We declare that we have no conflict of interest.

Conflicts of interest

There were no conflicts of interest in the writing of this report.

Contributions

The opinions expressed in this publication are not necessarily those of the EPPI-Centre/3IE or the funders. Responsibility for the views expressed remains solely with the authors.

Citation

This report should be cited as: Anderson E, Jalles d'Orey MA, Duvendack M, Esposito L (2016) *What policies and interventions have been strongly associated with the translation of growth into reductions in income poverty?* London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London

Picture

© AMISOM Public Information

SYSTEMATIC REVIEW SUMMARY

Fiscal policy and trade policy can make a substantial contribution to the translation of economic growth into income poverty reduction. However, the impact of other types of government policies and interventions is much less researched and understood.

ABOUT THIS SUMMARY

The overall aim of this systematic review is to identify and synthesise the empirical evidence on the impact of government policies on the translation of economic growth into reductions in income poverty. It was commissioned and funded by the UK Department for International Development (DFID). This summary is designed to provide an overview of the key evidence discussed in the review, to assist policy-makers and researchers in assessing the evidence in this field. It is not designed to provide advice on which interventions are more or less appropriate in particular contexts, but to summarise what is known in response to the above question.

SUMMARY

We find evidence of a moderate to strong negative association between government spending and income poverty, particularly health and education spending. We also find that cash transfers can make a large contribution to income poverty reduction, which often exceeds the contribution of in-kind transfers or indirect subsidies. There is, however, a general tendency for the poverty-reducing effect of cash transfers to be greater, the higher the level of a country's average income. We find no evidence to suggest that direct income taxes increase income poverty substantially, although indirect taxes often do, at least when considering their first-round impacts. We also find that trade liberalisation can have a substantial impact on income poverty, although this impact appears to have been more limited in low-income countries, and in sub-Saharan Africa, in comparison with other income groups and regions. For other sorts of government policies, including labour market reforms, privatisation, and land reforms, there has been much less research, which suggests priorities for further work.

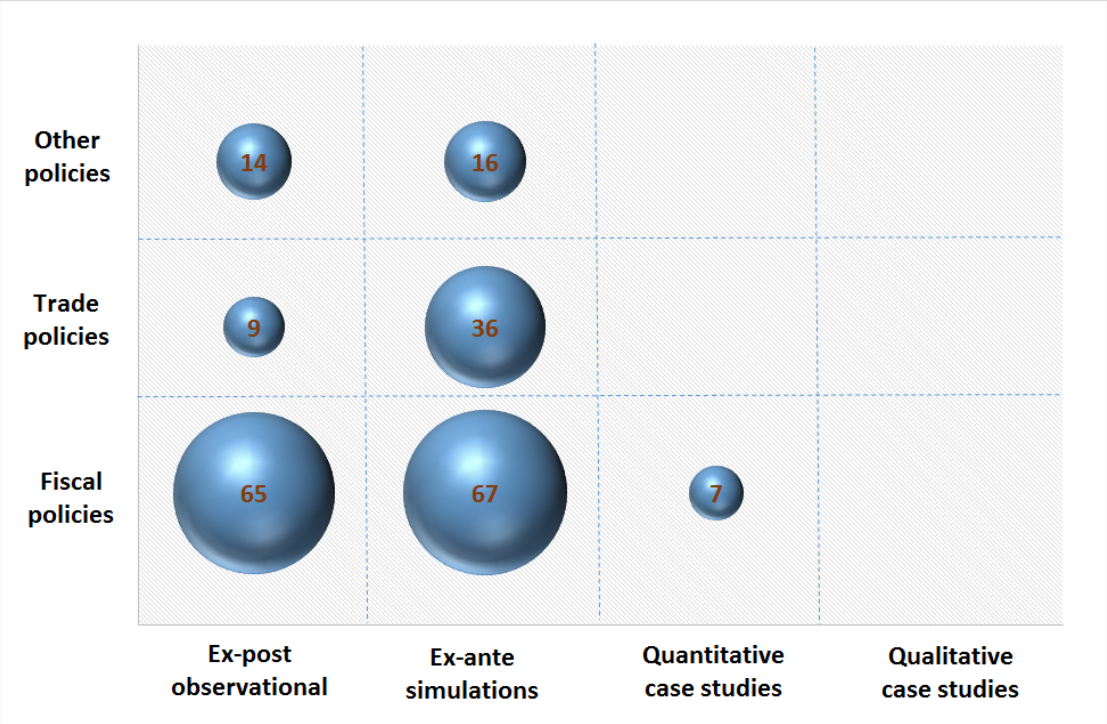
APPROACH

Our review is guided by a clear set of criteria which determine the studies included. It is restricted to studies focusing on low- and/or middle-income countries which use a recognised measure of absolute income poverty produced since 1990 and which are written in English, Spanish, or Portuguese. The review draws on a range of evidence: ex-post observational studies (e.g. cross-country econometric analysis), ex-ante simulation studies (e.g. computable general equilibrium models), quantitative case studies, and qualitative case studies.

Following an exhaustive and comprehensive process of searching and screening, including a range of bibliographic databases and websites, we identified a total of 207 separate studies meeting our inclusion criteria. Each of these studies provides evidence about the effect of one or more government policies on the translation of economic growth into income poverty reduction, in one or more low- or middle-income countries.

Figure I gives an overview of the studies included in the review, categorised by the type of government policy (vertical axis), and the study design used (horizontal axis). It makes clear that the majority of the evidence relates to fiscal and trade policy interventions, using either an ex-post observational or ex-ante simulation study design. We found few quantitative case studies which provide direct evidence of the effects of government policies on income poverty. We also did not identify any studies which use a qualitative study design and which analyse the relationship between government policies and the translation of growth into income poverty reduction in sufficient detail to be included in the review.

Figure I: Number of studies by type of policy and study design



Notes: Some studies focus on more than one type of policy or use more than one study design, and are counted twice in this figure; the total number of studies included in the review is 207. *Source*: Tables 4–6, main report.

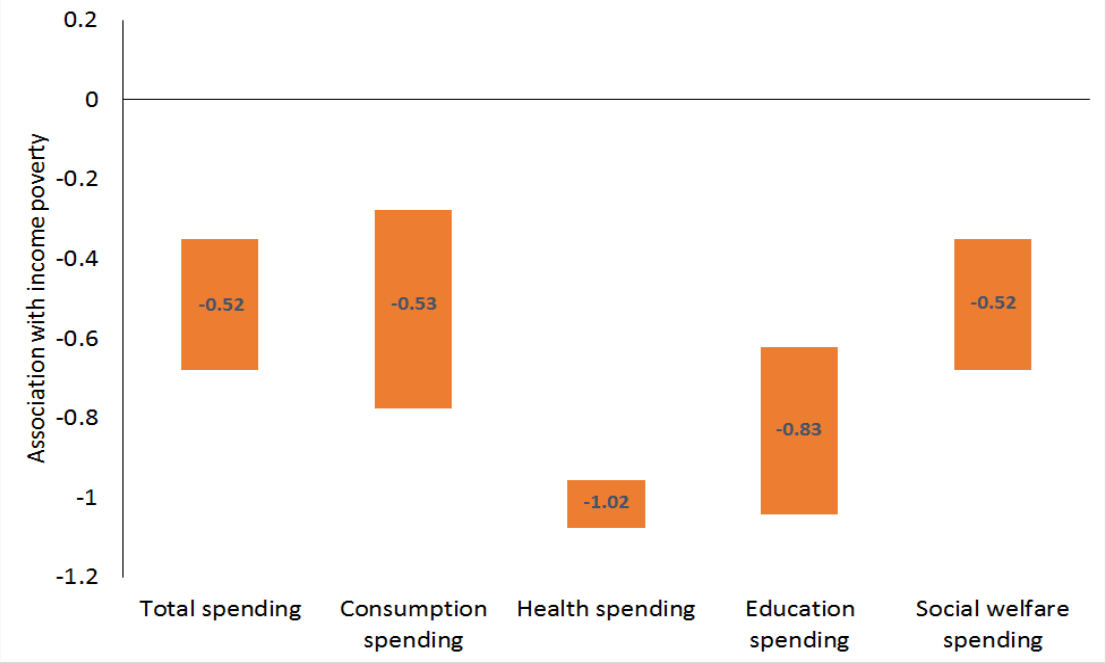
OUTLINE OF EVIDENCE

This section provides a more detailed overview of the evidence in this review, organised by the two main study designs and policy areas.

Ex-post observational studies

These studies use econometric analysis to estimate the association between measures of government policy and the translation of growth into income poverty reduction. Figure II summarises the evidence from these studies for measures of government spending.

Figure II: Evidence from ex-post observational studies



Notes: The vertical axis shows the direction (positive or negative) and strength of association (values closer to +1 or -1 indicating stronger associations) between each measure of government spending (shown on the horizontal axis) and income poverty. The numbers in each bar indicate the average association, across all estimates; the length of the bars indicates the 95 percent confidence intervals around the average. *Source*: Table 14, main report.

1. We find evidence of a negative and statistically significant relationship between government spending and income poverty, which is particularly strong for health and education spending.
2. However, the size and direction of the relationship between government spending and income poverty is affected by a range of moderating factors.
3. The first is the sample of countries used: studies only including developing countries show a larger negative relationship between government spending and poverty, in comparison with studies including both developed and developing countries. One possible reason is that the impacts of government spending on income poverty in developed countries are smaller, or harder to detect, because overall levels of poverty are lower.
4. The second is the measure of poverty used: studies using the poverty gap (which reflects the depth as well as the incidence of poverty) show a smaller negative relationship between government spending and income poverty, in comparison with estimates using the headcount measure (which reflects only the incidence of poverty). One possible explanation is that the impacts of government spending are strongest among households closer to the poverty line, and weaker for households further away from the poverty line.
5. The third is the estimation method: studies using ordinary least squares (OLS) typically find a smaller negative relationship between government spending and income poverty. This is

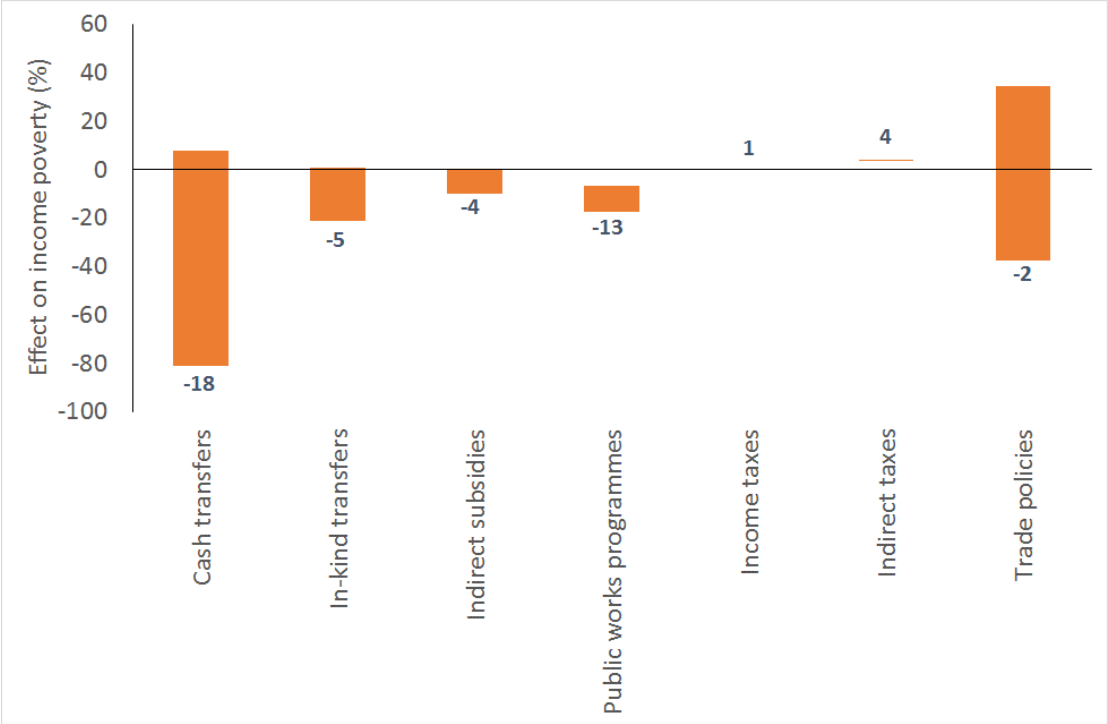
an important finding because it indicates the importance of using more robust analytical approaches, such as panel data methods and instrumental variables estimation.

6. We also find evidence of publication bias, in that peer-reviewed academic journal articles tend to report a more negative association between government spending and income poverty than other publication types (e.g. working papers, book chapters). It is difficult to say precisely what might be driving this finding, but one possible explanation is a tendency for journal editors to prioritise results showing a negative relationship between government spending and income poverty – perhaps because this confirms the 'do-good' element of government spending, as has been argued for the case of foreign aid.

Ex-ante simulation studies

These studies analyse the impact of government policies or spending on income poverty using an economic model applied to recent empirical data for a particular country or region, such as an applied computable general equilibrium (CGE) model. Figure III summarises the evidence from these studies on the effects of fiscal and trade policies.

Figure III: Evidence from ex-ante simulation studies



Notes: The height of the bars shows the range of estimated impacts of each policy on income poverty. The numbers below/above each bar show the average impacts, across all estimates. Source: Tables 15–16, main report.

7. The evidence from these studies shows that fiscal policy interventions can make a substantial contribution to income poverty reduction.

8. The largest reductions are observed to result from cash transfer programmes. On average, cash transfers reduce income poverty by significantly more than either in-kind transfers (e.g. health and education services) or indirect subsidies (e.g. subsidised fuel or electricity).

9. However, while cash transfers have the largest effect on income poverty on average, there is also a substantial variation around that average. There is a general tendency for the poverty-reducing effect of cash transfers to be greater, the higher the level of a country's average income. This is most likely due to higher overall levels of government spending on cash transfers as average income rises, and perhaps also better targeting.

10. Nevertheless, even in low-income countries, the median impact of cash transfers on poverty is not small, and there are some low-income countries in which impacts are quite substantial. This is an important counterpoint to the argument sometimes made that cash transfers are too small to have an impact on income poverty at the national level.

11. In addition, we find no significant differences on average between the estimated impacts of cash transfers derived from standard fiscal incidence analysis and the results from studies using more complex computable general equilibrium (CGE) models. This finding gives greater confidence in the results obtained from standard fiscal incidence analysis, which remains popular among researchers due to its lower data requirements and greater ease of computation.

12. There is no evidence that the direct taxes paid by households below the poverty line increase income poverty substantially. This is most likely due to the fact that poor households are exempt from such taxes, or are completely outside the direct tax system altogether. However, indirect taxes often do raise income poverty, by raising the prices of goods and services consumed by poor households, often quite substantially.

13. Finally, trade policy interventions can also have a substantial impact on income poverty reduction. Although the average impact across all estimates is quite small, in more than one quarter of cases we see impacts that are moderate to large in size. We also find evidence that the impact of trade liberalisation on poverty reduction has been more limited in low-income countries, and in sub-Saharan Africa, in comparison with other income groups and regions.

RESEARCH GAPS

A number of gaps in the literature were identified. Research has tended to focus predominantly on the effects of government fiscal policies on income poverty: for example, the role of taxes and transfers, and government spending more generally. To a lesser extent, trade policy interventions, including the liberalisation of tariff and non-tariff barriers to trade, are also reasonably well covered. But there is much less evidence on the impact of other sorts of government policies, such as labour market reforms, privatisation, and land reforms. In addition, although there is a reasonable coverage of low-income countries, the most intensively studied countries are still large middle-income countries, including Brazil, Argentina, South Africa, Mexico, and the Philippines.

Interestingly, we found a large number of ex-post observational studies on India, but very few ex-ante simulation studies. These relative gaps in the literature suggest priorities for future research.

It is also worth noting some of the limitations of this review. Because it necessarily focuses on a very wide range of government policies and interventions, and a very large body of literature (over 200 studies), it has not been possible to provide more detail about the underlying processes and mechanisms through which different government policies affect the translation of growth into income poverty reduction. Future work could explore this further, for example by synthesising the evidence on the intermediary variables through which specific interventions covered in this review affect income poverty – for example, the effects of trade reforms on wages and employment. The synthesis carried out in this review has also focused only on income poverty at the national level; further work could explore how the poverty impacts of government policies differ between rural and urban areas.

Finally, while this review has focused on income poverty, there are various limitations with income-based poverty measures, for example concerning inequalities within the household, and difficulties in valuing the non-market goods and services (e.g. public health and education facilities, water and sanitation infrastructure) to which households may or may not have access. This again suggests possible future directions for further synthesis work in this area, which could explore the effects of government policies on poverty in other important dimensions, such as health or education.

CONTENTS

1. INTRODUCTION

1.1 BACKGROUND

The eradication of poverty has been a central aim of international development efforts for a number of decades, dating back to the earliest years of the development era. Although there are various ways of defining and conceptualising poverty, at the heart lies the notion of poverty as the inability to fulfil a minimum set of requirements for a decent life, referred to as 'absolute poverty' (Foster 1998). Absolute poverty is typically measured using a poverty line, designed to reflect the amount of income that a person (or household) needs to be able to afford the minimum requirements for a decent life, so that a person or household whose income is below this level is considered to be poor. This is generally referred to as 'income poverty'.

Since the early 1990s, the World Bank has led efforts to measure the amount of absolute income poverty at the global level, using the '$1.25-a-day' and '$2-a-day' global poverty lines. The $1.25-a-day line reflects the average poverty line found in the world's poorest countries, while the $2-a-day figure reflects the average poverty line among all developing countries – in each case converted into their equivalent values in US dollars using purchasing power parity (PPP) exchange rates (see Chen and Ravallion 2010).[1] Measured by these yardsticks, the amount of absolute income poverty in the developing world has fallen substantially over the past three decades, from 52.2 percent of total population in 1981 to 22.4 percent in 2008 (see Table 1).

Table 1: Headcounts indices of poverty (percent below each line)

	1981	1984	1987	1990	1993	1996	1999	2002	2005	2008
					(a) Aggregate for developing world					
$1.25	52.2	47.1	42.3	43.1	40.9	34.8	34.1	30.8	25.1	22.4
$2.00	69.6	68.0	64.8	64.6	63.1	58.6	57.4	53.5	46.9	43.0
					(b) Developing world, excluding China					
$1.25	40.5	39.1	38.1	37.2	36.6	34.3	33.6	31.5	27.8	25.2
$2.00	59.3	59.1	58.2	57.7	57.8	56.4	56.1	54.2	49.9	47.0

Note: Table adapted from Chen and Ravallion (2010, 2012). The headcount index is the percentage of the relevant population living in households with household income or expenditure per person below the poverty line.

Despite the undoubted progress achieved in recent decades, it is clear that much remains to be done. On the one hand, the absolute number of people living on less than $2 a day remained

[1] National poverty lines tend to be higher (in real terms) in richer countries than in poorer countries, reflecting the tendency for perceptions of the minimum requirements for a decent life, and the real cost of those requirements, to rise with average income; on this point see Sen (1983). The $1.25-a-day line therefore provides a measure of extreme poverty, since by the standards of middle- and high-income countries, people with incomes above $1.25 a day would also be considered poor.

largely unchanged between 1981 and 2008, due to population growth (Chen and Ravallion 2010). On the other hand, the extent of poverty reduction has been much more marked for some regions than others. To give one illustration, the MDG target of halving the proportion of people living in extreme poverty by 2015 was achieved by 2005 in East Asia, but it is highly unlikely that this target will be met in sub-Saharan Africa, despite a recent improvement in progress (World Bank 2015a). This is shown in Table 2.

Table 2: Extreme income poverty by region, 1990–2030

Share of population below US$1.25 a day (2005 PPP)						Projections		
Region	**1990**	**2005**	**2008**	**2010**	**2011**	**2015**	**2020**	**2030**
East Asia and Pacific	58.2	16.7	13.7	10.3	7.9	4.1	1.5	0.1
Eastern Europe and Central Asia	1.5	1.3	0.4	0.6	0.5	0.3	0.2	0.1
Latin America and the Caribbean	12.0	7.4	5.4	4.8	4.6	4.3	3.8	3.1
Middle East and North Africa	5.8	3.0	2.1	1.7	1.7	2.0	1.8	2.4
South Asia	53.2	39.3	34.1	29.0	24.5	18.1	13.8	2.1
Sub-Saharan Africa	56.6	52.8	49.7	48.2	46.8	40.9	34.2	23.6
Total (developing world)	**43.5**	**24.8**	**21.8**	**19.1**	**17.0**	**13.4**	**10.5**	**5.7**
Total	**36.4**	**21.1**	**18.6**	**16.3**	**14.5**	**11.5**	**9.1**	**4.9**

Source: World Bank (2015a), Global Monitoring Report 2014/15, p. 19

In terms of the factors that drive reductions in absolute income poverty, a large body of evidence has shown that economic growth is a key factor. For example, on the basis of a sample of 120 periods of time spanning 50 low- and middle-income countries, Ravallion (2001) finds that, on average, each percentage point of economic growth is associated with a reduction of around 2 percent per year in poverty. Similar results have been reported by a range of other studies, including Besley and Burgess (2003), Bourguignon (2003), and World Bank (2005).[2]

Nevertheless, while economic growth tends to be associated with reductions in income poverty on average, a given rate of economic growth can still have very different impacts on poverty. An interesting comparison here may be drawn between the reductions in poverty achieved by India

[2] More specifically, Ravallion (2001) estimated the 'growth elasticity of poverty', namely the average percentage change in poverty associated with each percentage point of economic growth, to be -2.5. Bourguignon (2003) estimated this elasticity to be -1.7, while the World Bank (2005) estimated it to be -2.4. These estimates were all based on headcount measures of poverty, using a $1-a-day poverty line.

and Brazil over the past two decades. Between 1993 and 2005, India witnessed economic growth of 4.8 percent per year, while in Brazil, growth was slower at 1.3 percent per year. But despite a slower rate of growth, the rate of poverty reduction was higher in Brazil – 4.2 percent per year compared with 1.4 percent per year for India – because the rate at which growth was translated into poverty was much higher (Ravallion 2010). Had India been able to translate growth into poverty reduction at the same rate as Brazil, without affecting its growth rate, its rate of poverty reduction would have been considerably higher.

This finding has important implications for policy. In 2013 the World Bank adopted a new target of reducing absolute $1.25-a-day poverty to less than 3 percent of the world's population by 2030. This target is in turn expected to be adopted by the United Nations in 2015, as part of the new sustainable development goals (SDGs). However, research suggests that this target is very unlikely to be met by economic growth alone; there must also be an improvement in the responsiveness of poverty reduction to growth (Basu 2013, Yoshida et al. 2014, Lakner et al. 2014, World Bank 2015b). According to Lakner et al. (2014), for example, assuming no change in the distribution of income, the global $1.25-a-day headcount is projected to reach between 5 and 7 percent in 2030, depending on the precise assumptions made about the average rate of economic growth. However, if the incomes of the bottom 40 percent grow 2 percentage points faster than the mean, global poverty falls to below 3 percent in 2030 under a range of plausible assumptions about average rates of economic growth.[3] In other words:

> *It is clear that for the global target of 3 per cent to be achieved, countries will need to look beyond accelerating growth toward ensuring that the poor in particular benefit from growth. (World Bank 2015b, p. 29)*

Understanding the factors that affect the translation of economic growth into reductions in income poverty is therefore a key policy question that has risen to the forefront of the national and international agenda. There is a clear demand from policy-makers in national governments and international organisations for accurate, reliable, and up-to-date evidence as to the sorts of policies and interventions that can raise the extent to which economic growth is translated into income poverty reduction.

1.2 AIMS OF THE REVIEW

The overall aim of this systematic review is to identify and synthesise the existing empirical evidence about the association between government policies and the extent to which economic growth is translated into income poverty reduction. The more specific objectives are as follows:

[3] A higher rate of growth in the average income of the poorest 40 percent of households compared with average national income is an example of a *pattern of growth* which tends to be poverty reducing, in the sense that the amount of poverty reduction achieved will tend to be larger than if all households saw their incomes rise by the national average (see Section 1.4 below). Note, however, that this pattern of growth need not be poverty reducing in all cases; it depends on the initial level of poverty headcount and the precise measure of poverty used.

1) to map the available evidence that seeks to evaluate or better understand the effects of government policies and interventions on the translation of growth into reductions in income poverty in low- and middle-income countries;[4]

2) to establish whether any particular types of policies or interventions tend to reduce or increase the translation of growth into income poverty reduction on average: in other words, whether there are any consistent and generalisable findings or results across contexts and methods;

3) to explain heterogeneity in the estimated effect of such policies or interventions, across countries, regions, or over time ('structural' heterogeneity), or research methods used ('method' heterogeneity);

4) to understand better the processes and mechanisms through which government policies and interventions affect the translation of growth into reductions in income poverty.

The first aim is to map the research field. By mapping, we simply mean identifying and documenting all of the evidence relevant to the review question, and categorising the available evidence according to key descriptive information, namely:

- the country (or countries) of focus
- the type of government policy or intervention
- the method(s) used to assess the impact on income poverty
- the measure(s) of income poverty used.

Mapping is a useful output in its own right. In the words of Gough et al. (2013, p. 16):

> Systematic maps of research fields can also highlight gaps in research. [They] can be used to compare policy and practice on the ground with what has been studied in research; they may reveal that only a specific sub-set of policy and/or practice has been studied.

Through mapping the research field, therefore, we aim to provide an important resource for researchers working on income poverty, and organisations involved in the commissioning of research on income poverty – for example, indicating types of government policies where evidence of impacts on the translation of economic growth into income poverty reduction is relatively scare. As noted further below, mapping is a particularly important component of this review, given the very broad nature of the underlying question.

The second and third aims both relate to the synthesis of the evidence. We aim to establish whether any specific policy interventions tend to reduce or increase the translation of growth into reductions in income poverty on average, and to explain any heterogeneity in the estimated effects of particular policies, by structural characteristics or by research method. This will be done

[4] Note that in this report the terms 'policy', 'intervention', and 'policy intervention' are used interchangeably; no distinction is implied between each term.

using meta-regression analysis (MRA), applied to studies which use an appropriate counterfactual in assessing the impact of government policies on income poverty. The aim of MRA is to provide a reliable and objective way of summarising conflicting research findings (Stanley and Doucouliagos 2012). Even the best, most rigorous empirical research will produce a wide variation in estimates of a particular relationship, or in estimates of the effects of a particular policy intervention. Without a reliable way of summarising the results of such research, informed policy actions are impossible (ibid.). MRA uses multiple regression analysis to uncover the reasons why estimates vary, and to correct for some of the biases that can result in the way in which important, policy-relevant relationships are estimated and reported. It is for this reason widely regarded to be an essential part of evidence-based policy making.

The final aim of the review is to understand better the processes and mechanisms through which government policies and interventions affect the translation of growth into reductions in income poverty. This will involve synthesising the results of detailed case studies of income poverty in particular low- or middle-income countries, or particular regions within such countries. Such studies allow us to explore in detail the various assumptions in our conceptual framework about the ways in which government policies affect income poverty, and to identify and explore any unanticipated effects.

1.3 SCOPE OF THE REVIEW

Many of the systematic reviews that have been carried out in the field of international development to date have focused on a specific policy intervention or on a narrowly defined set of policy interventions; examples include microcredit programmes, conditional cash transfers, school feeding programmes, and farmer field schools (White and Waddington 2012, Table 1). This systematic review, by contrast, does not focus on a specific policy intervention, nor on a narrowly defined set of policy interventions. Instead, it potentially includes *any* government policy or intervention which is associated with the translation of growth into income poverty reduction.

The sorts of policies and interventions which can affect the translation of economic growth into poverty reduction are recognised to be broad. Klasen (2003) discusses a wide range of policies that can promote the related concept of 'pro-poor' growth, including macroeconomic policy, trade policy, privatisation, financial policy, agricultural policies, land reform, industrial policy, government spending on health and education, fiscal redistribution via the government budget (e.g. taxes, cash transfers, social safety nets), affirmative action, social insurance and safety nets, and geographically targeted programmes. A similarly wide range of policies is identified by other authors, including Eastwood and Lipton (2000). This broad nature of the review gives rise to two main dangers. The first is that the amount of literature relevant to the review will be too large, and not possible to review and synthesise adequately within a reasonable time-frame. The second is that the range of policies and interventions covered by the review will be too diverse, preventing meaningful and interesting comparisons of the effects of similar types of policies and interventions across different countries and contexts.

We respond to these dangers by dividing the review into two main stages. The first stage – the 'mapping stage' – involves identifying and documenting all studies looking at the impact of *any*

government policy or intervention on the translation of growth into income poverty reduction (subject to meeting certain other inclusion criteria, discussed further below). The second stage – the 'synthesis stage' – involves synthesising the results from a particular subgroup of the studies identified in the mapping stage, namely all studies looking at the effects of fiscal or trade policy interventions. The results of the mapping indicate that there is a sufficiently large body of comparable studies on these policy areas which can be subjected to meaningful synthesis using meta-regression analysis. By contrast, for most other intervention types (e.g. finance or labour market reforms), the number of studies would be too small to allow meta-analysis, which can only be applied if there is a sufficiently large body of comparable studies which all relate to a particular type of policy or intervention. We also restrict the synthesis to studies focusing on income poverty at the national level, as opposed to subnational level (e.g. within regions, or within urban or rural areas), to further reduce the heterogeneity of studies.

The two-stage approach adopted in our review – mapping the research field, as a prior stage to synthesis – has been an important part of many systematic reviews. In the words of Gough et al. (2013, p. 16):

> The studies contained within a research field may be too numerous or heterogeneous for meaningful synthesis; it might be methodologically too difficult or just take too much time. The map provides an opportunity to select a sub-group of studies for synthesis. This can involve undertaking a single synthesis based on a narrowed review question and set of inclusion criteria; or undertaking a series of syntheses. … Syntheses can also be restricted to studies employing specific research methods.

It is also worth stressing that studies looking at policies other than fiscal and trade policy, and at poverty at the subnational level, will remain documented in our review, as part of the mapping.

1.4 CONCEPTUAL FRAMEWORK

We are interested in policies and interventions associated with the translation of economic growth into reductions in absolute income poverty. By absolute income poverty we mean measures of poverty defined with respect to a monetary poverty line which is fixed in real terms over time (e.g. the World Bank $1.25-a-day poverty line). By economic growth we mean increases in the average level of income in society, as measured, for example, by GDP per capita (although other measures of average income are available and may also be used to calculate growth). The extent to which economic growth is translated into income poverty can be expressed as the ratio of the rate of reduction in absolute income poverty to the rate of economic growth, as follows:

$$\frac{\text{rate of poverty reduction (\% per year)}}{\text{rate of economic growth (\% per year)}}$$

The higher the ratio, the greater the extent to which economic growth is translated into poverty reduction.

To consider how government policies affect the translation of growth into poverty reduction, it helps to start with a basic decomposition. Consider a period of time in which average income rises by a certain amount (say 2 percent), and there is a change in the distribution of income, such that some households see their incomes rise by more than 2 percent, while others see their incomes rise by less than 2 percent. Following Datt and Ravallion (1992), the reduction in absolute income poverty over the period can be decomposed into two components: a 'growth' component and a 'redistribution' component.

- The **growth component** measures the amount of poverty reduction resulting *purely from growth*. It is measured by assuming that all households see their income rise by the same amount (in this case 2 percent), so that there are no changes in income distribution, and then calculating the implied reduction in poverty.

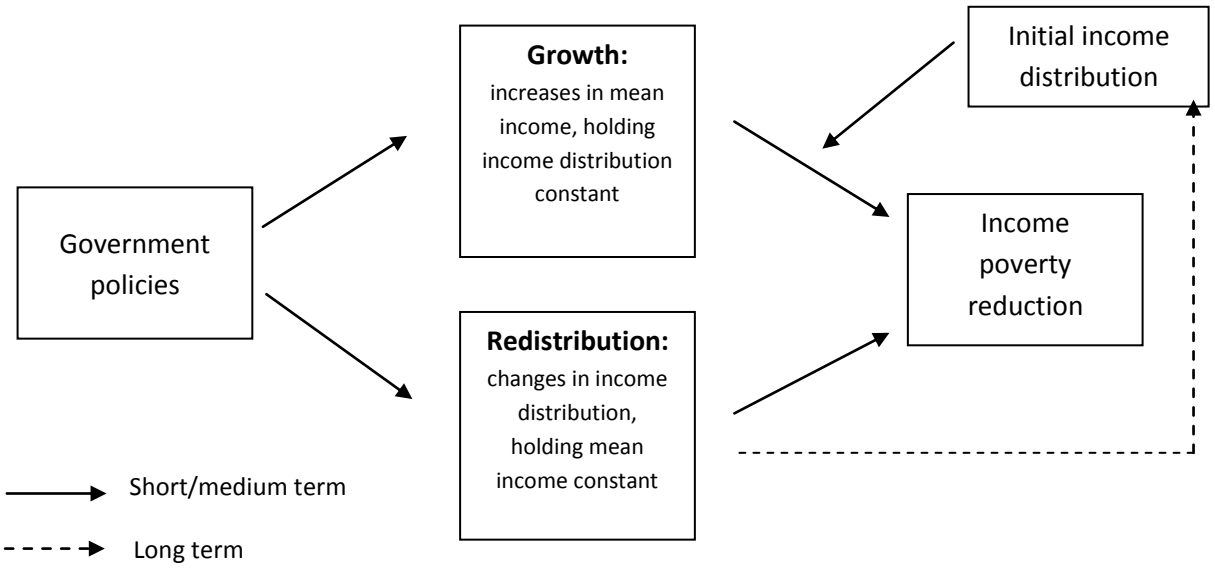
- The **redistribution component** measures the amount of poverty reduction resulting *from the changes in income distribution occurring alongside growth*. It is calculated by assuming that households see their incomes rise or fall by the same amount relative to average income, but that average income itself does not change.

Apart from a residual component which is typically small in size, the sum of these two components adds up to the total amount of poverty reduction achieved over any given period of time.

The extent to which growth is translated into poverty reduction is determined partly by the size of the redistribution component to poverty reduction; in other words, by the extent to which changes in the distribution of income occurring alongside growth by themselves reduce poverty. It is also determined by the initial distribution of income. In countries where income inequality is initially very high, for example, a given rate of economic growth will be associated with a significantly lower rate of poverty reduction, even if the distribution of income itself does not change (e.g. Ravallion 1997, 2001, Bourguignon 2003, Kalwij and Verschoor 2007). The high level of initial inequality reduces the size of the growth component.

From a policy perspective, however, the initial distribution of income is something of a given – it may have been influenced by earlier policies, but is not something that a current government can do much about. In the short to medium term, therefore, the main way in which government policies and interventions affect the translation of growth into poverty reduction is by affecting the size of the redistribution component of poverty reduction – in other words, the way in which the distribution of income changes alongside economic growth, and whether these changes by themselves reduce poverty. At least in the short to medium term, this is the channel through which government policies affect the translation of economic growth into poverty reduction. This is shown in Figure 1.

Figure 1: Overall framework (I): growth, distribution and poverty reduction



In the Protocol to this review, we set out a broad conceptual framework which showed the full range of government policies and interventions that can affect the way in which the distribution of income changes alongside growth, and the main transmission mechanisms involved in each case. In Appendix 1 of this report, we set out a more condensed framework, focusing on the two broad policy areas that form the basis of the synthesis stage of our review, namely fiscal policy and trade policy.

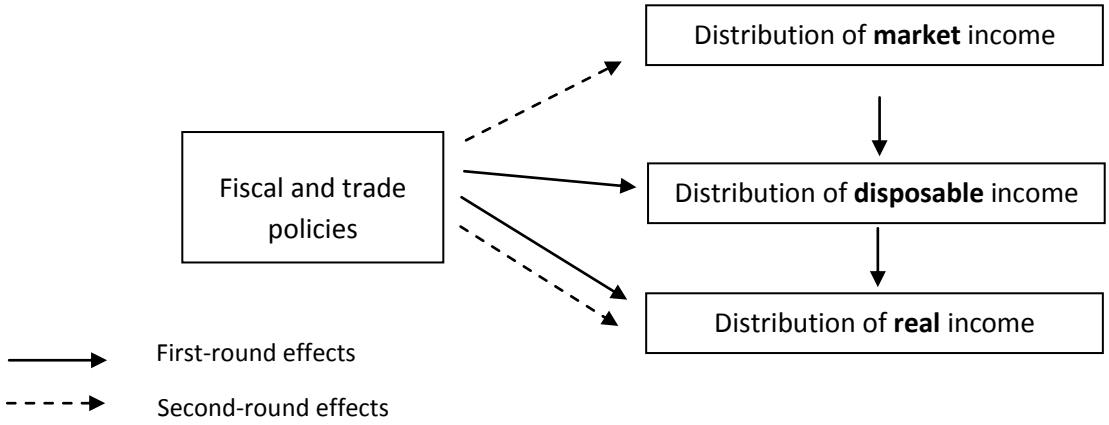
This framework is summarised in Figure 2. We distinguish between three concepts of income:

- **market income**, meaning a household's income from all 'private' sources, such as wages and salaries, profits from owned enterprises, investment earnings, private transfers (e.g. remittances), and private pensions: in other words, income *before* taxes have been subtracted and public transfers have been added;
- **disposable income**, defined as a household's income *after* direct (income) taxes have been subtracted and direct (cash) transfers from the government have been added;
- **real income**, which refers to the real value of a household's disposable income, after adjusting for the cost of living (more specifically, after deflating by a cost of living index).

The concept of most interest is households' real income, since this is the basis for standard measures of income poverty. However, households' market and disposable incomes are important intermediary outcomes, since higher market income leads to higher disposable income, and higher disposable income leads to higher real income, other things being equal.

In this framework we also distinguish between the short-run or 'first-round' effects of fiscal and trade policy interventions, and the medium-term 'second-round' effects that occur as a result of households' behavioural responses to the interventions, which in turn have potential spill-over or knock-on effects throughout the rest of the economy.

Figure 2: Overall framework (II): government policies and the distribution of income



Notes: Note that not all fiscal and trade policy interventions affect all three measures of income; some affect only one or two. This is discussed further in Appendix 1.

1.5 IMPORTANCE OF THE REVIEW

As discussed in Section 1.1, economic growth is widely accepted to be a key tool for poverty reduction. This is primarily true for income poverty, but the benefits of economic growth can spread to other areas such as health, housing, and so on. However, this important social goal is unlikely to be achieved by growth alone (Kalwij and Verschoor 2007, Basu 2013, World Bank 2015b). Economic growth can have a large or only a minor effect on poverty, and governments can play an important role in steering growth towards being beneficial for the poor.

There is of course already a large literature looking into the determinants of the translation of growth into poverty reduction, and a number of reviews of this literature (e.g. Klasen 2003, Lopez 2004, Paternostro et al. 2007). Despite this, there is still arguably no clear consensus about the sorts of policies and interventions that governments can use to improve performance in this area. The results from cross-country econometric studies are often inconclusive. For example, Kraay (2006) found little evidence that the contribution of distributional change to reductions in absolute income poverty was correlated across countries with measures of trade openness, government spending, inflation, or good governance. One possible reason is the limitations of cross-country econometrics as an analytical approach. This was the view of Kraay (2006):

> *…cross-country evidence is unlikely to be very informative about the policies and institutions that are likely to lead to poverty-reducing patterns of growth in relative incomes … [M]ore micro-level and case-study research may be useful in shedding light on the determinants of poverty-reducing distributional change. (p. 200)*

Similarly, Lopez (2004) notes that cross-country regressions are likely to be one of the 'weakest strands' of the empirical literature on this issue:

> *…not only because one has to face the inherent difficulties of linking a purely micro phenomenon like poverty changes to policies (which are usually in the macro*

> *domain), but also because the available empirical work relies on different controls (only a few variables are usually included in all the papers), estimation techniques (some studies use simple OLS, whereas others present more refined estimates based on SURE, IV, and GMM techniques), and even model specifications. (p. 12)*

However, there has not to our knowledge been a systematic review of the evidence on the determinants of the growth–poverty relationship. There has been a systematic review on the determinants of income inequality (Abdullah et al. 2015), which focused on the effects of education, and we are currently carrying out a separate systematic review looking at the relationship between government policies and income inequality.[5] Nevertheless, changes in income inequality are not always an accurate guide to the extent to which growth is translated into poverty reduction. This was made clear at the outset by Datt and Ravallion (1992):

> *One certainly cannot conclude that a reduction in inequality … will reduce poverty. And even when a specific reduction (increase) in inequality does imply a reduction (increase) in poverty, the change in the inequality measure can be a poor guide to the quantitative impact on poverty. A time series of an inequality measure can be quite uninformative about how changes in distribution have affected the poor. (pp. 275–276)*

A similar point is made by Kakwani et al. (2004). The two reviews are therefore linked – since both look at how government policies affect the distribution of income – but are also clearly different, since one focuses on the implications of distributional change for inequality, while the other focuses on implications for poverty.

Thus, for various reasons, there is a clear need for a systematic review of the evidence relating to the relationship between government policies and the translation of growth into poverty reduction in low- and middle-income countries, taking into account not just the econometric evidence but also other sources of evidence. Knowledge of policies that have been shown to be instrumental in translating economic growth into poverty reduction will be useful for an array of development actors, ranging from international organisations to policy-makers, NGOs, consultants, and academics. While what has worked in the past should not be taken as an assurance of impact in the future context, and what has worked in a certain context may not work in another, the provision of carefully reviewed evidence will endow a wide audience with valuable guidance, and with an illustration of the mechanisms which may prevent apparently pro-poor policies from bringing about tangible benefits for the poor.

[5] Anderson E, Duvendack M, Esposito L, Jalles D'Orey M (2015). What policies and interventions have been strongly associated with changes in in-country income inequality?' London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

2. METHODS

2.1 CRITERIA FOR INCLUDING STUDIES IN THE REVIEW

TYPES OF STUDIES

Study designs: We include studies using any one of four main study designs:

a) ex-post observational studies, using econometrics
b) ex-ante simulation studies
c) quantitative case studies, using decomposition analysis
d) qualitative case studies, which draw on primary data.

An extended discussion of these study designs is provided in Appendix 2. Their main features are as follows.

Ex-post observational studies (Study Design A) use econometric analysis to estimate the effects of government policies on income poverty. They involve estimating a regression in which a measure of income poverty is the dependent variable and the explanatory variables include a measure of per capita income (or economic growth), and one or more measure of government policy. The vast majority of studies using this approach are cross-country econometric studies using panel data, although there are also some single-country studies using time series econometric analysis.

Ex-ante simulation studies (Study Design B) analyse the impact of government policies on income poverty using an economic model applied to recent empirical data for a particular country or region. The model contains a set of assumptions about how households and firms respond to government interventions, and can be used to simulate the impact of those interventions on different measures of income poverty.

Quantitative case studies (Study Design C) use decomposition analysis (by income source) to analyse the contribution of government taxes or transfers to income poverty.

Qualitative study designs (Study Design D) make use of primary data collected by the researcher, such as small-scale household surveys, focus group discussions, and semi-structured interviews. Unlike the quantitative study designs, such studies do not attempt to establish a counterfactual and cannot therefore be used to assess impact; they can, however, be used to shed light on the processes and mechanisms through which government policies and interventions affect the translation of growth into income poverty.

With these four study designs we aim to include a diverse range of evidence in our review. One important goal of the synthesis will be to compare the results from the ex-post observational studies (e.g. cross-country econometrics) with ex-ante simulation studies (e.g. CGE models). While ex-post studies are often preferred since they represent external data validation, cross-country econometric studies unavoidably work at a high level of aggregation and as a result provide little evidence on the effects of specific policies on the translation of growth into poverty reduction – a

change in a key tax rate or import tariff, for example. By contrast, CGE models and other simulation-based studies are able to analyse much more specific policy changes. We aim to show how the results of studies using ex-ante simulation compare with those using econometrics, and to discuss the likely reasons for any systematic differences between these two different research approaches.[6]

Note, however, that we are still excluding many types of studies from our review, in particular:

- theoretical studies which contain no analysis of actual empirical data: instead there are purely theoretical derivations, or numerical simulations using hypothetical data;
- review articles which summarise or synthesise existing research on the growth–poverty relationship, but which do not present any new evidence;
- quantitative case studies which report and discuss quantitative data on economic growth and income poverty, but which do not analyse these data using econometrics, applied simulations or decomposition analysis;
- qualitative case studies which rely on narrative methods to assess the impacts of government policies on income poverty, and which do not make use of primary data.

Publication status: We include published and unpublished studies, including refereed and non-refereed journal articles, working papers, conference proceedings, book chapters, government reports, NGO reports, and other technical reports. We exclude comments and media briefings, review articles, and dissertations (PhD and MA). The exclusion of dissertations is mainly due to time and budgetary constraints: although our initial searches did identify a number of dissertations which are potentially relevant to the review, these are on the whole not available electronically. The financial and opportunity costs of obtaining hard copies of each dissertation for full text screening would therefore be very high, and detract from the review and synthesis of the other publication types.

Time-frame: We restrict the review to studies published since 1990. This is mainly on the grounds that reliable, cross-country data on income poverty have only been available since the early 1990s, so that any studies before this date would not meet basic requirements in terms of data quality.

Language: We include studies published in English, Portuguese, and Spanish.

TYPES OF PARTICIPANTS (POPULATION)

The review is restricted to studies of low-income countries (LICs) and middle-income countries (MICs) at the time of the government intervention; studies of high-income countries (HICs) are excluded. The World Bank definitions of LICs and MICs are used in applying this criterion. In the Protocol to this review we listed three groups of countries:

[6] We are not the first to include ex-ante simulation studies (e.g. CGE models) in a systematic review. For example, the DFID-funded systematic review on the effects of trade liberalisation on employment and fiscal revenue by Cirera et al. (2011) specifically included such studies, alongside studies using econometric analysis; the study by McCorriston et al. (2013) on trade liberalisation and food security also took this approach.

a) those which have always been low or middle income since classifications began
b) those which have been low or middle income in some years but not all
c) those which have always been high income.

Studies of countries in group (a) are always included, while studies of countries in group (c) are always excluded. Studies of countries in group (b) are included if the intervention being studied took place while the country was low or middle income.

TYPES OF INTERVENTIONS

As discussed in Section 1.3, the review is not restricted to any one type of policy or intervention; all government policies and interventions are relevant to the review. We also include policies and interventions by any level of government, including local, state, and national. We do, however, exclude studies of interventions by non-government and private sector organisations; for example, we exclude studies of microcredit programmes operated by non-governmental organisations. We also restrict our attention to 'unilateral' government policy interventions; we exclude studies of bilateral or multilateral policies, such as the forming of a free trade agreement with trading partners, or joining the World Trade Organization (WTO). In addition, while the review as a whole is not restricted to any one type of policy intervention, the synthesis is restricted to fiscal and trade policy interventions.

The measures of government policies included in the review differ somewhat according to the study design (see Appendix 2). For Study Design A, we require that the regression analysis includes one or more explanatory variable which is clearly and closely influenced by government policy. We refer to these as 'policy variables': examples include government spending on health, education, or social welfare as a share of GDP, the average tax rate in the economy, and the average level of import tariffs. We exclude econometric studies that only look at broader determinants of income poverty which are not clearly and closely influenced by policy; examples include international trade or foreign direct investment as a share of GDP, the rate of inflation, and the underlying institutional environment (e.g. control of corruption, political stability, and so on).

For Study Design B, we include studies which simulate the effect of a change in a variable that is directly controlled by the government. We refer to these as 'policy simulations'; examples include a change in the rate of income tax or VAT, or a change in the level of a cash transfer. We exclude any studies where the simulations refer only to the effects of external or internal shocks; examples include a change in a country's terms of trade, or an increase in productivity. Studies using Study Design C (decomposition analysis) are limited to estimates of the contribution of government taxes or transfers on income poverty. For Study Design D, we simply require that the study addresses in depth and details the processes and mechanisms through which one or more government policy or intervention affects income poverty.

TYPES OF COMPARISON GROUPS

The control or comparison group for assessing the impact of government policies and interventions will be constructed using either an ex-post observational approach or an ex-ante

simulation-based approach. The former involves comparisons of the extent to which growth is translated into poverty reduction across countries and over time, using panel data. The latter involves comparisons of the observed level of income poverty in a country before a particular intervention, and the simulated level of income poverty after the intervention.

We also include studies focusing on income poverty in regions or states within a country, as well as those that focus on poverty at the national level. Thus the unit of analysis may be the country as a whole, or a region or state within the country. However, the synthesis is restricted to studies looking at income poverty at the national level only.

TYPES OF OUTCOME MEASURES

We include studies using a comprehensive measure of market, disposable, or real income that includes income from all relevant sources: in other words, market income should include wages and salaries, business profits, investment earnings, rental income, and private transfers; disposable income should include all government transfers. We also require that studies use an absolute poverty line which is fixed in real terms over the relevant period, and that data on income or expenditure be drawn from a representative household survey covering all of the relevant population. We exclude any estimates which are derived from the national accounts, or from household surveys that cover only a subset of the relevant population. Note, however, that the relevant population need not be the country as a whole; it may also be the state or locality within the country.

We also include studies which use total expenditure rather than income to measure poverty, since expenditure is often considered to be a more reliable indicator when data on income are difficult to collect. In each case, income or expenditure may be measured at the household or individual level; average household income or expenditure may be expressed per capita or per adult equivalent.

We also include any measure of aggregate income poverty, including the class of measures proposed by Foster et al. (1984) – which include the poverty headcount, the poverty gap, and the squared poverty gap – as well as other measures such as the Watts index (Watts 1968). The poverty headcount (or headcount ratio) is the proportion of the population that lives below the poverty line, while the poverty gap measures the extent to which individuals fall below the poverty line, as a proportion of the poverty line. The squared poverty gap is the average of the squared values of the poverty gap, and unlike the other two measures is affected by changes in inequality among the poor.

2.2 SEARCH METHODS

In order to select appropriate databases for this review, we followed the Campbell Collaboration guide on key online databases for systematic reviews in international development (Campbell Collaboration 2012). This list was complemented with additional databases and websites used by other systematic reviews on questions relevant to this review. The electronic databases that were searched for relevant studies are listed in Appendix 3. We also reviewed relevant websites of key institutions and conference proceedings; a full list is contained in Appendix 3.

Each database was searched using a combination of the search terms indicated in Table 1. This shows three sets of concepts (A, B, and C), each of them containing a list of associated terms or synonyms that were used in our search.[7] When using foreign language databases, each term was translated into the appropriate language (i.e. Portuguese or Spanish). Due to the fact that some search engines only allow a limited number of operators, two search query strings were used: a long version and a short version. The long version follows the equation:

A + B + C

Thus the terms within columns A, B, or C were combined with 'OR'; the columns A, B, and C were combined using the 'AND' command. The precise search terms used for each database are listed in Appendix 3.

Table 3: Key terms for search strategy

A Policy	B Growth	C Poverty
Polic* Intervention* Program* Instrument* Tool* Reform* Legislation* Govern*	Growth	Poverty Deprivation 'Poor people' 'The poor' 'Pro-poor'

Notes: * is included as a truncation symbol to capture automatically conjugated forms of each word; thus polic* captures 'pro-poor' as well as 'poor'.

In addition to these electronic searches, we also identified a number of additional studies relevant to the review via handsearching. First, we checked all of the full text reports identified for the other systematic review the team is carrying out, on income inequality.[8] We found that some of these were also relevant to this review – and were not picked up by our electronic searches. Second, we checked all of the chapters of the edited volumes identified by our electronic searches, to see if there were multiple studies relevant to our review from any one particular volume. Third, we checked the reference lists of all published peer-reviewed academic journals

[7] Note that we did not include more precise terms in the search such as 'economic growth' and 'income poverty'. The reason is that our initial searches revealed many relevant studies which do not – at least in the abstract and keywords – explicitly mention *economic* growth or *income* poverty, they refer only to 'growth' and 'poverty'. Our broader search terms ensure that we do capture such studies in our search. The drawback is that we capture a large number of irrelevant studies. To offset this problem we utilise the boolean operator 'AND NOT' to exclude automatically literature using terms not relevant to our review, such as green growth, child growth, and health poverty.

[8] Anderson E, Duvendack M, Jalles D'Orey M, Esposito L (forthcoming). Which policies and interventions have been strongly associated with changes in in-country income inequality?

identified via our electronic searches to see if there were any other additional studies relevant to our review which we had missed.

2.3 DATA COLLECTION AND ANALYSIS

Data extraction took place in two main stages. For the first stage we extracted descriptive information about all studies meeting the inclusion criteria, in the following four areas:

1. context and population
2. type of intervention
3. study design and methods used
4. outcome measures

Data extracted in this first stage was used for the research mapping exercise, allowing us to provide a descriptive survey of all the relevant evidence relating to the question, categorising and cross-tabulating the available evidence in interesting ways, for example the overall balance of studies between intervention types, outcome indicators, country groupings, and study designs.

A further extraction stage was used to extract additional information required for the quality appraisal and synthesis (including meta-analysis), in particular:

5. study results and findings
6. quality of research methods.

As discussed in Section 1.3, only those studies focusing on the effects of fiscal policy or trade policy interventions on income poverty at the national level were selected for inclusion in the synthesis stage. This was designed to avoid the problems stemming from the very broad question of this systematic review. Studies included in the synthesis were also assessed for their quality – otherwise referred to as 'risk of bias'.

2.4 DATA SYNTHESIS

We carry out the synthesis and meta-analysis separately for each study design, as was the case in the systematic reviews by Cirera et al. (2011) and McCorriston et al. (2013). For the ex-post observational studies (Study Design A), we use meta-regression analysis following the approach taken by Abdullah et al. (2015). For the ex-ante simulation studies, we rely on a combination of narrative synthesis (using descriptive statistics) and some simple meta-regression analysis, following the broad approach used by Hess and von Cramon-Taubadel (2008), who synthesise the results from ex-ante simulation studies (including CGE models) on the impacts of multilateral trade reform. We also use narrative synthesis for the other remaining studies included in our review.

3. RESULTS (I): SEARCHING, SCREENING AND MAPPING

3.1 SEARCHING AND SCREENING

The initial phase of the electronic search process consisted of registering the databases which allowed exporting of results to Endnote, and only such databases were considered in this screening phase.[9] Figure 3 summarises the screening process. In total, 21,063 reports were exported into Endnote. After removing 6,578 duplicates, a first fast screening was conducted to exclude studies that dated from before 1990, or were Masters' theses. In the end 11,986 reports were left for screening.[10]

A comprehensive list of inclusion and exclusion criteria was used and it was decided to exclude 10,021 reports based on screening of the abstract. Of the remaining 1,965 reports, 1,768 were obtained in full text, either electronically (soft copy) or in hard copy via the UEA library or Inter-Library Loan (ILL).[11] The remaining 197 studies were not found, or were not available via ILL. Of the 1,768 reports available in full text, 1,589 were excluded in a second phase of screening based on the full text of the article. This left a total of 179 reports which were deemed to meet the inclusion criteria. Following a further round of checking during the process of data extraction, a further 46 reports were deemed not to meet the inclusion criteria. This left a total of 133 reports which were deemed to meet the inclusion criteria.

In addition to the electronic searches, a number of relevant databases and websites of key institutions were reviewed. The screening process followed the same approach as for the electronic searches, with the exception that the screening by abstract was conducted entirely online due to impossibility of exporting the results to Endnote. Here 4,847 studies were screened online and it was decided to exclude 4,687 reports based on screening of the abstract. The remaining 160 reports were then exported to Endnote in order to screen by full text.[12] Of these, 157 were obtained and screened in full text, and the remaining 3 were not found. Of the 157 reports in full text, a further 131 were excluded in a second phase of screening based on the full text of the article. This left a total of 26 reports which were deemed to meet the inclusion criteria.

Following a further round of checking during the process of data extraction, a further report was deemed not to meet the inclusion criteria. This left a total of 25 reports which were

[9] A list of the databases with details of the date of export, the number of hits per database, and precise search string used is available in Appendix 3.

[10] After exporting all results into Endnote they were divided into different folders according to the year of publication. An Excel spreadsheet was created corresponding to each Endnote file, in which the results of the screening process were recorded. These Excel spreadsheets are available on request from the authors.

[11] 200 ILL requests were submitted in total.

[12] In order to export the results to Endnote, the studies were first exported into Mendeley using the web importer bookmarklet to save references. After saving the studies in the Mendeley library the results were exported to Endnote.

deemed to meet the inclusion criteria. Adding the results from the electronic and other databases searches, we were left with 158 studies, 20 of which were linked papers (e.g. a journal article and an earlier working paper of the same title by the same authors).

In addition to these electronic searches, we also identified 69 additional studies relevant to the review via handsearching. In total, therefore, we identified 207 papers which meet our inclusion criteria. In Table 4 below we give a summary of the types of reports included in our review, by the four main study designs.

Table 4: Included reports by study design

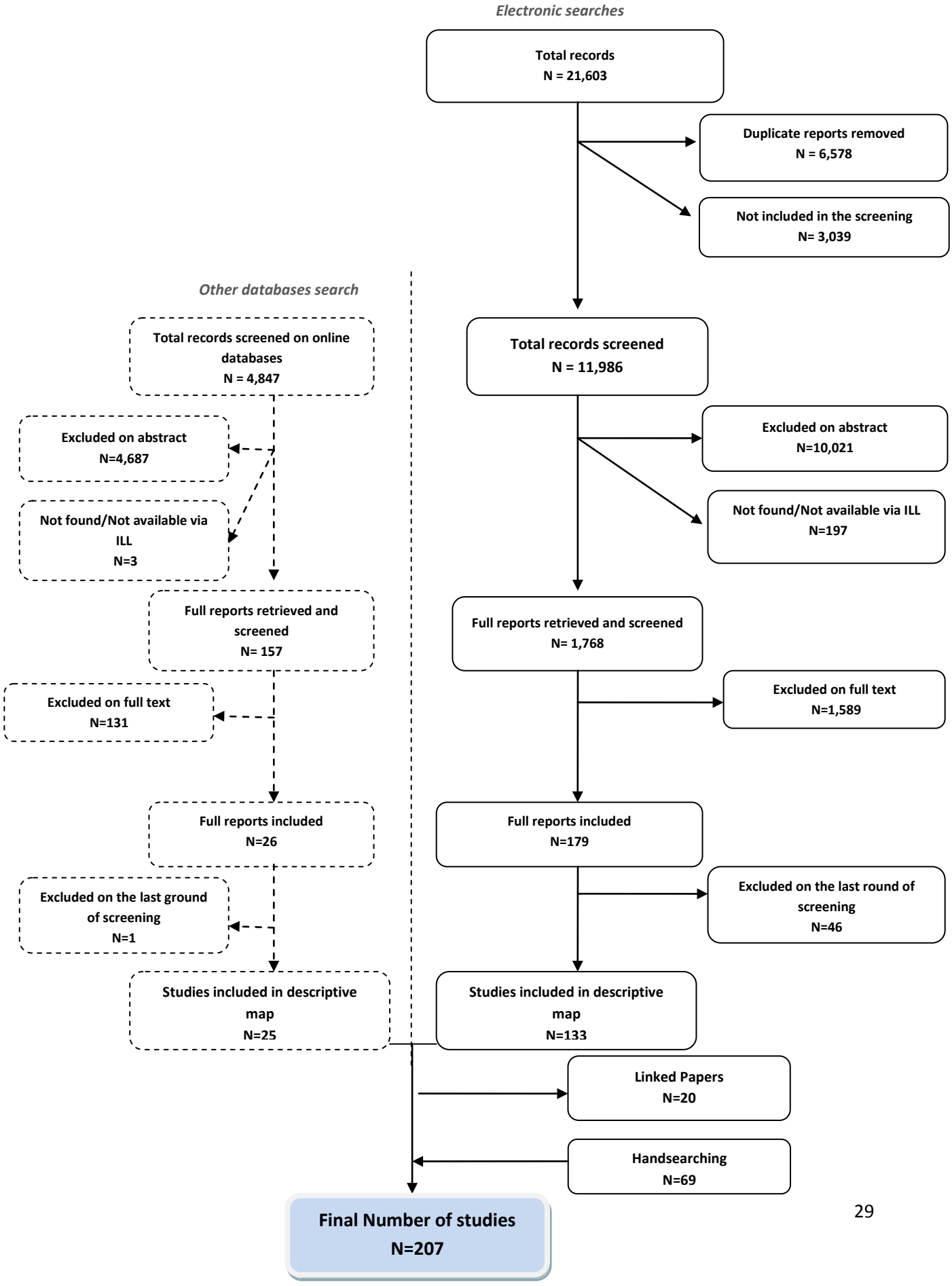
Study design	Electronic searches	Other database searches	Linked papers*	Handsearching#	Total number of studies
A	91	4	15	8	**88**
B	40	16	4	60	**112**
C	2	5	1	1	**7**
D	0	0	0	0	**0**
Total	**133**	**25**	**20**	**69**	**207**

Notes: #This only includes new, 'non-duplicate' studies that were found via handsearching. *Note that we subtract the number of linked papers when calculating the total number of studies. Two or more linked papers are treated as one study for the purposes of mapping and synthesis.

Note that we found relatively few quantitative case studies using decomposition analysis (Study Design C). Although there are several studies using decomposition analysis to analyse trends in poverty over time, this typically involves the decomposition of poverty changes into growth and redistribution components (e.g. Datt and Ravallion 1992), or into components explained by different sectors of the economy (e.g. Huppi and Ravallion 1991, Maasoumi and Mahmoudi 2013, Iniguez-Montiel 2014). Although these studies provide some descriptive information about the proximate sources of changes in income poverty over time, they do not provide direct evidence of the effects of government policies on income poverty. Only those studies using decomposition analysis by income source are included in this review, and these are much fewer in number. Note also that we did not find any qualitative case studies (Study Design D) which met our inclusion criteria. We had initially shortlisted 17 studies of this type for further investigation, but subsequently decided that they did not meet the inclusion criteria, largely because it was not clear how income poverty was conceptualised and often it was in fact not the focus of the study to investigate the link between policies and income poverty.[13]

[13] These studies are Wiggins et al. (2002), Ashley and Ntshona (2003), Ashley and Wolmer (2003), Ellis et al. (2003), Freeman et al. (2004), Krishna (2003), Krishna et al. (2003), Du Toit (2004), Korovkin (2005), Krishna et al. (2005), ODI (2009), Shepherd (2010), Higgins (2011), Amadi and Abdullah (2012), Scheyvens and Russell (2012), Hilson et al. (2013), Johnson and Dichaba (2013).

Figure 3: Flow of literature through the review: the PRISMA diagram



3.2 MAPPING

The results of the mapping exercise for the **ex-post observational studies** are shown in Table 5. As shown in Table 4, 88 papers were identified from the search process which use this study design. The majority of studies (67.1 percent) have been published in peer-reviewed journal articles, and have been published since the year 2000 (94.3 percent of the total). Many of the included studies (53.4 percent) are single-country studies. Countries of interest are India (22 papers), Pakistan (6), China (3), Brazil (4), Mexico (3), Philippines (2), Kazakhstan (1), Korea (1), Egypt (1), Thailand (1), Uganda (1), Indonesia (1), South Korea (when it was still a middle-income country) (1), and Vietnam (1). The most common analytical method is ordinary least squares (35.2 percent of the total); the poverty headcount is the most common outcome variable (86.4 percent of the total).

The most common type of policy variable is fiscal policy (73.9 percent of the total), followed by other policy variables (15.9 percent) and trade (10.2 percent). Of the 65 papers focusing on fiscal policy, the majority focus on government spending, and of these around half measure government spending in percent of GDP. This is useful from a meta-analysis viewpoint, since it suggests a relatively homogenous approach to measuring government spending across different studies.

The results of the mapping exercise for the **ex-ante simulations studies** are shown in Tables 6 and 7. As shown in Table 4 above, 112 studies have been identified which use this study design and which meet all of the other inclusion criteria for this review. Of these studies, 44 are peer-reviewed journal articles, 34 are working papers, 23 are book chapters, 9 are policy reports, and 2 are conference papers (see Table 6). The vast majority (110 studies) have been published since 2000; only 2 studies date from the 1990s. Just over half (57 studies) have been published since 2010. We believe that this distribution of studies across publication year vindicates our decision to restrict the review to studies published since 1990. In part this is due to the much greater availability of income poverty data since the 2000s, for example via the World Bank Povcal database.

The vast majority (103 studies) are also single-country studies. The remaining 9 studies look at more than one country, although in each case the analysis is carried out separately for each country (as opposed to multiple-country econometric studies, which pool data for different countries in the same analysis). The region with the largest coverage is Latin America and the Caribbean (46 studies covering 18 countries), followed by sub-Saharan Africa (30 studies covering 20 countries), East Asia and Pacific (19 studies covering 7 countries), South Asia (7 studies covering 4 countries), Middle East and North Africa (5 studies covering 6 countries), and Eastern Europe and Central Asia (5 studies covering 7 countries). A total of 62 countries are covered, of which a substantial proportion (23 studies, or 37 percent) are low-income countries.[14] However, the countries with the largest number

[14] Note that we measure income group status at the time of the policy intervention covered by the study, not the current status nor the status at the time of publication.

of studies are still large middle-income countries: Brazil (13 studies), followed by Argentina (9 studies), South Africa and Mexico (8 studies each), and Philippines, Peru, and Bolivia (7 studies each). Somewhat surprisingly, we found only 3 studies each for China and India which met our inclusion criteria.

All but 2 of the 112 studies use the poverty headcount as the outcome measure, which is one of the Foster-Greer-Thorbecke (FGT) classes of poverty measures. Of these, 64 studies also report one or both of the other FGT measures – namely the poverty gap and the squared poverty gap. In addition, the majority (101 studies) look at poverty at the national level – either as the sole focus of analysis or combined with more disaggregated analysis for rural and urban areas separately. This widespread use of the poverty headcount suggests that heterogeneity of outcome measure is unlikely to be a constraint to meta-analysis.

The most common analytical approaches are CGE modelling (63 studies), followed by standard fiscal incidence analysis (42 studies). We found only 13 studies using behavioural incidence analysis, while 2 other studies use other modelling approaches. It is worth noting that the vast majority (104 studies) use only one analytical approach; we found only 8 studies that use two approaches, and compare the results between them to see if they generate significantly different findings. One example is the study by Debowicz and Golan (2014), who compare the effects of the Oportunidades cash transfer programme on poverty in Mexico using both a partial and a general equilibrium approach. This suggests that there is a role for synthesis in terms of comparing the results of different analytical approaches in this area.

Each ex-ante simulation study includes one or more policy simulation. Taking into account the fact that most studies carry out more than one such simulation, we identified a total of 353 policy simulations from the 112 studies (see Table 7). In terms of the broad policy category, the majority of these were fiscal policy simulations (217 simulations from 67 studies). The next most common were trade policy simulations (75 simulations from 36 studies). The remaining 61 simulations (from 16 studies) cover a wide variety of other policy areas, including labour market reforms, land reforms, privatisation, and macroeconomic policies (e.g. exchange rate devaluation). More detailed policy categories are shown in Table 7.

Finally, as shown in Table 4, we found only 7 quantitative case studies using decomposition analysis. All of these look at the contribution of government social assistance programmes to poverty reduction. One study by Jitsuchon (2006) focuses on Thailand in 2000, another by Azevedo and Atamanov (2014) focuses on Turkey between 2002 and 2011, another by Azevedo et al (2014) focuses on Tajikistan between 2003 and 2009, while another study by Inchauste et al. (2014) looks at poverty reduction in Bangladesh, Peru, and Thailand during the 2000s. The remaining 3 studies (Szekely and Rascon 2005, Amarante and Perazzo 2009, Helfand et al. 2009) focus on Brazil, Mexico, and Uruguay during the late 1990s and 2000s.

Table 5: Results of mapping exercise, Study Design A

	Number of studies	percent of total
Source		
Peer-reviewed journals	59	67.1
Working papers/conference proceedings	24	27.3
Book chapters	5	5.7
Publication year		
1990s	5	5.7
2000s	53	60.2
2010 onwards	30	34.1
Country coverage		
Multiple	41	46.6
Single	47	53.4
Analytical approach		
Dynamic panel: GMM estimations	10	11.4
Panel random or fixed-effect estimations	14	15.9
IV/2SLS and related approaches	20	22.7
OLS and related approaches	31	35.2
Others	13	14.8
Outcome measure		
Headcount	76	86.4
Gap	2	2.3
Others (gap squared, Watts)	10	11.4
Type of policy variable		
Fiscal policy	**65**	**73.9**
- *Government spending related*	*63*	*71.6*
- *Tax related*	*2*	*2.3*
Trade policy	**9**	**10.2**
- *Sachs-Warner index*	*1*	*1.1*
- *Others*	*8*	*9.1*
Other policy variables	**14**	**15.9**
- *Financial reform*	*2*	*2.3*
- *Others*	*12*	*13.6*
TOTAL	**88**	**100.0**

Note: Many studies use various analytical approaches and multiple outcome measures. The most dominant for each paper is listed here. Similarly, some studies report a number of valid policy variables, and the most prevalent one is reported here.

Table 6: Results of mapping exercise, Study Design B

	Number of studies	percent of total
Publication type		
Peer-reviewed journal	44	39.3
Working paper	34	30.4
Book chapter	23	20.5
Policy report	9	8.0
Conference proceedings	2	1.8
Publication year		
1990s	2	1.8
2000s	53	47.3
2010 onwards	57	50.9
Country coverage		
Multiple	9	8.0
Single	103	92.0
*By region**		
LAC	46	41.1
EAP	19	17.0
EECA	5	4.5
SSA	30	26.8
SA	7	6.3
MENA	5	4.5
Outcome measure*		
Poverty headcount	110	98.2
Other FGT measure (poverty gap, squared gap)	64	57.1
Unit of analysis		
National	101	90.2
Subnational only	11	9.8
Analytical approach*		
Standard (fiscal) incidence analysis	42	37.5
Behavioural incidence analysis	13	11.6
Applied computable general equilibrium (CGE) model	63	56.3
Other approaches	2	1.8
Policy category*		
Fiscal policy	67	59.8
Trade policy	36	32.1
Other policy areas	16	14.3
Total number of studies	**112**	*100.0*

Notes: *Items under these headings sum to more than the total number of studies because some studies include more than one country, outcome measure, analytical approach, or policy category.

Table 7: Policy simulations by subcategory (Study Design B)

Category of simulation	*Number of policy simulations*	*percent of total*
Fiscal policy	**217**	61.5
- Direct taxes (e.g. income tax, corporate tax)	*21*	5.9
- Indirect taxes (e.g. VAT)	*11*	3.1
- Domestic subsidies (e.g. fuel, food items)	*15*	4.2
- Cash transfers (e.g. social assistance, social insurance)	*111*	31.4
- In-kind transfers (e.g. value of education, health services)	*19*	5.4
- Other government spending (e.g. infrastructure)	*26*	7.4
- Some combination of fiscal policy measures	*12*	3.4
Trade policy	**75**	21.2
- Import tariffs	*47*	13.3
- Export taxes	*6*	1.7
- Some combination of trade policy measures	*22*	6.2
Other	**61**	17.3
- Energy reforms	*28*	7.9
- Labour market reforms	*2*	0.6
- Land reforms	*2*	0.6
- Macroeconomic policies	*11*	3.1
- Agricultural reforms	*6*	1.7
- Privatisation	*12*	3.4
TOTAL	**353**	

3.3 SUMMARY

Through the search, screening, and mapping exercise we have assembled and mapped out a substantial body of evidence. Through an exhaustive and wide-ranging search process we have identified a total of 207 research studies, all of which provide evidence about the effects of one or more government policy on income poverty, in one or more low- or middle-income countries. Although there have been other reviews of the literature on how government policy affects the translation of growth into poverty reduction (see Section 1.5 above), we believe that the body of evidence we have identified is by far the largest and most comprehensive assembled to date.

Simply by mapping the research field in this way, our research has generated some important findings. Research has tended to focus predominantly on the effects of government fiscal policies: for example, the role of taxes and transfers, and government spending more generally. To a lesser extent, trade policy interventions, including the liberalisation (i.e. reduction) of tariff and non-tariff barriers to trade, are also reasonably well covered. But there is much less evidence on the impact of other sorts of government policies, such as labour market reforms, pension reforms, privatisation, and land reforms. With regard to the ex-ante simulation studies, for example, trade and fiscal policy simulations account for over 80 percent of the total number of policy simulations carried out across the 112 studies we identified using this approach.

In terms of sample coverage, although there is a reasonable coverage of low-income countries, the most intensively studied countries are still large middle-income countries, including Brazil, Argentina, South Africa, Mexico, the Philippines, Peru, and Bolivia. Interestingly, we found a large number of ex-post observational studies on India, but very few ex-ante simulation studies. Surprisingly, we found relatively few studies on China, of either study design.

In terms of measures, there is a clear reliance on the headcount measure of poverty. This is a potential problem because the headcount is widely regarded to suffer a number of drawbacks as a poverty measure. Nevertheless, the majority of studies do tend to report results for more than one poverty measure, at least in the ex-ante simulation studies.

Our mapping exercise also shows that the studies relevant to the review question are very diverse. Clearly, the two most common study designs are ex-post observational studies and ex-ante simulation studies. Within these two main study designs, however, there is a high degree of diversity across studies, in particular in terms of the level of analysis – whether national, regional, urban, or rural – and in the type of government policy or intervention being considered. This high degree of diversity is challenging from the perspective of synthesis and meta-analysis. As discussed in Section 1.3, therefore, for the purposes of synthesis and meta-analysis we restrict the focus to studies reporting estimates of the effect of fiscal or trade policy variables on the translation of growth into income poverty reduction at the national level. Through these refined inclusion criteria we aim to synthesise studies that are more similar in terms of their level of analysis and policy focus.

4. RESULTS (II): SYNTHESIS, EX-POST OBSERVATIONAL STUDIES

4.1 INTRODUCTION

As discussed in Section 1.3, for the purposes of synthesis and meta-analysis we restrict the focus to studies reporting estimates of the effect of fiscal or trade policy variables on income poverty at the national level. There are a total of 33 studies which meet these more refined criteria, and which have been included in the meta-analysis. Of these, 28 include estimates of government spending, 3 include estimates of taxation, and a further 4 include estimates of trade policy.[15] Some of these studies do not, however, report sufficient information for us to calculate our chosen effect size measure (the partial correlation coefficient), which explains why there are slightly fewer studies than this in the meta-regression analysis.

We carry out our meta-regression analysis for the government spending variables in Section 4.2, using a total of 21 studies. We follow the MAER-NET guidelines to report the findings (see Stanley et al. 2013, p. 393). Our approach also follows Abdullah et al. (2013), who examined the impact of education on income inequality using a meta-regression approach. Our synthesis of the evidence for tax and trade policy is then contained in Sections 4.3 and 4.4. In these cases, we do not have sufficient observations to carry out meta-regression analysis, and we therefore rely on narrative synthesis. In the remainder of this section we discuss the results of our risk of bias assessment (Section 4.1.1), our effect size measure (4.1.2), our initial tests for publication bias (4.1.3), and our overall modelling approach used in the meta-regression analysis (4.1.4).

RISK OF BIAS ASSESSMENT

We adapted the risk of bias tool developed by Duvendack et al. (2011 and 2012) for the purpose of our risk of bias assessment. We began by categorising each study by its proclaimed research design and analytical method. Following Duvendack et al., each study was scored depending on its design and analytical approach. In a next step each of these scores was combined in an index. An arbitrary threshold of 2 was applied; that is, a study with a score of equal to or less than 2 was classified as low risk of bias, while a study with a score above 2 was classified as medium risk of bias (Duvendack et al. 2011, 2012, 2014).

The studies included at the synthesis stage can be split into two dominant analytical approaches – 1) panel data techniques, and 2) regression-based techniques – which formed the basis for adapting the risk of bias tool of Duvendack et al. (2011 and 2012). Below we provide a brief description of these two broad approaches before presenting the findings of our risk of bias assessment.

[15] Note that some studies report more than one type of estimate and are therefore relevant for more than one synthesis or meta-analysis exercise.

Panel data analysis

Within panel data analysis, generalised method of moments (GMM) and fixed- as well as random-effects models prevail among the included studies. There are also some studies that employ instrumental variables (IV) approaches in the panel data context (e.g. Wagle 2012).

Fixed-effects models are used when the focus is on exploring impacts of variables that change over time; the relationship of predictor and outcome variables across countries is examined where each country has its own individual characteristics that could potentially affect the predictor variables. The underlying assumption of the fixed-effects model is that something within those individual characteristics affects the outcome variables in a fixed way modelled by a difference in the intercept. The fixed-effects model allows controlling for those time-invariant characteristics and thus provides the net effects (common to all countries) of the predictor variables on the outcome variables.

Unlike fixed-effects models, the assumption underlying random-effects models is that the variation across countries is random and uncorrelated with the predictor or independent variables included in the model:

> …the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not. (Greene 2008, p. 183)

Random effects are based on less restrictive assumptions than the fixed-effects model and is used when the differences across countries believed to influence the dependent variable are drawn from a population of effects with a given statistical distribution.

Fixed- and random-effects models cannot fully account for the numerous biases that may exist, even when combined with IV, which is supposedly an improvement of basic fixed- and random-effects models but it suffers from weak instrument bias, which can make the results worse than those of other methods (see, for example, Caliendo 2006, Caliendo and Hujer 2005). Thus, more recently, dynamic panel data models have been widely adopted, such as the approach of Arellano and Bond (1991), which is based on the notion that an IV approach does not fully exploit all of the information available in the sample. Thus, in a GMM context it may be possible to construct more efficient estimates of the dynamic panel data model. See Hansen (1982) for more details on GMM, who first developed this estimation technique.

From a risk of bias perspective it is very difficult to judge which one of these analytical approaches is affected more or less by bias; there are other factors that play a role in the risk of bias assessment, such as model specifications: for example, are adequate control variables included, how well was the method of analysis executed? (See, for example, the Campbell Collaboration for more guidance: www.campbellcollaboration.org/ID_Resources/Methods_Resources.php.)

Regression-based analysis

Among the regression-based studies, the use of ordinary least squares (OLS) dominates. Cross-country regression-based approaches have been criticised widely (see, for example, Beck et al. 2000, Graff 2002). Jalilian and Kirkpatrick (2002) summarise Beck et al.'s critique of cross-country approaches as follows:

> (i) time series dimension of data is generally ignored; (ii) parameter estimates may be biased because of omission of cross-country differences; and (iii) no control for endogeneity of regressors. An additional shortcoming of this approach is that it cannot be used for causal inference. (p. 99)

Jalilian and Kirkpatrick (2002) further argue that advances in analytical approaches such as dynamic panel estimations can correct for the drawbacks of cross-country approaches. Hence, in our risk of bias tool we coded studies using panel data analysis or 2SLS/IV differently to studies pursuing purely regression-based approaches. For example, the former were coded as 1, while the latter were coded as 2. As a result, most studies employing panel data analysis were classified as having a low risk of bias, while the regression-based studies were all labelled as medium risk of bias due to their shortcomings as outlined above.

Table 8 presents the results of our risk of bias assessment for the studies focusing on government spending. Included studies are ranked by research design and analytical method using scores 1–3, where 1 implies low risk of bias and 3 high risk of bias.

Table 8: Distribution of studies by research design and analytical method

		Statistical methods of analysis		
		Panel data analysis (GMM, fixed and random effects), IV, PSM, 2SLS/LIML, DID, RD	**Regression-based approaches/OLS/ error correction models**	**Others (correlations)**
Research design	**Scores**	1	2	3
RCT	1	0	0	0
Pipeline	2	0	0	0
Panel (cross-country/time series)	3	10	10	1
Legend	Low score	10	Medium score	11

Source: Duvendack et al. (2011, 2014, and see 2012 for an adaptation).

Based on an initial search exercise, we expected that most of the Study Design A studies would be scored 3 for research design, as the majority use panel data sets, and 1 or 2 for analytical method, as panel data analysis and cross-country regression approaches dominate. This point further motivates the use of the Duvendack et al. tool as it assesses risk of bias by providing a combined score for research design as well as analytical technique. For example, a study might get a score of 3 when using cross-country panel data, but can considerably improve its score when using a sophisticated analytical approach. A combined score per study will reflect this and provide an overall risk of bias score. We can see this in our sample of included studies, as many of them are classified as low risk of bias due to the use of advanced panel data techniques, which considerably improved their score. However, we still have a substantial number of medium risk of bias studies, which all use basic regression-based approaches.[16]

We are aware that the Duvendack et al. tool is subjective (see Duvendack et al. 2014, footnote 7 for an explanation) and the cut-off figures are arbitrary, but at least an indication is given as to how well studies deal with risk of bias issues. We explored alternative risk of bias tools; for example, many Campbell Collaboration systematic reviews now use adaptations of the ICDG risk of bias tool (see, for example, Baird et al. 2013). However, the ICDG tool was developed with microeconometric studies in mind (as was the Duvendack tool) and is a checklist approach which requires expert knowledge as well as a high degree of in-depth information from the included studies. We felt that the implementation of the ICDG tool in our particular context would be as problematic as the tool we opted for.

EFFECT SIZES

All regression-based estimates were converted into a comparable measure, the partial correlation coefficient, which was the best choice given our particular context. The partial correlation measures the strength of association between income poverty and government spending, holding all other factors constant. It is calculated as follows:

$$r = \frac{t}{\sqrt{t^2 + df}}$$

where *t* is the t-statistic of the regression coefficient and *df* reports the degrees of freedom from the t-statistic (Stanley and Doucouliagos 2012). If the t-statistic was not reported we calculated it by dividing the regression coefficient by its standard error. We had a few studies that did not report the t-statistic or the standard error but we had the exact p-value and the degrees of freedom. In these cases we used the TINV function in Excel, which allowed us to calculate the t-statistic using the p-values as well as the degrees of freedom (see Stanley and Doucouliagos 2012, footnote 45). In some cases we did not even have the exact p-value and only the levels of statistical significance were given, such as * (for 10

[16] Given there is only one study classified as high risk of bias, we aggregated the categories 'high score' and 'medium score' for the purpose of our meta-regression analysis.

percent), ** (for 5 percent) and *** (for 1 percent). Stanley and Doucouliagos (2012) argue that in such cases the analyst will have to decide whether or not the estimates should be included. We decided to include them and followed the simplest approach suggested by Stanley and Doucouliagos (2012, p. 31), namely to assume that the p-value is 0.01 if the significance level is given as ***, 0.05 if the significance level is given as **, and so on. We then used these p-values as well as the degrees of freedom to calculate the t-statistic using the TINV function in Excel again. We excluded any study that did not report any of the above statistics and therefore did not enable us to calculate the partial correlation coefficient.

We should note that a number of effect size measures exist in the meta-analytical context, such as standardised mean differences, odds, and risk ratios as well as partial correlation coefficients. We narrowed down the list of possible effect size calculations by closely looking at the data reported in the studies we included in our meta-regression approach. The vast majority of the included studies reported regression coefficients, t-statistics and standard errors. Hence, we chose the partial correlation coefficient as it can be calculated easily from regression output, requiring only limited information. It is a unitless measure allowing comparisons within and between studies as well as comparisons involving variables using different scales such as Gini coefficients and income shares (Stanley and Doucouliagos 2012, Abdullah et al. 2015). It is often argued that the partial correlation coefficient should be converted into Fisher's *z* scale as the partial correlation coefficient is truncated at -1 and +1, which can cause problems. These problems can be overcome by running the meta-regression on the Fisher's *z* transformations, though Hunter and Schmidt (2004) cast doubts about using this transformation. Despite these doubts we used the command corrci in STATA to transform our partial correlation coefficients to Fisher's *z* scale, but this made little difference to our results, which is not surprising if one follows the arguments set out by Stanley and Doucouliagos (2012) and Abdullah et al. (2015).

Table 9 provides a description of the sample of included studies, as well as the distribution of their results. For the government spending variables, of the 164 estimates we extracted from 21 studies, 134 recorded positive partial correlations between a government spending variable and income poverty, with 58 of these being statistically significant. On the other hand, 30 of the estimates recorded negative partial correlations, with 10 of these being statistically significant. Table 9 also shows the much smaller number of observations for measures of taxation and trade policy.

Table 9: Description of the sample

	Government spending	Taxation	Trade policy
Number of studies	21	1	3
Number of estimates	164	45	17
Distribution of results			
Positive	134	6	9
Of which: positive and statistically significant	*58*	*3*	*0*
Negative	30	39	8
Of which: negative and statistically significant	*10*	*23*	*2*
Total	164	45	17

Notes: A list of the included studies is provided in Appendix 4.

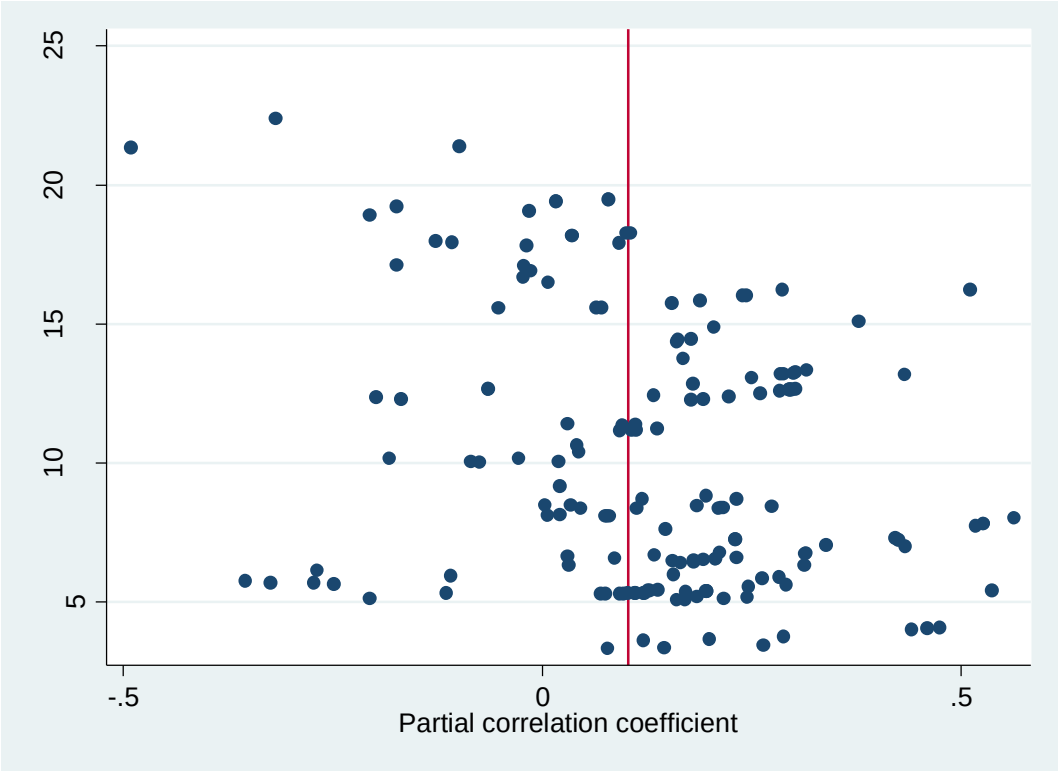
In Appendix 5 we show the frequency distribution of the partial correlation coefficient for the government spending measures. The distribution of estimates is skewed to the left, with the majority of the estimates having a coefficient that is above zero.

PUBLICATION BIAS

Publication bias is a serious issue in the context of systematic reviews as it can introduce serious biases in meta-analytical results. It is argued that studies reporting statistically significant findings are more likely to be published in peer-reviewed journals than studies reporting statistically non-significant findings. This bias in the literature will then also be reflected in the meta-analysis as published studies are more likely to be included in a meta-analysis (Borenstein et al. 2009).

The funnel plot is one of the most common methods to illustrate the presence of publication bias (see, for example, Egger et al. 1997). Figure 4 illustrates a funnel plot which plots the effect size on the x-axis, here the partial correlation coefficient between measures of government spending and income poverty, and precision (or the inverse of the standard error of the partial correlation coefficient) on the y-axis. At the bottom of the graph we find the estimates with less precision (i.e. with the larger standard errors), while the estimates with more precision (i.e. smaller standard errors) are more towards the top of the funnel plot. There is no publication bias present when the studies are distributed symmetrically. In our case a visual inspection of the funnel plot suggests a lack of symmetry, suggesting the presence of publication bias.

Figure 4: Funnel plot, partial correlations of government spending and income poverty (n=164)



Notes: Precision is calculated as the inverse of the standard error of the partial correlation coefficient. The weighted mean of the partial correlation coefficient is marked with a red line with the value of 0.103 (standard error=0.014).

Note, however, that Figure 4 indicates many scattered data points, and it is not obvious the extent to which certain outliers might be driving the results. In addition, visual inspection of funnel plots can be subjective (Borenstein et al. 2009, Abdullah et al. 2013) and thus Stanley (2005, 2008) suggests the FAT-PET (funnel-asymmetry precision-effect) regression as an empirical test to check more reliably for any publication bias. We carry out this test as part of our meta-regression analysis.

MODELLING HETEROGENEITY

Figure 4 suggests that a certain degree of heterogeneity remains in the studies in the meta-regression analysis, in that the reported estimates are rather spread out. To better understand what drives this heterogeneity we follow Abdullah et al. (2015) and adopt the following meta-regression model to explore heterogeneity in the reported estimates:

$$r_{ij} = \beta_1 + \sum \beta_k Z_{ki} + \beta_0 SE_{ij} + \varepsilon_{ij}$$

where *r* is the partial correlation coefficient expressing the link between government spending and income poverty of the *i*th estimate from the *j*th study (21 studies and 164 estimates), Z is a vector of variables that capture differences in the relationship between government spending and income poverty, *SE* is the standard error of the partial correlation coefficient and ε_{ij} is the error term. Note that the standard error of the partial correlation coefficient is calculated as follows: [17]

$SE = \frac{r}{t}$ The following variables are included in the Z vector:

Measures of the dependent variable: Our variable of interest is income poverty. We included any study that used a recognised measure of income poverty (poverty headcount, poverty gap, and other measures of poverty such as the squared poverty gap or the Watts index). Of these, 84 percent of the studies use the poverty headcount as the dependent variable.

Measures of government spending: Government spending was coded into seven different categories: total, health, education, health and education, social and welfare spending, consumption spending, and other spending.[18] Our meta-regression model aims to test the differential impact of the numerous government spending variables on the reported results.

Country composition: Although our main focus is on low- and middle-income countries, 42.7 percent of the estimates include data from developed countries.

Data: 62.2 percent of the estimates use a non-OLS method, for example dynamic panel estimators such as generalised method of moments (GMM), more traditional panel data analysis using random and/or fixed effects, other econometric approaches such as instrumental variables, 2- or 3-stage least squares, propensity score matching, differences-in-differences, or similar. The average year of the data used was included to account for different time periods and spans as income poverty is likely to vary with and over time. The variable was calculated by subtracting the average year of data used across all studies (1990) from the average year of data used in each study.

Other specification variables: Some of the potential moderator variables were combined to create the following six broad MRA variables: trade, inflation, governance, education, aid, and inequality measures. The variables were coded as 1 if they were included in the model specifications as explanatory variables and as 0 if otherwise. These specific variables were

[17] Note that the standard error of the partial correlation coefficient is different from the standard error of the individual regression coefficients.

[18] Social and welfare spending includes components such as pensions, social security, social protection, and welfare spending. Total government spending is used if the study refers to 'total government spending', or just 'government spending' or 'government size. Government consumption is used if the study refers specifically to government 'consumption' expenditure. If the study refers to categories of government spending not covered by the other codes (e.g. government investment spending or wage bill) it was coded under government spending others.

chosen after careful review of all included studies. The trade category incorporates all variables that were considered valid policy variables, such as import tariffs, export duties, non-tariff barriers, and trade policy indices. The governance category was included to reflect all democracy and institutional aspects as proxied by voice and accountability, corruption, and so on. Education variables include years of education and schooling-related variables such as educational attainment, enrolment rates, or human capital. Aid, inequality outcomes, and inflation appeared frequently in the specifications and it was decided to include them as well.

Publication: The standard error of the partial correlation coefficient is included to account for publication bias. We also account for the differences between published (peer-reviewed) and unpublished studies (e.g. working papers).

More details on these variables are reported in Table 10, including their mean values and standard deviations. Other variables were explored but they were only present in a small number of studies and were therefore not included in the meta-regression approach.

Table 10: Meta-regression variable definitions

		N=164	
Variable name	Variable description	Mean	Standard deviation
Partial correlation	Partial correlation of the effect of government spending variables on income poverty. This is the dependent variable in the meta-regression.	0.132[19]	0.185
Poverty measure			
Poverty headcounts	BD=1: Poverty headcount (used as the base)	0.841	0.366
Poverty gap	BD=1: Poverty gap	0.091	0.289
Poverty others	BD=1: Poverty others (poverty gap squared, Watts)	0.067	0.251
Government spending measure			
Total government spending	BD=1: Total government spending included as explanatory variables (used as the base)	0.329	0.471
Health government spending	BD=1: Health government spending included as explanatory variables	0.061	0.240
Education government spending	BD=1: Education government spending included as explanatory variables	0.079	0.271
Health and education government spending	BD=1: Health and education government spending included as explanatory variables	0.049	0.216
Social net government	BD=1: Social net government spending included as explanatory variables	0.159	0.366

[19] The weighted mean of the partial correlation coefficient by study is 0.103.

spending			
Government spending consumption	BD=1: Government spending (consumption) included as explanatory variables	0.268	0.444
Government spending others	BD=1: Government spending (any/not specified/other) included as explanatory variables	0.049	0.216
Country composition			
Sub-Saharan Africa (SSA)	BD=1: Countries in sub-Saharan Africa region included in samples	0.848	0.361
Developed	BD=1: Developed countries included in samples	0.427	0.496
Data			
OLS	BD=1: OLS estimator used	0.378	0.486
Year data	Average year of data used in each study minus the average year of data across all studies (Yr=Avg-1990)	-0.439	6.885
Other specification variables			
Trade	BD=1: Trade included as explanatory variable	0.238	0.427
Governance	BD=1: Governance variables included as explanatory variable	0.537	0.500
Inflation	BD=1: Inflation included as explanatory variable	0.494	0.501
Inequality measures	BD=1 Inequality measures included as explanatory variables	0.335	0.474
Education	BD=1: Education variables included as explanatory variable	0.250	0.434
Aid	BD=1: Aid included as explanatory variable	0.177	0.383
Publication			
Standard error	Standard error of the partial correlation coefficient. Used to correct for publication bias.	0.124	0.059
Unpublished	BD=1: Study is unpublished	0.762	0.427

Notes: BD means binary dummy with a value of 1 if condition is fulfilled and zero otherwise. All studies include countries from South Asia.

Three final points are worth highlighting. First, Figure 4 indicates many scattered data points, but it is not obvious which of these are outliers. In addition, if we were to remove some outliers, an already small sample would become even smaller and a meta-regression approach might not be sensible. We decided therefore to proceed with the analysis without removing any data points.

Second, estimations are carried out using a regression procedure with a weighted least squares (WLS) routine that Stanley and Doucouliagos (2013, 2015) advocate in a recent set

of papers. They demonstrate how an unrestricted WLS-MRA is likely to be as good as and often better than both random-effects and fixed-effects meta-regression analysis in practical applications (using the command metareg in STATA). The majority of the studies we included reported more than one result that could be used to calculate the partial correlation coefficient, none of the studies specified a preferred result, and thus we were faced with multiple dependent estimates per study. This needs to be dealt with appropriately to avoid bias due to data dependency (Lipsey and Wilson 2001, pp. 105, 125). The literature suggests a number of approaches to dealing with multiples estimates per study (see, for example, Lipsey and Wilson 2001, Borenstein et al. 2009, p. 230) and there is no consensus on the preferred approach. Thus, in Appendix 5 we explore different approaches to dealing with multiple dependent estimates per study as robustness checks. We find that irrespective of the approaches we adopted, our main findings hold. Following Abdullah et al. (2013), our preferred approach to accounting for multiple estimates per study is to use precision squared (inverse variance or 1/standard error squared) as weights with study level clustered standard errors.

Finally, the data used for the meta-regression analysis, as well as the corresponding STATA do files, are available from the authors on request.

4.2 SYNTHESIS AND META-ANALYSIS: GOVERNMENT SPENDING

In this section we use a meta-regression approach to establish whether there is a relationship between government spending and income poverty, and to explore the reasons for heterogeneity in either the size or direction of this relationship.

META-REGRESSION RESULTS

Our main results are reported in Table 11. Regression 1 reports the FAT-PET results where the standard error of the partial correlation coefficient is regressed on the partial correlation coefficient. Recall that the FAT-PET regression is an empirical check to explore publication bias. The results of regression 1 indicate that there is no publication bias as the coefficient for the standard error is statistically not significant. This finding holds across all estimations presented in Table 11. This contradicts the visual inspection of the funnel plot, which suggests publication bias is present. However, as we outlined above, the visual inspection of the funnel plot is subjective and thus we suggest relying on the FAT-PET results presented in regression 1. Note that the constant in regression 1 quantifies the overall or average relationship between government spending and income poverty, after correcting for publication bias. This takes the value of -0.046, implying that in the absence of moderator variables there is a negative relationship between government spending and income poverty. This result is not statistically significant, however.

In regression 2 additional dummy variables are added representing different income poverty measures, in order to explore whether the relationship differs depending on the measure that has been adopted. None of the income poverty measures are statistically significant,

however, so there is no evidence that the choice of poverty measure makes a difference to the estimated relationship between income poverty and government spending.

Regression 3 is our main model as it includes all potentially relevant explanatory variables described above. A range of variables are statistically significant at either the 5 or 1 percent level, such as *poverty gap*, *unpublished*, *OLS*, *inflation aid* and three categories of *government spending*. The coefficient for *poverty gap* is now positive and statistically significant, implying that studies using the *poverty gap* as an outcome measure report a larger positive (or a smaller negative) relationship between government spending and income poverty, all else being equal, compared with studies using *poverty headcount*.

We are particularly interested in the coefficients on the disaggregated measures of government spending such as health, education, and health and education spending, which are all negative and statistically significant. This indicates that studies using these measures of government spending find on average a larger negative (or smaller positive) partial correlation between spending and income poverty, in comparison with studies using *total government spending*. We also have a particular interest in the results for the *OLS* variable. The coefficient for this variable is positive and statistically significant at the 1 percent level, suggesting that studies using *OLS* as an estimation method report a larger positive (smaller negative) partial correlation between government spending and income poverty.

In regression 4 we follow Leonard et al. (2014) and employ a general-to-specific modelling strategy, removing the variable that has the largest p-value until all p-values are less than 0.05. The rationale for employing a general-to-specific approach can be found in Stanley and Doucouliagos (2012), who prefer a more specific model as it makes the underlying associations clearer. In the specific model (regression 4) we observe that *poverty gap*, *unpublished*, *OLS*, *inflation*, *aid*, *health*, *education*, and *health and education government spending* are statistically significant, as already seen in regression 3. In addition, *year data* and *education* are statistically significant.

Finally, in regression 5 we report the estimates from a robust regression which strengthens our findings further. It is noteworthy that the coefficient for government social spending is negative and statistically significant in this case, indicating that – like health and education expenditure – studies which use this category of expenditure report on average a more negative (or less positive) relationship between government expenditure and income poverty.

Table 11: MRA of the effects of government spending on income poverty (dependent variables=partial correlation)

	(1) FAT-PET WLS	(2) WLS	(3) WLS general	(4) WLS specific	(5) Robust
Standard error	1.564	1.573	-0.647		-0.333
	(0.967)	(0.993)	(0.710)		(0.348)
Poverty gap		0.046	0.137**	0.121**	0.084**
		(0.057)	(0.051)	(0.045)	(0.039)
Poverty others		0.028	0.046		0.062
		(0.046)	(0.048)		(0.047)
Developed			-0.115		-0.115***
			(0.074)		(0.040)
Unpublished			0.367***	0.395***	0.360***
			(0.091)	(0.060)	(0.060)
Year data			-0.008	-0.008**	-0.007**
			(0.006)	(0.003)	(0.003)
OLS			0.163***	0.179***	0.292***
			(0.055)	(0.044)	(0.056)
SSA			0.075		-0.137*
			(0.093)		(0.081)
Trade			-0.021		0.010
			(0.056)		(0.058)
Governance			-0.081		-0.158***
			(0.087)		(0.039)
Inflation			-0.323***	-0.311***	-0.288***
			(0.073)	(0.077)	(0.053)
Inequality measures			0.032		-0.091*
			(0.109)		(0.047)
Education			0.107	0.171***	0.112*
			(0.123)	(0.042)	(0.062)
Aid			0.381***	0.342***	0.444***
			(0.118)	(0.040)	(0.052)
Health government spending			-0.297**	-0.185***	-0.354***
			(0.133)	(0.049)	(0.080)
Education government spending			-0.259*	-0.205***	-0.457***
			(0.143)	(0.060)	(0.085)
Health and education government spending			-0.279**	-0.112**	-0.221***
			(0.109)	(0.042)	(0.072)
Social net government spending			0.077		-0.427***
			(0.239)		(0.093)
Government spending (consumption)			0.040		-0.007
			(0.086)		(0.045)
Government spending others			-0.104		-0.183*
			(0.144)		(0.099)
Constant	-0.046	-0.053	-0.024	-0.161***	0.249***
	(0.113)	(0.116)	(0.212)	(0.028)	(0.092)
N	164	164	164	164	164
R^2	0.092	0.098	0.677	0.643	0.609

Notes: Columns report estimates variants of regression 2. Regressions use 164 estimates from 21

studies. Standard errors are reported in parentheses. All regressions use cluster standard errors to adjust for data dependence, i.e. multiple estimates per study. All columns use weighted least squares, except for regression 5, which uses robust regression. In regression 4 we employed a general-to-specific modelling strategy, removing the variable that had the largest p-value until all p-values are <0.05. Total government spending is used as the base category for the government spending variable. Poverty headcount is used as a base for the poverty variables in our regressions. For definitions of variables see Table 10. In order to test for multicollinearity we use the variance inflation factor (VIF) for both the general (3) and specific (4) regressions; the mean VIF is 7.82 and 2.82, respectively, which is not a case for concern. According to Hosmer and Lemeshow (2000), values of VIF exceeding 10 are often regarded as indicating multicollinearity and should be investigated.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

To check the robustness of our findings we conduct a range of subgroup analyses. In Table 12 we explore how our findings differ by the category of government spending, focusing on the two measures of government spending where we have sufficient number of observations. Regression 1 shows the results for *total government spending* and regression 2 the results for *government spending (consumption)*.[20]

In Table 12 we find statistically significant and positive coefficients for *poverty gap* and *year data* across both subgroups. This implies that studies using the poverty gap show a larger positive (smaller negative) correlation between government spending and income poverty than studies using the poverty headcount. The coefficient on *year data* also suggests that, holding all else constant, studies using more recent data (the average year of data exceeding 1990) find a larger positive (or smaller negative) relationship between these categories of spending and income poverty, in comparison with studies using less recent data. The results for the control variables are more mixed; for example, for the inflation variable the coefficient is positive and significant in regression 1, while it is negative and significant in regression 2. This variation in the results could well be due to the fact that the size of the sample in each case is rather small.

[20] For the remaining categories of government spending, most of the moderator variables were omitted due to the low number of observations and hence we felt there is not much value in presenting them here.

Table 12: Subgroup analysis for selected government spending variables (dependent variable=partial correlation)

	(1) Total government spending	(2) Government spending (consumption)
Standard error	-1.334	0.860
	(2.758)	(0.778)
Poverty gap	0.230***	0.091**
	(0.030)	(0.029)
Poverty others		0.020
		(0.012)
Developed	-0.380***	0.316***
	(0.069)	(0.060)
Unpublished	.	.
Year data	0.037***	0.043***
	(0.001)	(0.004)
OLS	-0.072	0.370***
	(0.199)	(0.029)
SSA	0.117**	
	(0.045)	
Trade		-0.400***
		(0.043)
Governance	-0.094	.
	(0.082)	
Inflation	0.726***	-0.082*
	(0.017)	(0.038)
Inequality measures	-0.175**	0.425***
	(0.065)	(0.043)
Education	.	.
Aid	0.079*	
	(0.034)	
Constant	0.100	-0.096
	(0.244)	(0.128)
N	54	44
R^2	0.762	0.688

Notes: Standard errors are reported in parentheses. All regressions use cluster standard errors to adjust for data dependence, i.e. multiple estimates per study. All columns use weighted least squares. All regressions are estimated with the government spending dummy variables set to 1. Some explanatory variables were dropped as they did not vary in the specifications * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 13 shows the results of further subgroup analyses designed to explore additional aspects of the data and to check the robustness of our main findings presented in Table 11 (note that Appendix 5 also presents further robustness checks). We were particularly interested to explore how our findings might change depending on the regional coverage of the samples used for estimation, and to check whether the inclusion of developed countries makes a difference.

The results from Table 13 strengthen our previous discussion and results. Consider *sub-Saharan Africa*, for example. Three of the government spending variables *(health*, *education*, and *health and education*) are again negative and statistically significant, meaning that these categories of government spending report larger negative (or smaller positive) partial correlations with income poverty. The same applies when only developed countries are considered. Similarly, *OLS* is consistently positive and significant in Table 13 and across subgroup analyses, implying that studies using this estimation method report on average a larger positive (or smaller negative) relationship between government spending and income poverty.

As mentioned above, we conducted further robustness checks using different approaches to addressing multiple dependent estimates per study. Appendix 5 presents the results of the different weighting schemes that are often used to deal with biases due to data dependence.

Table 13: Further subgroup analysis (dependent variable=partial correlation)

	(1) FAT-PET WLS	(2) WLS general	(3) Developed, no= 0	(4) Sub-Saharan Africa, yes=1
Standard error	1.564	-0.647	0.715	-0.231
	(0.967)	(0.710)	(0.766)	(0.855)
Poverty gap		0.137**	-0.045**	0.135**
		(0.051)	(0.018)	(0.050)
Poverty others		0.046	-0.050**	0.042
		(0.048)	(0.022)	(0.047)
Developed		-0.115		-0.064
		(0.074)		(0.098)
Unpublished		0.367***	0.283***	0.400***
		(0.091)	(0.007)	(0.112)
Year data		-0.008	-0.002	-0.008
		(0.006)	(0.001)	(0.006)
OLS		0.163***	0.172***	0.163**
		(0.055)	(0.000)	(0.063)
SSA		0.075	-0.024	
		(0.093)	(0.017)	
Trade		-0.021	-0.649***	-0.083
		(0.056)	(0.028)	(0.071)
Governance		-0.081	-0.267***	-0.042
		(0.087)	(0.044)	(0.099)
Inflation		-0.323***	-0.005	-0.388***
		(0.073)	(0.011)	(0.096)
Inequality measures		0.032	-0.155***	0.069
		(0.109)	(0.023)	(0.128)
Education		0.107	-0.056*	0.184
		(0.123)	(0.030)	(0.161)
Aid		0.381***	0.457***	0.363***
		(0.118)	(0.059)	(0.123)
Health government spending		-0.297**	-0.500***	-0.246
		(0.133)	(0.074)	(0.153)
Education government spending		-0.259*	-0.317***	-0.299*
		(0.143)	(0.027)	(0.158)
Health and education government spending		-0.279**	-0.173**	-0.252**
		(0.109)	(0.066)	(0.114)
Social net government spending		0.077	.	-0.351
		(0.239)		(0.244)
Government spending (consumption)		0.040	-0.011	0.024
		(0.086)	(0.050)	(0.095)
Government spending others		-0.104	-0.132***	-0.122
		(0.144)	(0.014)	(0.152)
Constant	-0.046	-0.024	0.185	-0.057
	(0.113)	(0.212)	(0.131)	(0.222)
N	164	164	94	139
R^2	0.092	0.677	0.726	0.682

Notes: Standard errors are reported in parentheses. All regressions use cluster standard errors to adjust for data dependence, i.e. multiple estimates per study. All columns use weighted least squares. Some explanatory variables were dropped as they did not vary in the specification.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

IS THERE AN ASSOCIATION BETWEEN GOVERNMENT SPENDING AND INCOME POVERTY?

The results in Tables 11–13 show that both the size and direction of the estimated relationship between government spending and income poverty are affected by a range of factors, including the control variables included in the analysis, the analytical approach used, and the measure of government spending used. This makes it difficult to answer the question of whether or not there is – on average – a strong association between government spending and income poverty. However, we are able to make some progress towards answering this question by calculating the average (or predicted) relationship between government spending and income poverty implied by the results in Tables 11–13 for a certain set of values of the moderator variables.

This is done in Table 14. We consider a study that is published, uses a more robust non-OLS analytical approach, includes all developing country regions but not developed countries in the analysis, uses a time period centred on 1990, includes all control variables in the analysis (e.g. governance, inflation, education, inequality measures, aid and trade), and uses the headcount measure of poverty. We then show the average relationship between different types of government spending and income poverty implied by the results in Tables 11–13.

Panel A of Table 14 shows the results from all studies, based on the results in Table 11. In this case, the average relationship is positive for total spending, consumption spending, and social welfare spending, and negative for health and education spending. In each case, however, the results are not statistically significant. Panel B then shows the results for total spending and consumption spending, based on the results in Table 12. The results are again quite similar – the average relationship is positive in each case, although for consumption spending the relationship is now statistically significant at the 5 percent level. Finally, Panel C shows the results for studies focusing on developing countries only. In this case, the results are markedly different – the average relationship is now negative for all five categories of spending, and statistically significant at the 1 percent level. Moreover, the size of the relationship is large: it has been suggested that a partial correlation coefficient of less than 0.07 in absolute terms can be considered small, with 0.17 or above considered to be moderate, and 0.33 or above large (Doucouliagos 2011, Abdullah et al. 2015).

The results in Table 14 must be treated with caution, since they refer of course only to one particular set of moderator variables; as Tables 11–13 show, both the size and direction of the estimated relationship between government spending and income poverty is clearly affected by a range of factors. Nevertheless, the evidence from studies focusing on developing countries only does suggest that higher government spending, particularly in health and education, although also in other sectors, has been associated with the reduction of income poverty, at least on average. Note that one possible explanation for the different results when including developing countries only is that the impacts of government spending on income poverty in developed countries are smaller, or harder to detect, because overall

levels of poverty are lower. This could explain the finding of a stronger association between government spending and poverty when developed countries are excluded from the sample.

Table 14: Predicted (average) relationship between government spending and income poverty

	Total spending	Consumption spending	Health spending	Education spending	Social welfare spending
A. Pooled analysis, all studies~					
	0.147	0.186	-0.150	-0.112	0.224
B. Subgroup analysis, all studies #					
	0.028	0.217**	.	.	.
C. Pooled analysis, studies including developing countries only $					
	-0.515***	-0.526***	-1.015***	-0.832***	-0.515***

Notes: ~Based on regression 3 in Table 11; # based on regressions 1–2 in Table 12; $based on regression 3 in Table 13. The following values of each moderator variable are assumed: standard error=0; developed=0; unpublished=0; year=0; OLS=0; SSA=1; trade, governance, inflation, inequality measures, education, and aid all equal to 1; poverty gap=0; other poverty measures=0. Note that the subgroup analysis is carried out only for total spending and consumption spending because of insufficient observations for other categories of spending. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

SUMMARY

Overall, the results in this section show that both the size and direction of the relationship between government spending and income poverty are affected by a range of factors.

First, we find fairly strong evidence that the relationship between government spending and income poverty varies according to the type of spending. We find that studies looking specifically at government spending on health or education typically find larger negative (or smaller positive) partial correlations with income poverty than studies looking at government spending as a whole. This is an important finding, which is consistent with, and adds further support to, the view that these sectors of government expenditure are more 'pro-poor' than others (e.g. Mosley et al. 2004, Gomanee et al. 2005). However, we cannot say for sure that higher spending on health and education has a causal impact on income poverty reduction, since not all econometric studies control for the possibility of joint causality; that is, countries which spend more on health and education may also spend more in other areas relevant to income poverty reduction.

Second, we find some evidence that the measure of poverty used makes a difference to the results, in that estimates using the poverty gap (which reflects the depth as well as the incidence of poverty) show a larger positive (or smaller negative) relationship between

government spending and income poverty, in comparison with estimates using the headcount measure (which reflects only the incidence of poverty). One possible explanation for this result is that the impacts of government spending are strongest among households closer to the poverty line, and weaker for households further away from the poverty line. Although we have seen that most econometric studies do report results for more than one measure of poverty (see Section 3.2), which is to be applauded, this finding highlights the dangers of drawing policy conclusions solely on the basis of results for the most commonly reported measure, the poverty headcount.

Third, we find fairly consistent evidence that the method of estimation makes a difference to the results. In particular, studies using ordinary least squares (OLS) typically find a smaller negative (or larger positive) relationship between government spending and income poverty. This is an important finding because it indicates the importance of using more robust analytical approaches with lower risk of bias, such as panel data methods and instrumental variables estimation. (Recall that, according to the risk of bias tool developed previously, most of the studies identified as having a medium risk of bias use OLS as an estimation method.) Studies relying on OLS appear to have a tendency to underestimate the contribution of government spending to the reduction of income poverty, compared with more robust analytical approaches.

Fourth, we also find consistent evidence that the control variables used in the analysis make a difference to the results. This is an important finding because researchers tend to differ in terms of precisely which control variables they include in their analysis. Our results show that these choices affect the estimated results, sometimes quite substantially – and therefore highlight the importance of very careful consideration by researchers of the control variables included in their analysis. Although a large set of control variables is not always possible (due to lack of data), our results suggest that failing to control for measures of governance and inflation could lead to biased estimates of the relationship between government spending and income poverty.

Fifth, we find some evidence of publication bias. This is another important finding because, unless corrected for in some way, publication bias can lead to significant errors in attempts to summarise empirical knowledge on a given issue. Publication bias is common in the literature, and has been observed in a number of different contexts. For example, Doucouliagos and Paldam (2008, 2009, 2014) have found evidence of publication bias in estimates of the relationship between foreign aid and economic growth, with negative estimates being under-reported in the literature. In our case, the publication bias takes the form of a more negative (less positive) relationship between government spending and income poverty among peer-reviewed academic journal articles than among other types of publications (working papers, book chapters, policy reports). It is difficult to say precisely what might be driving this finding, but one possible explanation is a tendency for researchers and journal editors to prioritise results showing a negative relationship between government spending and income poverty – perhaps because this confirms the ‘do-good’ element of

public action, as has been argued for the case of foreign aid (Doucouliagos and Paldam 2009).

Finally, in terms of our central question – is there a strong association between measures of government spending and income poverty – we find that the answer depends very much on the sample of countries included in the analysis. Across all studies, we find no evidence of a statistically significant relationship between government spending and income poverty. However, when considering studies of developing countries only, we find evidence of a negative and statistically significant relationship between government spending and income poverty, which is particularly strong for health and education spending. This finding must be treated with caution, however, since both the size and direction of the estimated relationship between government spending and income poverty is clearly affected by a range of factors. Moreover, greater spending in these sectors cannot be guaranteed to reduce income poverty. Nevertheless, the evidence does suggest that higher spending in these and in other sectors has been strongly associated with the reduction of income poverty, at least on average.

4.3 SYNTHESIS OF TAX STUDIES

It was not possible to employ meta-regression analysis for the studies focusing on the relationship between taxation and poverty, as only one study made it to the synthesis stage: Santarelli and Figini (2004). This study is a book chapter that primarily examines the impact of globalisation on income poverty. However, the study also includes an analysis of the effects of various tax-related variables on poverty – in particular the share of total tax revenues in GDP, which is used as a proxy for the size of government involvement in the economy more generally.

The study measures poverty using national-level data on $1-a-day and $2-a-day poverty lines across a sample of 54 developing countries between 1970 and 1998, with data taken from Sala-i-Martin (2002). The authors include a wide range of other explanatory variables in the regression, including trade openness, GDP per capita, and a set of dummy variables designed to reflect geographic, cultural, and historical influences on income poverty. Note also that the authors carry out their regressions for both absolute and relative poverty, which they consider to be two separate concepts with different approaches to measurement; for this review, however, we are only concerned with the results for absolute poverty.

In terms of results, the study finds that higher tax revenues as a share of GDP are associated with lower income poverty, and that this relationship is statistically significant in most cases. The authors do note, however, that the relationship is weaker and less statistically significant when using the $2-a-day poverty line, suggesting that public intervention is more important in alleviating extreme income poverty (Santarelli and Figini 2004, p. 283). In conclusion, although this study does focus on tax measures, the results refer more broadly to the effects of the 'size of government', including the effects of taxes and the effects of the

spending financed by those taxes.[21] This is recognised by the authors when they conclude that 'although many caveats exist …, the "size of government" seem[s] to be associated with lower poverty levels' (ibid. p. 193). They go on to argue that this is most likely due to 'the provision of necessary goods and safety-nets' (ibid.), rather than taxation per se.

4.4 SYNTHESIS OF TRADE STUDIES

As with the tax-related studies, it was not possible to employ meta-regression analysis for the studies focusing on trade policy, since in this case only three studies made it to synthesis stage: Agenor (2002), Hasan et al. (2006), and Bergh and Nilsson (2011).

The study by Agenor (2002) examines analytically and empirically how globalisation affects poverty in low- and middle-income countries. It uses data from 1985 to 1999 applying different methods (e.g. principal component analysis, OLS) to estimate the effect of trade openness and financial integration on poverty, proxied by the poverty headcount index. It is included in our synthesis as it also contains information on the effect of trade policy variables on poverty – in particular the average tariff rate, which is included as a control variable in the main regressions reported in the Agenor paper.22 Overall the paper concludes that globalisation seems to hurt the poor below a certain threshold; but beyond that, it seems to reduce poverty. In terms of the specific results for the trade policy indicators, however, the study found that the average tariff rate has a statistically significant negative impact on income poverty, implying that trade liberalisation (as measured by a fall in average tariffs) increases poverty (ibid. p. 32).

The study by Hasan et al. (2006) examines the effects of institutions and government policies on economic growth and poverty. The study uses data from 1990 to 1999 from different regions of the world, including developed countries. It is relevant here because it includes the Sachs and Warner (1995) trade policy index as one of the explanatory variables included in the regression analysis. The study finds no evidence of a statistically significant relationship between this measure of trade policy and income poverty, although the authors do find evidence of a statistically significant negative relationship between trade volumes (as a share of GDP) and poverty. This, they argue, suggests that 'a more open trade policy may not lead to significantly lower poverty' (Hasan et al. 2006, p. 35).

Finally, the study by Bergh and Nilsson (2011) uses panel data for around 100 countries covering all geographical regions between 1988 to 2007 to examine the relationship between globalisation and income poverty, measured by the poverty headcount index. The

[21] To measure the separate effects of taxes, the authors would need to include measures of taxes and spending in the same regression, which they do not do – most likely because of multicollinearity (taxes and spending being highly correlated).

[22] Note that this study was also included in the government synthesis as the regression analysis also includes measures of government spending among the explanatory variables, in particular public transfers as a share of GDP.

study is relevant to this review since one of the globalisation indices used in the paper focuses specifically on measures of trade policies (e.g. import tariffs, non-tariff barriers). The authors find evidence of a negative and statistically significant relationship between more liberal trade (lower restrictions) and income poverty. In addition, contrary to the findings of Hasan et al. (2006), the relationship is stronger and more robust than the relationship between trade flows and poverty. Finally, and particularly relevant for our purposes, is their finding that the magnitude of the effect decreases only marginally when controlling for economic growth. This suggests that higher growth is not the main mechanism through which trade liberalisation reduces poverty; it is instead by influencing the distribution of growth, and thereby raising the translation of growth into poverty reduction (Bergh and Nilsson 2011 pp. 3, 23).

5. RESULTS (III): SYNTHESIS, EX-ANTE SIMULATION STUDIES

5.1 INTRODUCTION

As discussed in Section 3, we identified 112 studies using ex-ante simulation methods which meet our inclusion criteria. For purposes of synthesis we again restrict the focus to studies reporting estimates of the effect of fiscal or trade policy on income poverty at the national level. A total of 82 studies meet these more restricted criteria. In this section we report the results of our synthesis and meta-analysis for these studies.

For each policy simulation contained in these studies, we calculate the percentage change in income poverty before and after the policy change thus:

$$d = \frac{H(y_1;z) - H(y_0;z)}{H(y_0;z)} * 100$$

where *y* is a measure of individual or household income, *H* is some summary measure of poverty (e.g. the poverty headcount or poverty gap), *z* is the absolute poverty line (assumed fixed in real terms), and subscripts 0 and 1 indicate the time period before and after the policy change. Thus $H(y_0;z)$ indicates the actual level of poverty in the base year, while $H(y_1;z)$ indicates the simulated level of poverty following the policy change. A positive value of *d* implies that the policy change increases income poverty, while a negative value implies that it reduces income poverty.

The use here of proportional as opposed to absolute changes in poverty is used to control for differences in poverty measures used. Although most studies use the poverty headcount, other measures are also used (e.g. the poverty gap). By measuring impacts in proportional terms, the results are more comparable across the different measures.

Given the fact that some studies carry out more than one policy simulation and use more than one measure of poverty, and that some studies focus on more than one country and more than one year, our final sample includes 751 observations. Each one of these observations corresponds to the impact of a particular fiscal or trade policy simulation on a particular measure of income poverty (at the national level), in a particular country and in a particular year. In some cases we were unable to calculate the value of *d* due to missing information, in particular when studies report the absolute change in poverty in response to a policy simulation, but not the baseline level of poverty. A total of 27 potential observations from one study were lost in this way.

Table 15 shows some basic descriptive statistics for our sample of observations, both in total and separately for fiscal and trade policy simulations. The range of impacts is shown to be relatively large. The largest reduction in poverty following a policy intervention is 81 percent; at the other extreme, the largest increase is 68 percent. These overall figures do not, however, reflect the diversity among the estimated impacts, in terms of the analytical approach used (e.g. standard incidence analysis vs CGE models), and the more specific type

of fiscal or trade policy simulation carried out (e.g. tax reforms vs cash transfer programmes). In the next two subsections we disaggregate further between the results for each of the two main policy areas, with a view to explaining some of the diversity shown in Table 15.

Table 15: Effects of fiscal and trade policy on income poverty: descriptive statistics and frequency distribution

A. Descriptive statistics							
	Mean	**Median**	**Standard deviation**	**Min. value**	**Max. value**	**Studies**	**Observations**
Fiscal policy simulations	-12.4	-7.5	18.3	-81.4	67.7	53	621
Trade policy simulations	-1.8	-1.7	7.1	-37.5	34.4	30	130
TOTAL	-10.6	5.7	17.4	-81.4	67.7	81	751

B. Frequency distribution							
	Reductions in poverty[#]			No change	**Increases in poverty[#]**		
	Large	Moderate	Small		Small	Moderate	Large
Fiscal policy simulations	149	218	160	29	44	11	10
Trade policy simulations	3	25	64	4	24	9	1
TOTAL	152	243	224	33	68	20	11

Notes: The numbers in this table refer to the percentage change in a given measure of income poverty from a given base year; [#]small: less than 5 percent; moderate: between 5 and 20 percent; large: more than 20 percent. The underlying figures were extracted from the 92 studies that use an ex-ante simulation approach to estimate the effects of trade or fiscal policy on income poverty at the national level. A list of the included studies is provided in Appendix 4.

A final point worth noting relates to risk of bias. The ex-ante simulation studies reviewed in this section encompass three main analytical approaches. The first and simplest approach, which we refer to as standard incidence analysis, assumes there are no behavioural responses to fiscal or trade policy changes. This approach is typically justified as being relatively straightforward to implement, and providing a reasonable first approximation of the true effect of a policy change (Sahn and Younger 2003, Martinez-Vazquez 2004). Nevertheless, by not taking into account behavioural responses to policy changes it has an inherent 'risk of bias'. This risk is greater when considering the medium-term effects of policy changes – since in the immediate short term individuals may be limited in their ability to adjust their behaviour in response to policy changes – and also when considering larger, more substantial changes in policy, since small policy changes at the margin may be argued to have less effect on behaviour.

The two other approaches are behavioural incidence analysis and applied computable general equilibrium (CGE) analysis. Behavioural incidence analysis is a general term used here to refer to studies which take into account some behavioural responses considered important, although within a partial equilibrium framework. Applied CGE analysis, by contrast, estimates the impact of fiscal and trade policy interventions in the context of a model of the whole economy, allowing for a range of behavioural responses, linkages, and spill-overs between different sectors of the economy. In theory, applied CGE analysis should provide more accurate estimates of impact than standard incidence analysis. However, they often only take some behavioural responses into account, and they rely on the accuracy of the equations and parameters which are used to construct them. In addition, CGE models are computationally complex and the results are often sensitive to modelling choices.

In summary, therefore, standard fiscal incidence analysis is relatively straightforward to implement, but has an inherent risk of bias since it does not take into account behavioural responses to taxes and tax changes. However, behavioural incidence analysis and applied CGE analysis are also subject to bias, depending on the range of behavioural responses taken into account and the reliability of the estimates of relevant elasticities included in the underlying models. This in turn means that it is difficult to simply rank the three approaches in terms of 'high', 'medium', and 'low' risk of bias. Instead, we investigate the extent to which the results differ across these three approaches, exploring as far as possible the extent to which conclusions drawn from one approach are backed up by results from other approaches.

5.2 SYNTHESIS: FISCAL POLICY

In this section we review the evidence on the effects of fiscal policy interventions on income poverty. We distinguish between the results from average and marginal fiscal incidence analysis (Martinez-Vazquez 2004). Average fiscal incidence analysis compares the existing distribution of income (including, but not necessarily limited to, the level of poverty) with a counterfactual situation in which one or more taxes or spending programmes are set at zero. For example, we might compare the level of poverty under the prevailing rate of VAT (say 15 percent) with a counterfactual scenario in which VAT is removed (i.e. 0 percent). This gives the average or 'total' effect of VAT on poverty. Marginal incidence analysis, by contrast, looks at smaller changes in tax rates or levels of spending on the distribution of income. For example, we might compare the level of poverty under a VAT of 15 percent with a counterfactual scenario in which VAT is increased to 16 percent. This gives the 'marginal' effect of a change in VAT (in this case a 1 percent increase) on poverty.

Of these two approaches, average incidence analysis is more common: we have 468 estimates in this case, derived from 34 studies, compared with 153 estimates from 21 studies for marginal incidence analysis. Nevertheless, the results from marginal incidence analysis are often considered to have more relevance to policy-makers, since they correspond more closely to the sorts of fiscal policy reforms typically implemented in practice (Bourguignon et al. 2006). They are also considered to be less demanding in terms

of data requirements, and less subject to bias, since small policy changes at the margin may be argued to have less effect on household behaviour.

AVERAGE INCIDENCE ANALYSIS

Table 16 shows the results for the estimated effects of fiscal policy interventions on income poverty in developing countries derived from average incidence analysis. These results give an indication as to which types of fiscal policy interventions – for example, direct taxes and transfers, indirect taxes and subsidies, in-kind transfers – have the largest overall impacts on income poverty.

Table 16: Effects of fiscal policy simulations on income poverty: average incidence analysis

A. Descriptive statistics							
	Mean	**Median**	**Standard deviation**	**Min. value**	**Max. value**	**Studies**	**Observations**
Cash transfers	-18.4	-13.0	17.5	-81.4	7.7	30	379
In-kind transfers	-4.8	-3.5	5.4	-21.5	0.6	3	27
Indirect subsidies	-3.9	-2.5	4.5	-10.0	-0.0	2	6
Public works programmes	-12.5	-13.5	5.5	-17.4	-6.6	1	3
Income taxes	1.2	0.6	1.4	0.0	4.0	6	18
Indirect taxes	3.9	3.9	0.3	3.6	4.1	1	3
Combined fiscal~	12.5	2.4	22.0	-15.2	67.7	8	32

B. Frequency distribution							
	Reductions in poverty#				**Increases in poverty#**		
	Large	Moderate	Small	No change	Small	Moderate	Large
Cash transfers	127	165	78	4	-	1	-
In-kind transfers	1	8	12	3	3	-	-
Indirect subsidies	-	2	4	-	-	-	-
Public works programmes	-	3	-	-	-	-	-
Income taxes	-	-	-	8	10	-	-
Indirect taxes	-	-	-	-	3	-	-
Combined fiscal~	-	4	4	1	8	7	7

Notes: The numbers in this table refer to the percentage change in a given measure of income poverty from a given base year; #small: less than 5 percent; moderate: between 5 and 20 percent; large: more than 20 percent; ~combined fiscal policy simulations involving changes in taxes and spending

Table 16 shows that the largest impacts are observed for *cash transfers*: the average effect across all estimates is a reduction in income poverty by 18.4 percent (379 observations, 30 studies). The largest (most negative) impact is minus 81 percent; this is the estimated impact of social pensions on the squared poverty gap in Azerbaijan in 2003, from the study by Habivov and Fan (2006). In addition, in around one third of cases, the estimated reduction is large in size (defined here as greater than 20 percent). There are in fact only 3 observations showing a positive effect of cash transfers on poverty, and in 2 of these cases the effect is small. The only significant exception is one of the simulations carried out in the paper by Bussolo and Round (2003), on the impact of income transfers on the headcount in Ghana in 1993 (although all other simulations in this paper show a reduction in poverty).

The average effect of *in-kind transfers* (27 observations, 3 studies) is a reduction of poverty by 4.8 percent, which is less than one third of the average effect of cash transfers. The estimated impacts are again virtually all negative, however, except for 3 observations showing no effect. The largest effect is a reduction in poverty by 22 percent; this is the estimated impact of the public distribution system (PDS) on the squared poverty gap in India in 1994, from the study by Himanshu (2013). The three cases of zero impact refer to the impact of PRAF in-kind transfers on the three FGT measures of poverty in Honduras in 2007, from the study by Osório (2008).

The average effect of *indirect subsidies* (6 observations, 2 studies) is a reduction of poverty by a similar amount: 3.9 percent. This includes the study by Osório (2008), which looks at the impact of electricity subsidies in Honduras in 2007 and finds the effects on income poverty to be small. For *public works programmes*, we have just 3 estimates from the study by Cogneau and Robilliard (2008). These authors use a CGE model to estimate the impact on poverty of implementing a workfare programme in Madagascar in 1994. The results indicate a reduction of poverty of between 7 and 17 percent, depending on the measure of poverty used.

In terms of taxation, our sample includes 18 estimates from 6 studies of the impact of *direct taxes* on income poverty. These studies (Lustig 2011, Lustig et al. 2012, Bucheli et al. 2013, Higgins and Pereira 2014, Jaramillo 2014, Scott 2014) all use standard fiscal incidence analysis. All estimates are positive, indicating that direct taxes raise poverty, by lowering household disposable income, but they are all small in magnitude (less than 5 percent). Note that a negative impact of direct taxes on poverty is not usually possible with standard fiscal incidence analysis, since post-tax income is always lower than pre-tax income. A possible exception occurs with negative income taxes, but these are treated in this review as cash transfers. The same applies to the effects of *indirect taxes*, although in this case we have just 3 estimates from 1 study (Jaramillo 2014).

Finally, our sample includes a further 32 observations from 8 studies which look at the effect on poverty of *combined fiscal policy simulations* involving changes in taxes and spending. The majority of these refer to the combined effect of indirect taxes and subsidies on income poverty, from the studies by Arauco et al. (2014) on Bolivia, Higgins and Pereira (2014) on Brazil, Lustig et al. (2012) on Argentina, Bucheli et al. (2013) on Uruguay, and Scott (2014) on Mexico. With the exception of Scott, these studies all find positive impacts, namely the combination of indirect taxes and subsidies is to raise income poverty, often by a moderate or even large amount (more than 20 percent). Another study (Breisinger et al. 2012), on the impacts of removing petroleum subsidies in Yemen in 2009, shows that the effects on income poverty vary quite significantly, between a reduction of 15 percent and an increase of 6 percent, depending on whether the revenue savings from the reform are used for deficit reduction, infrastructure investment, or a cash transfer programme. The policy reduces poverty the most when savings are used for infrastructure investment.

In Appendix 6 we provide a more detailed statistical analysis which helps explain the diversity of the estimated impacts of fiscal policy interventions shown in Table 16, focusing on cash transfers where we have the largest number of observations. Three main findings stand out.

First, there are some clear differences by region. The observed impacts of cash transfers tend to be largest in Eastern Europe and Central Asia, where the average effect (across 18 estimates) is a reduction in poverty of 32 percent. This is arguably a special case, given that large-scale welfare programmes are typically a historical legacy of former socialist rule. Nevertheless, the average effects are also negative and substantial in other regions, namely Latin America (a reduction of 19 percent on average, across 265 estimates), sub-Saharan Africa (a reduction of 17 percent, across 68 estimates), and East Asia and Pacific (a reduction of 10 percent, across 27 estimates). Note, however, that we have only 1 observation for the Middle East and North Africa region, and no observations for South Asia.

Second, there are significant differences by level of average income, as measured by GNP per capita. In middle-income countries, for example, the median effect of cash transfers is a reduction in poverty by 14 percent, but in low-income countries the median effect is a reduction of 7 percent. More generally, the negative impacts of cash transfers on poverty tend to become larger (in absolute terms) as a country's GNP per capita rises. Note, however, that the mean effect of cash transfers on poverty is much more similar between low- and middle-income countries, indicating that there are some low-income countries in which cash transfers make a substantial contribution to income poverty reduction at the national level.

Third, in terms of the different analytical approaches, the average impacts of cash transfers estimated by standard fiscal incidence analysis, behavioural incidence analysis, and CGE models are very similar, at between 16 and 19 percent. There is therefore no evidence from these results to suggest that the use of standard fiscal incidence analysis has any substantial tendency to overestimate (or underestimate) the impacts of cash transfers on income poverty.

MARGINAL INCIDENCE ANALYSIS

Table 17 shows the impacts of fiscal policy interventions on income poverty derived from marginal incidence analysis.

For *cash transfers* (85 observations, 6 studies), the majority of estimates refer to the impacts of expansions in cash transfer programmes on income poverty, either in terms of the size of the transfer or in terms of coverage and eligibility. The average effect is a reduction in income poverty of 12.2 percent; and in around one quarter of cases, the reduction is large in size (defined here as greater than 20 percent).

For *indirect taxes* (15 observations, 2 studies), the estimates refer to the effects of indirect tax reforms on poverty. One study (Karl 2004) looks at the effect in Colombia in 2000 of unifying VAT rates at 10 percent; using a CGE model, the study finds that this reform reduces poverty. The other study (Ramirez et al. 2006), which also focuses on Colombia, looks at the effect of shifting to a two-tier VAT system – a 16 percent basic rate, combined with a 6 percent preferential rate. Both studies use a CGE model and find that the reforms result in a reduction of income poverty in most cases, except for the first simulation carried out by Ramirez et al. (2006), in which the additional revenue generated by the reform is not channelled back into government expenditure.

For *infrastructure spending* (25 observations, 5 studies), the estimates refer to the effects of increased government infrastructure spending on income poverty. The effects here are quite small: the average effect is a reduction of 1.2 percent, and only in 3 out of 25 cases do we see a reduction in poverty greater than 5 percent. This is somewhat surprising given that the simulations carried out by these studies involve quite large increases in government infrastructure spending: typically around 25 or 30 percent.

Our sample also contains a further 28 observations from 9 studies applying marginal incidence analysis to *other sorts of fiscal policies*. One of these is the study by Oktaviani et al. (2007) on the effect of a reduction in fuel subsidies on poverty in Indonesia in 2000. Using a CGE model, they estimate that this would raise poverty substantially, by between 45 and 54 percent, depending on the poverty measure. This study does not make clear, however, how the revenue savings from a lower subsidy would be used. Another is the study by Amir et al. (2013) which looks at the impact of a shift to a more simplified structure of income and corporation tax in Indonesia, again using a CGE model. The estimated effects on poverty are all small in size, however: reductions in poverty of less than 1 percent.

Table 17: Effects of fiscal policy simulations on income poverty: marginal incidence analysis

A. Descriptive statistics							
	Mean	**Median**	**Standard deviation**	**Min. value**	**Max. value**	**Studies**	**Observations**
Cash transfers	-12.2	-7.1	13.3	-50.0	1.7	6	85
Indirect taxes	-1.7	-1.0	2.3	-6.3	1.2	2	15
Infrastructure spending	-1.4	-0.5	3.4	-12.5	2.6	5	25
Other fiscal policies	4.6	-0.1	17.3	-12.6	54.2	9	28

B. Frequency distribution							
	Reductions in poverty[#]				**Increases in poverty[#]**		
	Large	Moderate	Small	No change	Small	Moderate	Large
Cash transfers	21	27	28	3	6	-	-
Indirect taxes	-	2	7	3	3	-	-
Infrastructure spending	-	3	15	3	4	-	-
Other fiscal policies	-	4	12	4	2	3	3

Notes: The numbers in this table refer to the percentage change in a given measure of income poverty from a given base year; [#]small: less than 5 percent; moderate: between 5 and 20 percent; large: more than 20 percent.

SUMMARY

In summary, the evidence reviewed in this section indicates four main findings.

First, it is clear from this evidence that fiscal policy interventions can make a substantial contribution to income poverty reduction. Out of a total sample of 621 estimates obtained from 53 studies, we show that in around one quarter of cases the estimated impacts on income poverty exceed 20 percent; and in nearly two thirds of cases the impacts exceed 5 percent. Although the contribution of fiscal policy to poverty reduction and pro-poor growth has long been recognised (e.g. van de Walle and Nead 1995, Klasen 2003, McKay 2004), the results in this section document the magnitude of estimated impacts on the basis of what is arguably the largest and most comprehensive review of the literature carried out to date.

Second, it is clear that the poverty-reducing effects of fiscal policy are greater for government spending than they are for taxation. There is no evidence from our sample of studies that the direct taxes paid by households below the poverty line increase poverty substantially, at least when considering the 'first-round' effects of these taxes. As has been

argued elsewhere (e.g. Claus et al. 2012), this is most likely due to the fact that poor households are exempt from such taxes, or are completely outside the direct tax system altogether. This finding must be treated with a certain amount of caution, however, since there are far fewer studies in our sample looking at the impact of taxes on poverty than there are studies looking at the impact of government spending. This applies particularly to the impacts of indirect taxes on income poverty, where we have surprisingly little evidence to go on.

Third, with regard to government spending, the largest reductions in poverty in our sample are observed to result from cash transfers. On average, cash transfers reduce income poverty by significantly more than either in-kind transfers (e.g. health and education services) or indirect subsidies (e.g. subsidised fuel or electricity). It appears, therefore, from this evidence that cash transfers are a more powerful tool for income poverty reduction than in-kind transfers, at least on average. This finding must again be treated with some caution, however, for two reasons. First, the sample of studies looking at the impact of in-kind transfers and indirect subsidies is much smaller than that looking at cash transfers. Second, the value of in-kind transfers is typically not in itself considered part of the definition of income used to calculate income poverty – unlike cash transfers, which form part of a household's disposable income. This means that the direct, 'first-round' effects of in-kind transfers are typically not included when assessing their impacts on poverty, which may underestimate their contribution to overall poverty reduction (Chen and Ravallion 2010).

Finally, while cash transfers have the largest effect on income poverty on average, there is also a substantial variation around that average, ranging from a reduction of 81 percent to an increase of 7 percent. There is a general tendency for the poverty-reducing effect of cash transfers to be greater, the higher the level of GNP per capita. This is most likely due to higher overall levels of government spending on cash transfers as GNP per capita rises, and perhaps also better targeting. It in turn suggests that there are certain structural constraints which to some extent limit the amount of poverty reduction that can be achieved by cash transfers in countries with lower average income, at least in the short term. Nevertheless, even in low-income countries, the median impact of cash transfers on poverty – 7 percent – is clearly not small, and there are some low-income countries in which impacts are much larger than this. This is an important counterpoint to the argument sometimes made, that cash transfers in developing countries are too small to have an impact on income poverty at the national level (Kabeer et al. 2012).

In addition, we find no evidence of any major differences between the estimated impacts of cash transfers derived from different analytical approaches. Although the majority of estimates found in the literature are based on standard incidence analysis – due in part to its lower data requirements and greater ease of computation – we found no significant differences between the results from this method and the results from studies using behavioural fiscal incidence analysis or CGE models. This finding must again be treated with caution, however, since very few studies apply more than one analytical approach to the

same policy simulation. Ideally, more studies would use more than one approach to estimate the impacts of any given policy intervention, thereby allowing a more direct comparison between their results.

5.3 SYNTHESIS: TRADE POLICY

We now turn to a discussion of the results from the trade policy simulations. In this case we have 130 estimates from 30 studies (Table 18). The vast majority of these refer to the effects of *trade liberalisation* on poverty, namely reductions in (or elimination of) artificial barriers or inducements to trade, such as import tariffs, import quotas, export taxes, and export subsidies (127 estimates, from 32 studies). The estimated effects range in this case from a reduction in poverty by 38 percent – the estimated effect of the complete liberalisation of agricultural and non-agricultural tariffs on the poverty gap in Tunisia in 2001, from the study by Hassine et al. (2010) – to an increase in poverty by 13 percent – the estimated effect of the elimination of import tariffs on agricultural cereals on the poverty headcount in Morocco in 1998, from the study by Ravallion and Loshkin (2008).

The remaining 3 observations from 2 studies refer to the effects of *trade protectionism*, or increases in artificial barriers to trade. One of these is the study by Lambert et al. (1991), which found that an increase in export taxes would raise poverty in Côte d'Ivoire in 1980 by up to one third, depending on the measure of poverty used. The other is the study by Vos and de Jong (2003), who find that a doubling of import tariffs in Ecuador in 1993 would lead to an increase in poverty of 3 percent.

Table 18: Effects of trade policy simulations on income poverty

A. Descriptive statistics							
	Mean	**Median**	**Standard deviation**	**Min. value**	**Max. value**	**Studies**	**Observations**
Trade liberalisation	-2.3	-1.8	6.1	-37.5	12.9	29	127
Trade protection	18.6	18.7	15.9	2.6	34.4	2	3

B. Frequency distribution							
	Reductions in poverty[#]				**Increases in poverty[#]**		
	Large	Moderate	Small	No change	Small	Moderate	Large
Trade liberalisation	3	25	64	4	23	8	-
Trade protection	-	-	-	-	1	1	1

Notes: The numbers in this table refer to the percentage changes in a given measure of income poverty from a given base year; [#]small: less than 5 percent; moderate: between 5 and 20 percent; large: more than 20 percent.

In Appendix 6 we provide a more detailed statistical analysis which seeks to explain the diversity of the estimated impacts of trade policy interventions shown in Table 18, focusing on the effects of trade liberalisation where we have the largest number of observations. All but one of the simulations carried out are obtained from studies using CGE models, so differences in analytical approach are not an issue here. Nevertheless, the range of estimated impacts on poverty is still quite large, ranging from minus 38 percent to plus 13 percent. We investigate the extent to which this variation can be explained by the following factors:

- the region, income status, and average income of the country undergoing liberalisation;
- the year in which the trade liberalisation takes place;
- the extent of liberalisation, either 'full', meaning the complete removal of all import tariffs, or 'partial', meaning only a reduction in import tariffs;
- the measure of poverty used, such as the poverty headcount or the poverty gap.

The results from this analysis may be summarised as follows. First, there is some indication of differences across regions – for example, the average effect of trade liberalisation on poverty is less negative (more positive) in sub-Saharan Africa compared with other regions. This suggests that there are constraints to the translation of trade liberalisation into poverty reduction for countries in this region. Second, and relatedly, there are differences by income group – the average effect of trade liberalisation in low-income countries is less negative (more positive) in low-income countries compared with middle-income countries. Third, there is evidence that the poverty-reducing impact of trade liberalisation has been greater in the decade of the 2000s compared with the 1990s, and also for full as opposed to partial trade liberalisation. Overall, however, we have only limited ability to explain the range of variation in reported results; the R-squared figure for our regression is 0.22, indicating that nearly 80 percent of the variation in the estimated impacts of trade liberalisation on income poverty is unexplained by the factors listed above.

In summary, the results in this section indicate two main findings. First, it is clear from the evidence that trade policy interventions – in particular, trade liberalisation, which the vast majority of the evidence focuses on – can have a substantial impact on income poverty reduction in developing countries. Although the average impact across all estimates is quite small (a reduction of around 2 percent), in more than one quarter of cases we see impacts that are at least moderate in size (greater than 5 percent), and some that are quite large in size (greater than 20 percent). Although trade liberalisation is not implemented solely with the aim of reducing poverty – it is widely considered to be an important policy for promoting economic performance more broadly – these findings highlight to policy-makers the crucial importance of taking the poverty impacts of trade reforms into account, and designing reforms in such a way that adverse impacts are avoided and beneficial impacts strengthened.

Second, we have only limited success in terms of uncovering the factors that drive differences in the estimated impact of trade liberalisation on poverty. Differences in analytical approach are less of an issue in this case, since all but one of the studies rely on CGE models (although different types of CGE models, which we have not tested, could be one factor that could be investigated in further research). We do, however, find evidence that the translation of trade liberalisation into poverty reduction has been more limited in low-income countries, and in sub-Saharan Africa, in comparison with other income groups and regions. This finding highlights to policy-makers the importance of combining trade reforms with complementary policies, financed if necessary via 'aid for trade', designed to improve the translation of trade reforms into income poverty reduction.

6. RESULTS (IV): SYNTHESIS, QUANTITATIVE CASE STUDIES USING DECOMPOSITION ANALYSIS

The method of decomposing measures of income inequality into the contribution of different income sources (e.g. Shorrocks 1982, Lerman and Yitzhaki 1985) does not readily extend to poverty measures. However, similar approaches for assessing the contribution of different income sources to income poverty, and to trends in income poverty over time, have been proposed in the literature, in particular Kakwani et al. (2004) and Azevedo et al. (2013).

The approach set out by Kakwani et al. (2004) involves calculating the elasticity of poverty with respect to each income source – in other words, the percentage change in a measure of poverty if a given income source increases by 1 percent. The more negative the elasticity, the stronger the contribution of that income source to poverty reduction. Jitsuchon (2006) calculates the value of this elasticity for government (cash) assistance programmes in Thailand in 2000. He finds an elasticity of
-0.086 for the poverty headcount and -0.154 for the poverty gap. According to these results, therefore, a 10 percent rise in expenditure on such programmes would reduce income poverty by between 0.8 and 1.5 percent, all else being equal.

The approach set out by Azevedo et al. (2013), involves simulating the contribution of different income components (and other factors, such as household composition) to observed changes in poverty, based on the so-called Shapley-Shorrocks method. The approach is used in the studies by Azevedo and Atamanov (2014) and Azevedo et al. (2014) on the drivers of poverty reduction in Turkey and Tajikistan. In Turkey, social assistance accounted for a reduction in poverty of 3 percentage points between 2002 and 2011, out of a total reduction of 30 percentage points (Azevedo and Atamanov 2014). In Tajikistan, social assistance played a very minor role in the reduction of poverty between 2003 and 2009: a reduction of 1 percentage point out of a total reduction of 36 percentage points (Azevedo et al. 2014).[23]

Finally, there are regression-based decompositions. Inchauste et al. (2014) use this approach to assess the contribution of public transfers to reductions in poverty in Bangladesh, Peru, and Thailand during the 2000s. They find that public transfers made no contribution to the reduction of income poverty in Bangladesh over this period, but a more significant contribution in Peru and Thailand: 1.4 percentage points out of a total reduction of 16.1 percentage points in Peru, and 2.5 percentage points out of a total reduction of 12.8 percentage points in Thailand.

[23] Inchauste et al. (2014) use this approach to assess the contribution of different income sources to reductions in poverty in a sample of 21 countries over the period 2000–2010. However, their study does not isolate the contribution of government transfers, only total transfers, which includes private transfers and remittances, and is not therefore included in this review.

7. SUMMARY AND CONCLUSIONS

The eradication of poverty has been a central aim of international development efforts for a number of decades, dating back to the earliest years of the development era. In terms of the factors that drive reductions in absolute income poverty, a large body of evidence has by now shown that economic growth is a key factor. Nevertheless, while economic growth tends to be associated with reductions in income poverty on average, a given rate of economic growth can still have very different impacts on poverty. Understanding the factors that affect the translation of economic growth into reductions in income poverty is therefore a key question.

With this background, the overall aim of this systematic review is to identify and synthesise the existing evidence about which policies affect the extent to which economic growth is translated into income poverty reduction. The specific objectives of the review are fourfold:

1) to map the available evidence that seeks to evaluate or better understand the effects of government policies and interventions on the translation of economic growth into reductions in income poverty, in low- and middle-income countries;

2) to establish whether any particular types of policies or interventions tend to reduce or increase the translation of growth into income poverty reduction *on average* – in other words, whether there are any consistent and generalisable findings or results across contexts and methods;

3) to explain heterogeneity in the estimated effect of such policies or interventions, across countries, regions, time period ('structural' heterogeneity), or research methods used ('method' heterogeneity);

4) to understand better the processes and mechanisms through which government policies and interventions affect the translation of growth into income poverty reduction.

With regard to the first aim, we have assembled and mapped out a substantial body of evidence. Through an exhaustive and wide-ranging search process we have identified a total of 207 separate studies, each of which provides evidence about the effects of one or more government policy interventions on income poverty, in one or more low- or middle-income countries. Although there have been other reviews of the literature on how government policies affect the translation of growth into poverty reduction, we believe that the body of evidence we have identified and documented is by far the largest and most comprehensive assembled to date.

Simply by mapping the research field in this way, our research has generated some important findings. Research has tended to focus predominantly on the effects of government fiscal policies: for example, the role of taxes and transfers, and government spending more generally. To a lesser extent, trade policy interventions, including the

liberalisation of tariff and non-tariff barriers to trade, are also reasonably well covered. But there is much less evidence on the impact of other sorts of government policies, such as labour market reforms, privatisation, and land reforms. In terms of sample coverage, although there is a reasonable coverage of low-income countries, the most intensively studied countries are still large middle-income countries, including Brazil, Argentina, South Africa, Mexico, the Philippines, Peru, and Bolivia. Interestingly, we found a large number of ex-post observational studies on India, but very few ex-ante simulation studies. Surprisingly, we found relatively few studies on China, of either of these study designs. In addition, the majority of econometric studies do not allow for the possibility of lagged effects (e.g. when government spending on education, health, or infrastructure reduces income poverty, but only after a period of time), which may result in the underestimation of the overall impact of government spending on poverty. Since these relative gaps in the literature suggest priorities for future research, our mapping exercise provides an important resource both for researchers and for policy-makers involved in the commissioning of research. Since these relative gaps in the literature suggest priorities for future research, our mapping exercise provides an important resource for both researchers and policy-makers involved in the commissioning of research.

With regard to the second and third aims, we focused on studies looking at the impact of fiscal and trade policy interventions on income poverty. There is a sufficiently large body of comparable studies on these policy areas which can be subjected to meaningful synthesis using meta-regression analysis. By contrast, for most other intervention types (e.g. finance or labour market reforms), the number of studies is too small to allow meta-analysis, which can only be applied if there is a sufficiently large body of comparable studies which all relate to a particular type of policy or intervention. We also restricted the focus to studies looking at income poverty at the national level, to further reduce the heterogeneity of studies. Our main findings for these studies are summarised in Sections 4, 5, and 6 of the report; here we highlight key overall findings.

For the *ex-post observational studies*, we found that both the size and direction of the estimated relationship between measures of government spending and income poverty are affected by a range of factors. We find fairly strong evidence that the relationship between government spending and income poverty varies according to the type of spending. In particular, studies looking specifically at government spending on health or education typically find a larger negative (or smaller positive) partial correlation with income poverty than studies looking at government spending as a whole. This is an important finding, which is consistent with, and adds further support to, the view that these sectors of government expenditure are more 'pro-poor' than others. We also find that studies including developing countries only in the sample used for estimation show a larger negative relationship between government spending and poverty, in comparison with studies including both developed and developing countries. One possible explanation for the different results when including developing countries only is that the impacts of government spending on income poverty in developed countries are smaller, or harder to detect, because overall levels of poverty are lower.

We also find fairly consistent evidence that studies relying on ordinary least squares (OLS) as an estimation method have a tendency to underestimate the contribution of government spending to the reduction of poverty, compared with other more robust approaches with lower risk of bias, such as panel data methods and instrumental variables (IV). There are various reasons why this might be, including omitted explanatory variables, measurement error, or failure of control for potential reverse correlation between government spending and income poverty. Although the meta-regression analysis is able to show the extent to which estimates derived from OLS differ from more robust approaches, this difference could be the result of any one of these potential sources of bias. There is also some evidence of publication bias, in that the relationship between government spending and poverty reduction is more negative for studies published in peer-reviewed academic journal articles. It is again difficult to say precisely what might be driving this finding, but one possible explanation is a tendency for journal editors to prioritise results showing a negative relationship between government spending and income poverty – perhaps because this confirms the 'do-good' element of public spending, as has been argued for the case of studies looking at the effectiveness of foreign aid.

In terms of our central question, we find evidence of a negative and statistically significant relationship between government spending and income poverty, which is particularly strong for health and education spending. We cannot say for sure that higher spending on health and education has a causal impact on income poverty reduction, since not all econometric studies control for the possibility of joint causality; that is, countries which spend more on health and education may also spend more in other areas relevant to income poverty reduction. Nevertheless, the evidence does suggest that higher spending in these areas has been strongly associated with the reduction of income poverty on average.

The results for the *ex-ante simulation studies* support these findings in many ways. The evidence from these studies shows that fiscal policy interventions can have a substantial impact on income poverty reduction. Out of a total sample of 621 estimates obtained from 53 studies, we show that in around one quarter of cases the estimated impacts on income poverty reduction exceed 20 percent. For fiscal policy, the impacts are greater for government spending than they are for taxation. There is no evidence from our sample of studies that the direct taxes paid by households below the poverty line increase poverty substantially, at least when considering the 'first-round' effects of these taxes. However, there is evidence that indirect taxes raise income poverty, by raising the prices of goods and services consumed by poor households.

With regard to government spending, the largest reductions in poverty in our sample are observed to result from cash transfers. On average, cash transfers reduce income poverty by significantly more than either in-kind transfers (e.g. health and education services) or indirect subsidies (e.g. subsidised fuel or electricity). It appears, therefore, at least from this evidence, that cash transfers are a more powerful tool for income poverty reduction than in-kind transfers. This finding must again be treated with some caution, for two reasons. First, the sample of studies looking at the impact of in-kind transfers and indirect subsidies is

much smaller than that looking at cash transfers. Second, the value of in-kind transfers is typically not in itself considered part of the definition of income used to calculate income poverty – unlike cash transfers, which are part of a household's disposable income.

Nevertheless, while the evidence shows that cash transfers have the largest effect on income poverty on average, there is also a substantial variation around that average, ranging from a reduction of 81 percent to an increase of 7 percent. There is a general tendency for the poverty-reducing effect of cash transfers to be greater the higher the level of GNP per capita. This in turn suggests that there are certain structural constraints which to some extent limit the amount of poverty reduction that can be achieved by cash transfers in countries with lower average income, at least in the short term. Nevertheless, even in low-income countries, the median impact of cash transfers on poverty reduction – 7 percent – is clearly not small, and there are some low-income countries in which impacts are much larger than this. This is an important counterpoint to the argument sometimes made, that cash transfers in developing countries are too small to contribute to income poverty reduction at the national level.

A key issue when assessing the evidence on the effects of fiscal and trade policy interventions on income poverty is the distinction between 'first-round' and 'second-round' effects. The immediate or first-round effect of cash transfers to poor households is to raise household *disposable* income, thereby reducing income poverty directly. Beyond the immediate short run, however, households are likely to adjust their behaviour in response to transfers. For example, transfers may lead to an increase in productivity and earnings potential (e.g. by improving human capital); they may also affect household labour supply, or receipts of private transfers (e.g. remittances). This means that the transfers have 'second-round' effects on poor households' *market* income, and the overall impact on poverty may be greater or less than the first-round impact. Studies using standard fiscal incidence analysis measure the first-round impacts only, and may for that reason either underestimate or overestimate the overall poverty impacts, depending on whether the second-round impacts reinforce or offset the first-round impacts.

In this review, we found that the majority of the estimated impacts of cash transfers in the literature are based on standard fiscal incidence analysis – which is most likely due to its lower data requirements and greater ease of computation. However, we find no evidence of any major differences between the results from this method and those from studies using behavioural fiscal incidence analysis or CGE models: the average effects on poverty reduction are similar in each case, at between 16 and 19 percent. This to some extent increases confidence in the conclusions drawn from standard fiscal incidence analysis. Nevertheless, very few studies apply more than one analytical approach to exactly the same policy intervention. Ideally, more studies would use more than one analytical approach to estimate the impacts of any one policy intervention on income poverty, thereby allowing a more direct comparison between their results.

With respect to trade policy, the evidence from ex-ante simulation studies again shows that trade reforms have a substantial impact on income poverty reduction in developing

countries. Although the average impact across all estimates is quite small (a reduction of around 2 percent), in more than one quarter of cases we see impacts that are moderate in size (greater than 5 percent), and some that are quite large in size (greater than 20 percent). This highlights the crucial importance of taking the poverty impacts of trade reforms into account, and designing reforms in such a way that adverse poverty impacts are avoided and beneficial impacts strengthened. We also find evidence that the impact of trade liberalisation on poverty reduction has been more limited in low-income countries, and in sub-Saharan Africa, in comparison with other income groups and regions. This finding highlights the importance of combining trade reforms with complementary policies, financed if necessary via 'aid for trade', designed to improve the translation of trade reforms into income poverty reduction.

The results for *studies using decomposition analysis* to some extent support the results from ex-ante simulation studies, showing the significant contribution of cash transfers to poverty reduction, at least in some cases – although in this case there is a much smaller sample of studies.

With regard to the fourth and final objective, we made less progress. In Section 1 (and also Appendix 1) we set out a basic overall framework which illustrates how fiscal and trade policy interventions can affect the distribution of four different concepts of income, namely market income, disposable income, real income, and final income, and the implications this has for the translation of economic growth into income poverty reduction. Nevertheless, because the review necessarily focuses on such a wide range of government policies and interventions, and a very large body of literature (over 200 studies), it has not been possible to provide more detail about the underlying processes and mechanisms through which each government policy affects income poverty reduction. Further work could explore these processes and mechanisms in greater detail, by focusing on one or two specific government policy interventions. This would involve synthesising the evidence on other intermediary variables through which government policy interventions are likely to affect income poverty – for example, the effects of trade liberalisation on wages and employment.

There are also certain other limitations to the review. First, the review has only included studies using a quantitative study design. Although we did seek to include studies using a qualitative design in the review, and we did identify several studies using a qualitative case study approach which discuss income poverty, we found on further scrutiny that they did not address in sufficient depth or detail the relationship between government policies and the translation of growth into poverty reduction to be included in the review. We believe that qualitative study designs can play an important role in understanding the mechanisms by which policies affect income poverty, although as discussed this requires focusing in more detail on one or two specific policy interventions.

Second, while the synthesis carried out in this review has also focused only on fiscal and trade policy interventions, and on income poverty at the national level, further work could involve synthesising the results for other types of interventions, using narrative approaches (since meta-regression analysis is unlikely to be feasible), and also explore how the poverty

impacts of government policies differ at the subnational level, for example between rural and urban areas.

Finally, while this review has focused on income poverty, there are various limitations with income-based measures of poverty, for example concerning inequalities within the household, and difficulties in valuing the non-market goods and services (e.g. public health and education facilities, water and sanitation infrastructure) to which households may or may not have access. This again suggests possible future directions for further synthesis work in this area, which could explore the effects of government policies on poverty in other important dimensions, such as health or education.

8. REFERENCES

Abdullah, A., Doucouliagos, H., Manning, E. (2015). Does education reduce income inequality? A meta-regression analysis. Journal of Economic Surveys 29(2): 301–316.

Ahmad, E. & Stern, N. (1991). The theory and practice of tax reform in developing countries. Cambridge: Cambridge University Press.

Aloe, A. & Thompson, C. (2013). The synthesis of partial effect sizes. Journal of the Society for Social Work and Research 4(4): 390–405.

Amadi, B.O. & Abdullah, H. (2012). Poverty alleviation through corporate social responsibility in Niger Delta, Nigeria. Asian Social Science 8(4): 57.

Arai, L., Britten, N., Popay, J., Roberts, H., Petticrew, M., Rodgers, M., Sowden, A. (2007). Testing methodological developments in the conduct of narrative synthesis: A demonstration review of research on the implementation of smoke alarm interventions. Evidence and Policy: A Journal of Research, Debate and Practice 3(3): 361–383.

Arellano, M. & Bond, S.R. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The Review of Economic Studies 58(2): 277–297.

Ashley, C. & Ntshona, Z.M. (2003). Transforming roles but not reality?: Private sector and community involvement in tourism and forestry development on the wild coast. Sustainable Livelihoods in Southern Africa Programme, University of Sussex.

Ashley, C. & Wolmer, W. (2003). Transforming or tinkering?: New forms of engagement between communities and the private sector in tourism and forestry in southern Africa. Sustainable Livelihoods in Southern Africa Programme, University of Sussex.

Azevedo, J.P., Inchauste, G., Olivieri, S., Saavedra, J., Winkler, H. (2013). Is labour income responsible for poverty reduction? A decomposition approach. Policy Research Working Paper 6414, World Bank, Washington D.C.

Baird, S., Ferreira, F.H.G., Özler, B., Woolcock, M. (2013). Relative effectiveness of conditional and unconditional cash transfers for schooling outcomes in developing countries: A systematic review. Campbell Systematic Reviews: 8.

Basu, K. (2013). Shared prosperity and the mitigation of poverty: In practice and in precept. Policy research working paper 6700. Washington DC: World Bank.

Beck, T., Levine, R., Loayza, N. (2000). Finance and the sources of growth. Journal of Financial Economics 58: 261–300.

Besley, T. & Burgess, R. (2003). Halving global poverty. Journal of Economic Perspectives 17(3): 3–22.

Besley, T. & Burgess, R. (2000). Land reform, poverty reduction and growth: Evidence from India. Quarterly Journal of Economics 115(2): 389–430.

Bourguignon, F. (2003). The growth elasticity of poverty reduction: Explaining heterogeneity across countries and time periods. In Eicher, T.S. & Turnovsky, S.J. (eds), Inequality and Growth: Theory and Policy Implications. Cambridge, MA: MIT Press.

Bourguignon, F., Pereira da Silva, L., Stern, N. (2006). Evaluating the poverty impact of economic policies: Some analytical challenges. In: Mody, A. & Pattillo, C. (eds) Macroeconomic policies and poverty reduction. London: Routledge.

Borenstein, M., Hedges, L.V., Higgins, J.P.T., Rothstein, H.R. (2009). Introduction to meta-analysis. Chichester: Wiley.

Caliendo, M. (2006). Microeconometric evaluation of labour market policies. Berlin: Springer.

Caliendo, M. & Hujer, R. (2005). The microeconometric estimation of treatment effects: An overview. Forschungsinstitut zur Zukunft der Arbeit (IZA) discussion paper No. 1653, July.

Campbell Collaboration (2012). Systematic reviews in international development: Key online databases. www.campbellcollaboration.org./artman2/uploads/1/Database_Guide_for_SRs_in_International_Development_1.pdf.

Chen, S. & Ravallion, M. (2010). The developing world is poorer than we thought, but not less successful in the fight against poverty. The Quarterly Journal of Economics 125: 1557–1625.

Chen, S. & Ravallion, M. (2012). An update to the World Bank's estimates of consumption poverty in the developing world. Briefing note, Development Research Group. World Bank.

Chu, K., Davoodi, H., Gupta, S. (2000). Income distribution and tax and government spending policies in developing countries. IMF working paper 00/62. Washington DC: International Monetary Fund.

Cirera, X., Willenbockel, D., Lakshman, R. (2011). What is the evidence of the impact of tariff reductions on employment and fiscal revenue in developing countries? Technical report. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Claus, I., Martinez-Vazquez, J., Vulovic, V. (2012). Government fiscal policies and redistribution in Asian countries. ADB economics working paper series 310. Manila: Asian Development Bank.

Cohen, J. (1988). Statistical power analysis for the behavioural sciences. (2nd edn) Hillsdale NJ: Erlbaum Associates.

Cox, D. & Jiminez, E. (1995). Private transfers and the effectiveness of public income redistribution in the Philippines. In: van de Walle, D. & Nead, K. (eds) Public spending and the poor: Theory and evidence. Baltimore: John Hopkins University Press.

Cox, D., Hansen, D., Jimenez, E. (2004). How responsive are private transfers to income? Evidence from a laissez-faire economy. Journal of Public Economics 88 (9–10): 2193–2219.

Critical Appraisal Skills Programme (CASP) (2006). Qualitative research: Appraisal tool. 10 questions to help you make sense of qualitative research. CASP, Oxford.

Datt, G. & Ravallion, M. (1992). Growth and redistribution components of changes in poverty measures: A decomposition with applications to Brazil and India in the 1990s. Journal of Development Economics 38: 275–295.

Davoodi, H., Tiongson, E., Asawanuchit, S. (2003). How useful are benefit incidence analyses of public expenditure and health spending? IMF working paper 03/227. Washington DC: International Monetary Fund.

Deaton, A. (1997). The analysis of household surveys: A microeconometric approach to development policy. Washington DC: World Bank.

Dixon-Woods, M., Shaw, R.L., Agarwal, S., Smith, J.A. (2004). The problem of appraising qualitative research. Quality and Safety in Health Care 13: 223–5.

Doucouliagos, C. (2011). How large is large? Preliminary and relative guidelines for interpreting partial correlations in economics. Economic series 2011_5. Australia: Faculty of Business and Law, School of Accounting, Economics and Finance, Deakin University.

Doucouliagos, C. & Paldam, M. (2008). Aid effectiveness on growth: A meta-study. European Journal of Political Economy 24: 1–24.

Doucouliagos, C. & Paldam, M. (2009). The aid effectiveness literature: The sad results of 40 years of research. Journal of Economic Surveys 23(3): 433–461.

Doucouliagos, C. & Paldam, M. (2014). Finally a breakthrough? The recent rise in the size of the estimates of aid effectiveness. Economics working papers 2014–07. Denmark: Aarhus University.

Du Toit, A. (2004). Forgotten by the highway: Globalisation, adverse incorporation and chronic poverty in a commercial farming district of South Africa. Chronic Poverty Research Centre working paper (49).

Duvendack, M., Palmer-Jones, R., Copestake, J.G., Hooper, L., Loke, Y., Rao, N. (2011). What is the evidence of the impact of microfinance on the well-being of poor people? London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Duvendack, M., Hombrados, J., Palmer-Jones, R., Waddington, H. (2012). Assessing 'what works' in international development: Meta-analysis for sophisticated dummies. Journal of Development Effectiveness 4(3): 456–471.

Duvendack, M., Palmer-Jones, R., Vaessen, J. (2014). Meta-analysis of the impact of microcredit on women's control over household decisions: Methodological issues and substantive findings. Journal of Development Effectiveness 6(2): 73–96.

Easterly, W. & Fischer, S. (2001). Inflation and the poor. Journal of Money, Credit and Banking 33(2): 160–178.

Eastwood, R. & Lipton, M. (2000). Pro-poor growth and pro-growth poverty reduction: Meaning, evidence and policy implications. Asian Development Review 18(2): 22–58.

Egger, M.D., Smith, G., Schneider, M., Minder, C. (1997). Bias in meta-analysis detected by a simple, graphical test. BMJ 315: 629–634.

Ellis, F., Kutengule, M., Nyasulu, A. (2003). Livelihoods and rural poverty reduction in Malawi. World Development 31(9): 1495–1510.

EPPI-Centre (2010) Quality and relevance appraisal. http://eppi.ioe.ac.uk/cms/Default.aspx?tabid=177 (accessed July 2010).

Fan, S., Hazell, P., Thorat, S. (2000). Government spending and poverty in rural India. American Journal of Agricultural Economics 82(4): 1038–1051.

Fishlow, A. (1996) Inequality, poverty and growth: Where do we stand? In: Bruno, M. & Pleskovic, B. (eds) Annual World Bank conference on development economics 1995. Washington DC: World Bank.

Foster, J.E. (1998). Absolute versus relative poverty. The American Economic Review 2: 335–341.

Foster, J.E., Greer, J., Thorbecke, E. (1984). A class of decomposable poverty measures. Econometrica 3: 761–766.

Freeman, H., Ellis, F., Allison, E. (2004). Livelihoods and rural poverty reduction in Kenya. Development Policy Review 22(2): 147–171.

Fritz, C.O., Morris, P.E., Richler, J.J. (2012). Effect size estimates: Current use, calculations, and interpretation. Journal of Experimental Psychology General 141(1): 2–18.

Gomanee, K., Morrissey, O., Mosley, P., Verschoor, A. (2005). Aid, government expenditure and aggregate welfare. World Development 33(3): 355–370.

Goni, E., Lopez, J.H., Serven, L. (2011). Fiscal redistribution and income inequality in Latin America. World Development 39(9): 1558–1569.

Gough, D. (2007). Weight of evidence: A framework for the appraisal of the quality and relevance of evidence. In: Furlong, J. & Oancea, A. (eds) Applied and practice-based research. Special edition of research papers in education 22(2): 213–228.

Gough, D., Oliver, S., Thomas, J. (2013). Learning from research: Systematic review for informing policy decisions. A quick guide. A paper for the Alliance for Useful Evidence. London: Nesta.

Graff, M. (2002). Causal links between financial activity and economic growth: Empirical evidence from cross country analysis, 1970–1990. Bulletin of Economic Research 54(2): 119-133.

Greene, W.H. (2008). Econometric analysis. (6th edn) Upper Saddle River NJ: Prentice Hall.

Grimm, M., Klasen, S., McKay, A. (2007). Determinants of pro-poor growth: Analytical issues and findings from country cases. Palgrave Macmillan.

Hansen, L.P. (1982). Large sample properties of generalized method of moments estimators. Econometrica 50(4): 1029–1054.

Hertel, T. & Reimer, J. (2005). Predicting the poverty impacts of trade reform. Journal of International Trade and Economic Development 14(4): 377–405.

Hess, S. & von Cramon-Taubadel, S. (2008). A meta-analysis of general and partial equilibrium simulations of trade liberalisation under the Doha Development Agenda. World Economy 31(6): 804–840.

Higgins, J.P.T. & Green, S. (2008). (eds) Cochrane handbook for systematic reviews of interventions. Version 5.0.0 (updated February 2008) www.cochrane-handbook.org.

Higgins, K. (2011). Escaping poverty in Tanzania: What can we learn from cases of success? Chronic Poverty Research Centre working paper (204).

Hilson, G., Amankwah, R., Ofori-Sarpong, G. (2013). Going for gold: Transitional livelihoods in Northern Ghana. The Journal of Modern African Studies 51(01): 109–137.

Hosmer, D.W. & Lemeshow, S. (2000). Applied logistic regression. (2nd edn) New York: John Wiley and Sons, Inc.

Hunter, J. & Schmidt, F. (2004). Methods of meta-analysis: Correcting error and bias in research findings. London: Sage Publications.

Huppi, M. & Ravallion, M. (1991). The sectoral structure of poverty during an adjustment period: Evidence for Indonesia in the mid-1990s. World Development 19(12): 1653–1678.

Iniguez-Montiel, A.J. (2014). Growth with equity for the development of Mexico: poverty, inequality and economic growth (1992-2008). World Development 59: 313-326.

Jalilian, H. & Kirkpatrick, C. (2002). Financial development and poverty reduction in developing countries. International Journal of Finance and Economics 7: 97–108.

Johnson, L. & Dichaba, M. (2013). The impact of social grants on rural women: Perspectives from ABET practitioners. Mediterranean Journal of Social Sciences 4(13): 541.

Kabeer, N., Piza, C., Taylor, L. (2012). What are the economic impacts of conditional cash transfer programmes? A systematic review of the evidence. Technical report. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

Kakwani, N. & Pernia, E. (2000) What is pro-poor growth? Asian Development Review 16(1): 1–22.

Kakwani, N., Khandker, S., Son, H. (2004). Pro-poor growth: Concepts and measurement with country case studies. Working paper no. 1. Brasilia: UNDP International Poverty Centre.

Kraay, A. (2006). When is growth pro-poor? Evidence from a panel of countries. Journal of Development Economics 80: 198–227.

Kalwij, A. & Verschoor, A. (2007). Not by growth alone: The role of the distribution of income in regional diversity in poverty reduction. European Economic Review 51: 805–829.

Klasen, S. (2003). In search of the holy grail: How to achieve pro-poor growth. In: Tungodden, B. & Stern, N. (eds) Towards pro-poor policies. Proceedings from the annual World Bank conference on development economics – Europe. Washington DC: World Bank.

Korovkin, T. (2005). Creating a social wasteland? Non-traditional agricultural exports and rural poverty in Ecuador. Revista Europea de Estudios Latinoamericanos y del Caribe/European Review of Latin American and Caribbean Studies 79: 47–67.

Krishna, A. (2004). Escaping poverty and becoming poor: Who gains, who loses, and why? World Development 32(1): 121–136.

Krishna, A., Kapila, M., Porwal, M., Singh, V. (2003). Falling into poverty in a high-growth state: Escaping poverty and becoming poor in Gujarat villages. Economic and Political Weekly: 5171–5179.

Krishna, A., Kapila, M., Porwal, M., Singh, V. (2005) Why growth is not enough: Household poverty dynamics in Northeast Gujarat, India. Journal of Development Studies 41(7): 1163–1192.

Lakner, C., Negre, M., Prydz, E. (2014) Twinning the goals: How can promoting shared prosperity help to reduce global poverty? Policy research working paper 7106. Washington DC: World Bank.

Leonard de Linde, M., Stanley, T.D., Doucouliagos, H. (2014) Does the UK minimum wage reduce employment? A meta-regression analysis. British Journal of Industrial Relations 52(3): 499–520.

Lerman, R. & Yitzhaki, S. (1985). Income inequality effects by income source: A new approach and applications to the United States. The Review of Economics and Statistics 67(1): 151–156.

Lipsey, M.P. & Wilson, D. (2001). Practical meta-analysis. London: Sage Publications.

Lopez, J. (2004). Pro-poor growth: A review of what we know (and what we don't). Washington DC: World Bank.

Maasoumi, E. & Mahmoudi, V. (2013). Robust growth-equity decomposition of change in poverty: the case of Iran (2000-2009). The Quarterly Review of Economics and Finance 53(3): 268-276.

Martin, W. (2003). Developing countries' changing participation in world trade. World Bank Research Observer 18(2): 187–203.

Martinez-Vazquez, J. (2004). The impact of fiscal policy on the poor: Fiscal incidence analysis. ISP working paper 01–10, Andrew Young School of Policy Studies, Georgia State University.

McCorriston, S., Hemming, D.J., Lamontagne-Godwin, J.D., Parr, M.J., Osborn, J., Roberts, P.D. (2013). What is the evidence of the impact of agricultural trade liberalisation on food security in developing countries? A systematic review. London: EPPI-Centre, Social Science Research Unit, Institute of Education, University of London.

McCulloch, N., Winters, L., Cirera, X. (2001). Trade liberalisation and poverty: A handbook. London: Centre for Economic Policy Research.

McKay, A. (2004). Assessing the impact of fiscal policy on poverty. In: Addison, T. & Roe, A. (eds) Fiscal policy for development: Poverty, reconstruction and growth. Basingstoke: Palgrave Macmillan.

Mosley, P., Hudson, J., Veschoor, A. (2004). Aid, poverty reduction and the 'new conditionality'. Economic Journal 113 (June): F217-F243.

Nicita, A. (2009). The price effect of trade liberalisation: Measuring the impact on household welfare. Journal of Development Economics 89(1): 19–27.

ODI (2009). Aid for trade in Lesotho: ComMark's Lesotho Textile and Apparel Sector Programme. www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/5948.pdf (accessed June 2015).

Paternostro, S., Rajaram, A., Tiongson, E. (2007). How does the composition of public expenditure matter? Oxford Development Studies 35(1): 47–82.

Ravallion, M. (1990). Rural welfare effects of food price changes under induced wage responses: Theory and evidence for Bangladesh. Oxford Economic Papers 42(3): 574–585.

Ravallion, M. (1997). Can high-inequality developing countries escape absolute poverty? Economics Letters 56: 51–57.

Ravallion, M. (2001). Growth, inequality and poverty: Looking beyond averages. World Development 29: 1803–1815.

Ravallion, M. (2004). Pro-poor growth: A primer. World Bank policy research paper 3242. March 2004. Development Research Group, World Bank.

Ravallion, M. (2010). A comparative perspective on poverty reduction in Brazil, China, and India. The World Bank Research Observer 26: 71–104.

Ravallion, M. & Chen, S. (2003). Measuring pro-poor growth. Economics Letters 78: 93–99.

Ravallion, M., Chen, S. (2007). China's (uneven) progress against poverty. Journal of Development Economics 82: 1–42.

Ravallion, M., Datt, G. (2002). Why has economic growth been more pro-poor in some states of India than others? Journal of Development Economics 68: 381–400.

Rhee, C., Zhuang, J., Kanbur, R., Felipe, J. (2014). Confronting Asia's rising inequality: Policy options. In: Kanbur, R., Rhee, C., Zhuang, J. (eds) Inequality in Asia and the Pacific: Trends, drivers and policy implications. London: Routledge.

Rodgers, M., Sowden, A., Petticrew, M., Arai, L., Roberts, H., Britten, N., Popay, J. (2009). Testing methodological guidance on the conduct of narrative synthesis in systematic reviews: Effectiveness of interventions to promote smoke alarm ownership and function. Evaluation 15(1): 49–73.

Sahn, D.E. & Alderman, H. (1996). The effect of food subsidies on labor supply in Sri Lanka. Economic Development and Cultural Change 45(1): 125–145.

Sahn, D. & Younger, S. (2003). Estimating the incidence of indirect taxes in developing countries. In: Bourguignon, F. & Pereira da Silva, L. (eds) The impact of economic policies on poverty and income distribution: Evaluation techniques and tools. Washington DC: World Bank.

Sala-i-Martin, X. (2002). The world distribution of income (estimated from individual country distributions). NBER Working Paper 8933, National Bureau of Economic Research, Cambridge, MA.

Sally, R. (2008). Trade policy, new century. Hobart paper 163. London: Institute for Economic Affairs.

Sen, A. (1983). Poor relatively speaking. Oxford Economic Papers 335.

Scheyvens, R. & Russell, M. (2012). Tourism, land tenure and poverty alleviation in Fiji. Tourism Geographies 14(1): 1–25.

Shepherd, A. (2010). Growth and poverty reduction: Policy implications from qualitative research in Tanzania. Chronic Poverty Research Centre working paper (21).

Shorrocks, A. (1982). Inequality decomposition by factor components. Econometrica 50: 193–211.

Slavin, R.E. (1986). Best-evidence synthesis: An alternative to meta-analytic and traditional reviews. Educational Researcher 15(9): 5–11.

Spencer, L., Ritchie, J., Lewis, J., Dillon, L. (2003). Quality in qualitative evaluation: A framework for assessing research evidence. Monograph online. London: Cabinet Office. www.gsr.gov.uk/evaluating_policy/era_papers/qual_eval.asp.

Stanley, T.D. (2005). Beyond publication selection. Journal of Economic Surveys 19: 309–345.

Stanley, T.D. (2008). Meta-regression methods for detecting and estimating empirical effects in the presence of publication bias. Oxford Bulletin of Economics and Statistics 70: 103–127.

Stanley, T.D. & Doucouliagos, H. (2012). Meta-regression analysis in economics and business. Abingdon: Routledge.

Stanley, T.D., Doucouliagos, H., Giles, M., Heckemeyer, J.H., Johnston, R.J., Laroche, P., Pugh, G., Nelson, J., Paldam, M., Poot, J., Rosenberger, R., Rost, K. (2013). Meta-analysis of economics research reporting guidelines. Journal of Economic Surveys 27(2): 390–394.

Stanley, T.D. & Doucouliagos, H. (2013). Better than random: Weighted least squares meta-regression analysis. Deakin University, Economics working paper series SWP 2013/2, July. www.deakin.edu.au/buslaw/aef/workingpapers/papers/2013_2.pdf.

Stanley, T.D. & Doucouliagos, H. (2015). Neither fixed nor random: Weighted least squares meta-analysis. Statistics in Medicine, early view online version: http://onlinelibrary.wiley.com/doi/10.1002/sim.6481/abstract.

Van de Walle, D. (1998). Assessing the welfare impacts of public spending. World Development 26(3): 365–379.

Van de Walle, D. & Nead, K. (eds) (1995). Public spending and the poor: Theory and evidence. Baltimore: John Hopkins University Press.

Watts, H.W. (1968). An economic definition of poverty. In: Moyniham, D.P. (ed.) On understanding poverty. New York: Basic Books.

Wiggins, S., Keilbach, N., Preibisch, K., Proctor, S., Herrejón, G.R., Muñoz, G.R. (2002). Agricultural policy reform and rural livelihoods in Central Mexico. Journal of Development Studies 38(4): 179–202.

Wilcox, R.R. (2008). Sample size and statistical power. In: Nezu, A.M. & Nezu, C.M. (eds) Evidence based outcome research : A practical guide to conducting randomized controlled trials for psychosocial interventions. Oxford: Oxford University Press.

White, H. & Waddington, H. (2012). Why do we care about synthesis? An introduction to the special issue on systematic reviews. Journal of Development Effectiveness 4(3): 351–358.

Winters, L., McCulloch, N., McKay, A. (2004). Trade liberalisation and poverty: The evidence so far. Journal of Economic Literature 42: 72–115.

World Bank (2005). World Development Report 2006: Equity and development. Washington DC: World Bank and New York: Oxford University Press.

World Bank (2015a). Global monitoring report 2014/15: Ending poverty and sharing prosperity. Washington DC: World Bank.

World Bank (2015b). A measured approach to ending poverty and boosting shared prosperity: Concepts, data and the twin goals. Washington DC: World Bank.

Yoshida, N., Uematsu, H., Sobrado, C. (2014). Is extreme poverty going to end? An analytical framework to evaluate progress in ending extreme poverty. Policy research working paper 6740. Washington DC: World Bank.

APPENDICES

A1 CONCEPTUAL FRAMEWORK

FISCAL POLICY

It is widely recognised that fiscal policy can play a central role in shaping income distribution and generating a pattern of growth that is effective in reducing poverty – although quantifying these impacts is difficult in practice (Klasen 2003, McKay 2004). Fiscal policy interventions can be divided into three broad areas – direct taxes and transfers, indirect taxes and subsidies, and in-kind transfers.

Direct taxes and transfers

Direct cash transfers are perhaps the most obvious fiscal policy intervention for reducing income poverty alongside economic growth. By raising households' disposable income, their immediate, first-round effect is to reduce income poverty (see Figure A1). The size of this impact depends on the size of the transfer and the extent to which transfers reach households living below the poverty line. As is widely recognised, large parts of existing cash transfer programmes in developing countries do not reach poor households, even for programmes which are supposed to be targeted.

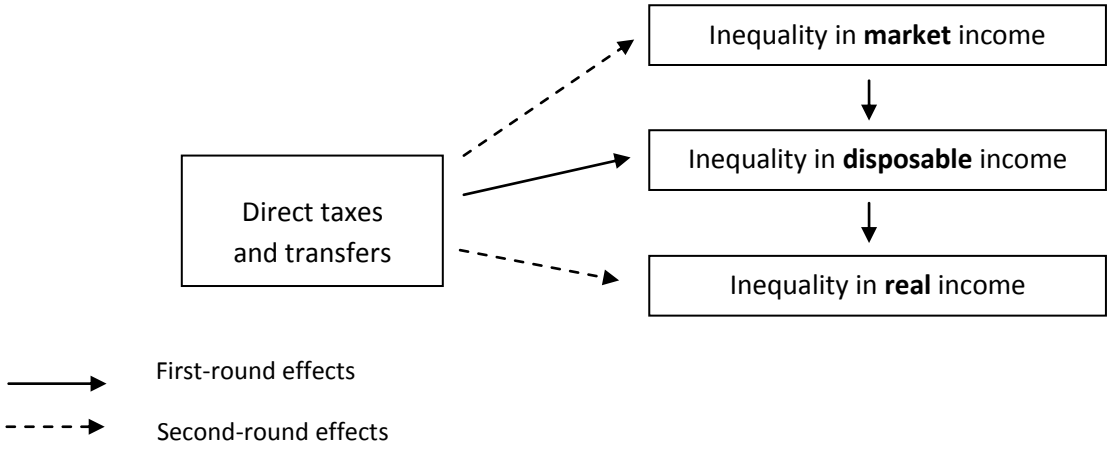
In addition, cash transfers are likely to have medium-term, second-round effects which can reinforce or offset the first-round impacts. These include the potential beneficial impacts of cash transfers on the productivity and earnings potential of poor households, by improving human capital (e.g. better nutrition, health, education). This would tend to raise households' market income. However, there are also the potential adverse impacts of cash transfers on household labour supply, or on receipts of private transfers (e.g. remittances), which would reduce households' market income. Evidence of such responses has often been observed, for example by Cox and Jimenez (1995) and Cox et al. (2004), who find that government transfers displaced private transfers in the Philippines. The overall impact of cash transfers on income poverty, taking into account the first-round and second-round effects, is therefore ambiguous.

By themselves, direct income taxes are considered to have few first-round impacts on poverty, either because households living below the poverty line are exempt from such taxes or are completely outside the direct tax system altogether (Claus et al. 2012).[24] The same point applies to 'tax expenditure' policies – tax exemptions, deductions, credits, and so on – designed to reduce the direct tax burden faced by households on low income. Although significant in many OECD countries, such policies again have limited relevance as a tool for reducing income poverty in a context in which poor households are outside of the formal tax

[24] So-called 'negative' income taxes can have an immediate impact on poverty reduction, but these are in effect a form of cash transfer (and are treated in this review as such).

system (ibid.). Once again, however, direct income taxes can have second-round impacts which may affect poor households indirectly – for example, if higher taxes adversely affect incentives for private investment, which in turn lowers employment opportunities for households living below the poverty line (Fishlow 1996).

Figure A1: Effects of direct taxes and transfers



Indirect taxes and subsidies

In many developing countries, a significant share of government expenditure is made up of indirect subsidies. In Indonesia, for example, fuel and electricity subsidies in 2011 amounted to 3.4 percent of GDP, more than government spending on infrastructure (Rhee et al. 2014). To the extent that indirect subsidies reduce the prices of goods and services consumed by poor households, thereby raising real income, their first-round effect is to reduce income poverty (see Figure A2).

There are two caveats, however. First, it is widely argued that indirect subsidies are inefficient as an income poverty reduction policy, in that a large proportion (often the majority) of the subsidies goes to non-poor households. Referring again to the case of fuel and electricity subsidies in Indonesia, it is estimated that over 80 percent of the benefits of subsidised gasoline go to households in the top half of the income distribution (Ginting and Aji 2012, referenced in Rhee et al. 2014, p. 89). This problem can be reduced somewhat if subsidies are applied particularly to basic necessities and other goods and services, which are consumed in greater proportion by poor as opposed to non-poor households. This follows from the fact that the first-round impact of an indirect tax on a household's real income is equal to the rise in price caused by the tax, multiplied by the share of the household's expenditure accounted for by the good being taxed (Deaton 1997, Sahn and Younger 2003).

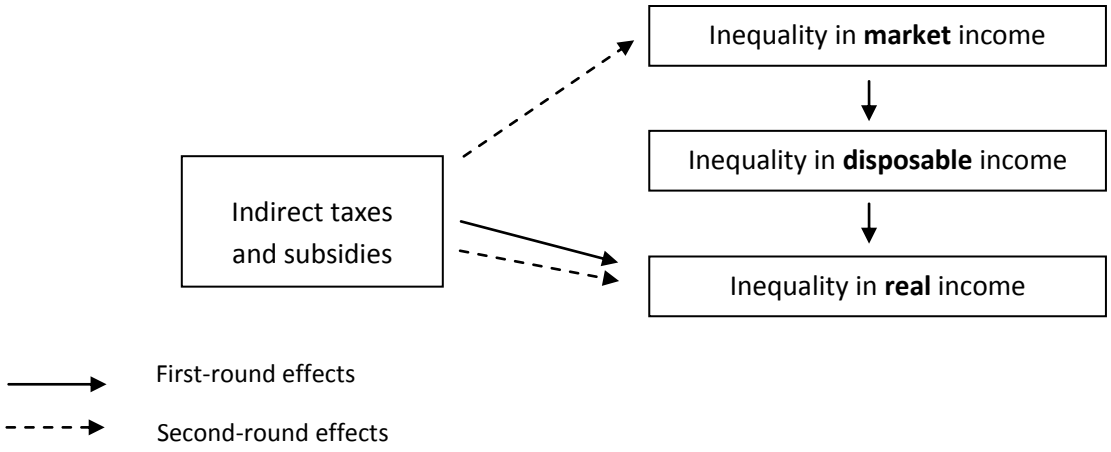
Second, indirect subsidies are likely to have medium-term, second-round effects which can reinforce or offset the first-round impacts. There are also potential adverse impacts. For example, Sahn and Alderman (1996) find that rice subsidies reduced labour supply in Sri Lanka. This would tend to reduce the market income of poor households, other things being equal, offsetting the first-round effect of the subsidies on poverty.

In many developing countries, a larger share of tax revenue comes from indirect taxes (e.g. value-added tax, excise duties) rather than direct taxes. In Latin America, for example, around 60 percent of tax revenue comes from VAT, in comparison with 40 percent in OECD countries (Goni et al. 2011). To the extent that indirect taxes raise the prices of goods and services consumed by poor households, their first-round effect is to increase income poverty. The channels of impact are therefore identical to the case of indirect subsidies (see Figure A2).

Changes in the structure of indirect taxation can also have an impact on poverty. For example, VAT exemptions for goods consumed in large proportion by poor households can raise the real incomes of poor households and reduce income poverty; the same applies to graduated or 'two-tier' VAT structures consisting of a standard rate for basic items and a higher rate for luxury items (Ahmad and Stern 1991, Sahn and Younger 2003). Many developing countries have, however, been moving towards the simplification or unification of VAT rates in recent years, reducing the size or the extent of preferential rates. These reforms can raise income poverty, at least in the short run.

Once again, however, changes in indirect taxes such as VAT have second-round impacts, and it is not clear to what extent these offset or reinforce the first-round impacts. Sahn and Younger (2003) argue that there have been few attempts in the literature for developing countries to 'calibrate' exactly how reliable the estimated first-round impacts are as measures of overall impacts – although studies for OECD countries have sometimes found quite large differences.

Figure A2: Effects of indirect taxes and subsidies



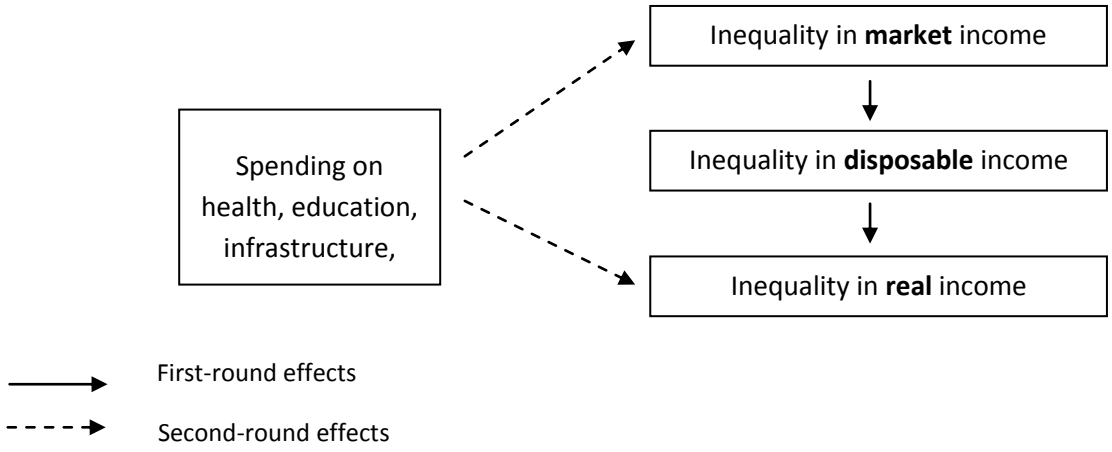
In-kind transfers and other 'pro-poor' government spending

Government spending on basic health and education services is widely viewed as having beneficial impacts on poverty, both directly and indirectly (Chu et al. 2000, McKay 2004). It is rare to measure income poverty using a broad concept of final income which includes the value of public and publicly provided goods and services, such as health and education. Instead, most measures of poverty found in the literature are based on real income, which corresponds most closely to a person's (household's) purchasing power over private goods

and services; the difficulties of trying to measure a household's final income are typically considered too great (Chen and Ravallion 2010).[25] This means that government spending on basic health and education services does not have direct, first-round impacts on income poverty, in the same way that direct taxes and transfers, and indirect taxes and subsidies, do.

Nevertheless, government spending on health and education can have significant second-round impacts on income poverty, primarily via its effects on market incomes (see Figure A3). To the extent that higher spending leads to improved health and education outcomes among the poor, this would raise productivity and earnings potential (by improving human capital), leading to a rise in market incomes. This reduces income poverty indirectly. Other examples of 'pro-poor' government spending which can reduce income poverty in this way include infrastructure development, particularly that which is targeted towards geographical regions in which poverty is highest in poor areas, investment in legal systems, and conflict prevention (McKay 2004, Paternostro et al. 2007).

Figure A3: Effects of 'pro-poor' government spending



Of course, the actual impact of government spending on income poverty depends critically on how well it is targeted and the extent to which it really does lead to higher productivity and earnings potential among the poor. It has often been argued that even supposedly 'pro-poor' government expenditures are poorly targeted; the groups that benefit the most are in the middle classes, particularly in urban areas (e.g. Davoodi et al. 2003).

[25] 'The measures of consumption (or income, when consumption is unavailable) in our survey data set are reasonably comprehensive, including both cash spending and imputed values for consumption from own production. But we acknowledge that even the best consumption data need not adequately reflect certain "non-market" dimensions of welfare, such as access to certain public services … Furthermore, with the expansion in government spending on basic education and health in developing countries, it can be argued that the omission of the imputed values for these services from survey-based consumption aggregates will understate the rate of poverty reduction. How much so is unclear.' (Chen and Ravallion 2010, p. 1591)

Effects of expenditure vs effects of financing

When assessing the impacts of fiscal policy on income poverty it is vital to consider both the public spending measures and the way they are financed. This is made clear by McKay (2004, 2000):

> *In assessing the poverty impacts of fiscal policy, it is equally important to consider both public spending measures and the way they are financed, whether based on tax revenue or deficit financing. The financing method will have poverty impacts, as will the spending it finances. Hence it is incorrect and therefore meaningless to consider, for instance, the impact of an increase in the overall level of public spending without considering how this is to be financed; the poverty impact is the combination of the two effects which may (probably will) operate in opposite directions.*

This relates to the broader point made by Basu (2013, p. 16), on the importance of considering the 'macro' implications of poverty-reduction programmes, and not just the 'micro' impacts:

> *[M]icro interventions often have macro implications that elude the policy maker and some researchers. Suppose, for the sake of argument, a certain welfare intervention, like a rural employment program, is operated by the government by resorting to printing money. If it is run well, this will create jobs and improve nutrition among those who are employed. However, this will almost certainly create an upward pressure on prices, which would leave people in faraway places, who have nothing to do with the program, to be worse off. In brief, the net effect on society can be negative. This does not have to happen but it can. What this alerts us to is that microeconomic programs have macroeconomic implications. These can work through intricate channels and this is where there is need for economic theory. Most of these channels will be very difficult, if not impossible, to test empirically. Hence, one will have to use a combination of economic theory and intuition to get at these; but to ignore them, as we so often do, is folly.*

It should be recognised therefore that no one fiscal policy instrument can be considered individually; there must always be consideration of the poverty impacts of the spending as well as the financing of that spending.

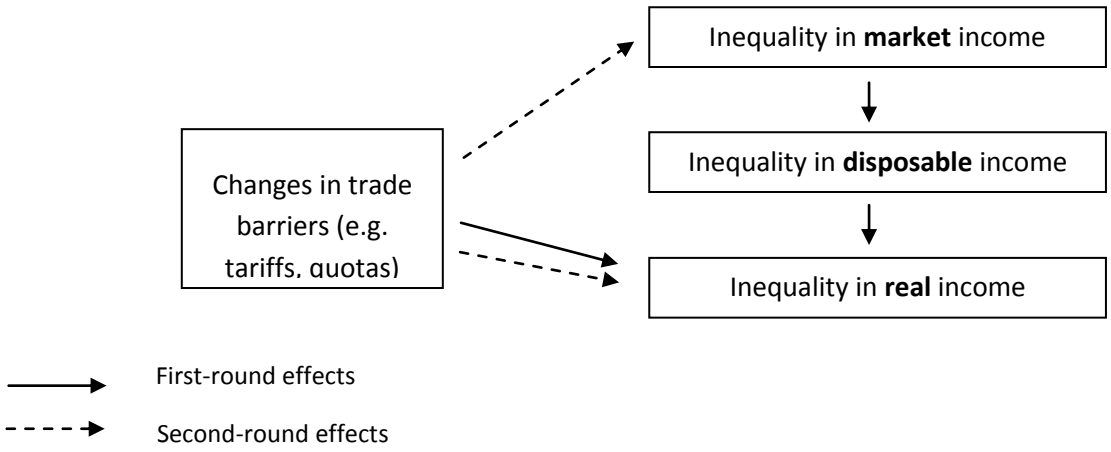
A1.2 TRADE POLICY

In recent decades, a large number of developing countries have embarked on trade policy reforms aimed at reducing barriers to international trade. This has involved the gradual liberalisation of import tariffs and quotas, as well as various other non-tariff barriers (e.g. Martin 2003, Sally 2008). It is widely accepted that trade policy reforms of this nature can have a large impact on income poverty. For example, a large and exhaustive review of the

literature carried out by McCulloch et al. (2001) and Winters et al. (2004) highlighted a range of transmission channels through which trade liberalisation can affect poverty, including effects on economic growth, macroeconomic stability, domestic prices, employment, tax revenues, and government spending.[26]

For the purposes of this review, it is sufficient to consider a simpler framework in which the effects of trade policy reforms can again be decomposed into first-round and second-round effects (Figure A4). In the immediate short run, trade policy reforms affect income poverty via their effects on the prices of goods and services, which affects households' real income. Beyond the immediate short run, however, a reduction in tariffs is likely to have knock-on effects on households' market income. Increasing competition from imports, for example, can cause the contraction of import-competing industries; if these sectors provide an important source of income and employment for poor households, a reduction in market income may result. On the other hand, expansion of export sectors can provide enhanced income earning opportunities for poor households. The overall effects of trade reforms on income poverty are therefore difficult to predict a priori; they must typically be assessed on a case by case basis.

Figure A4: Effects of trade policy reforms



[26] It is worth noting that the literature reviews by McCulloch et al. (2001) and Winters et al. (2004) focus on the 'overall' effects of trade liberalisation on poverty, whereas for this review we are concerned only with how trade policy affects the translation of economic growth into poverty reduction, and not whether trade policy also affects economic growth. In addition, while these studies review the evidence on the effects of trade policy on a range of intermediary outcomes (e.g. employment, tax revenues), in this review we consider only studies focusing directly on income poverty as the outcome measure.

A2 STUDY DESIGNS

EX-POST OBSERVATIONAL STUDIES (STUDY DESIGN A)

Ex-post observational studies use econometric analysis to estimate the effects of government policies on income poverty. They involve estimating a regression in which a measure of income poverty is the dependent variable and the explanatory variables include a measure of per capita income, and one or more measure of government policy. This can be written in a general form as:

$$h_{it} = \beta_0 + \beta_1 y_{it} + \beta_j X_{itj} + \beta_k Z_{itk} + \varepsilon_{it} \quad \textbf{(1)}$$

where h is a measure of income poverty, y is a measure of per capita income, X_j is a vector of policy variables, Z_k is a vector of other explanatory variables, and ε is the error term, with subscripts i and t indicating country (or region within a country) and year respectively.

A policy variable is an explanatory variable that is clearly and closely influenced by government policy. For this review, we adopt a relatively narrow definition of what constitutes a policy variable, to include:

- any measure of government spending or taxation;
- any direct measure of government trade policy, including measures of import tariffs and/or quotas, non-tariff barriers, and export taxes or quotas, but excluding measures of trade openness (defined as imports and/or exports as a share of GDP);
- any other direct measure of government policy, including measures of user fees for public services, price controls (e.g. interest rate ceilings, minimum wages), quantitative restrictions (e.g. limits on foreign direct investment, capital controls);
- any policy index which is calculated on the basis of one or more of the above indicators.

In addition, while we include all studies containing one or more policy variables (as defined above) in the mapping exercise, we further limit the synthesis and meta-analysis to fiscal and trade policy variables (the first two categories above).

In equation (1), poverty and per capita are typically measured in logarithms, so that the coefficient β_1 provides an empirical estimate of the partial elasticity of income poverty with respect to average income. The equation may also be estimated in first differences as:

$$\Delta h_{it} = \beta_0 + \beta_1 \Delta y_{it} + \beta_j \Delta X_{itj} + \beta_k \Delta Z_{itk} + \Delta \varepsilon_{it} \quad \textbf{(2)}$$

where $\Delta h_{it} = h_{it} - h_{it-1}$, $\Delta y_{it} = y_{it} - y_{it-1}$, and so on. In this case, Δh_{it} is the proportionate change in income poverty over a given period, and Δy_{it} is the proportionate change in average income over that same period, otherwise referred to as economic growth.

For this review we include econometric studies using either of these two basic specifications shown in equations (1) and (2). We are also interested in studies which include interaction terms between economic growth and one or more policy variables. In other words, regressions of the form:

$$h_{it} = \beta_0 + \beta_1 y_{itj} + \beta_j X_{itj} + \beta_l y_{it} * X_{itl} + \beta_k Z_{itk} + \varepsilon_{it} \quad \textbf{(3)}$$

where X_l is a vector of policy variables which are interacted with average income. In this case, the elasticity of income poverty with respect to average income is given by:

$$\frac{\partial h}{\partial y} = \beta_1 + \beta_l X_{itl}$$

Regressions of the form given by equation (3) are able to test whether the elasticity of poverty with respect to average income is affected by different measures of government policy.

EX-ANTE SIMULATION STUDIES (STUDY DESIGN B)

Ex-ante simulation studies analyse the impact of government policies on income poverty using an economic model applied to recent empirical data for a particular country or region. The model contains a set of assumptions about how households and firms respond to government policy interventions, and can be used to compare the level of poverty under an initial or 'given' set of government policies with a counterfactual scenario in which one or more policy is changed from its initial level. The comparison can be written as follows:

$$D = H(y_1; z) - H(y_0; z)$$

where *y* is a measure of individual or household income, *H* is some summary measure of poverty (e.g. the poverty headcount or poverty gap), *z* is the absolute poverty line (assumed fixed in real terms), and subscripts 0 and 1 indicate the time period before and after the policy change. A positive value of *D* implies that the policy change increases income poverty, while a negative value implies that it reduces income poverty.

We refer to a change in a variable that is directly controlled by the government as a 'policy simulation'. We group these simulations into three main headings: fiscal policy, trade policy, and other:

- **fiscal policy simulations** include changes in domestic tax and subsidy rates (e.g. income tax, VAT, fuel subsidies), transfer payments (e.g. pensions, unemployment assistance, cash transfers), the supply of publicly provided goods and services (e.g. roads, education, health), and the prices or user fees charged for public goods and services (e.g. school tuition fees);
- **trade policy simulations** include changes in import tariffs, import quotas, export taxes, export subsidies, and non-tariff-barriers;

- **other policy simulations**, which include changes in official price floors or ceilings (e.g. minimum wages, interest rate controls), and in government restrictions or prohibitions (e.g. anti-discrimination legislation, or a ban on child labour).

Each study must include at least one policy simulation; we exclude studies in which the simulations refer only to the effects of external or internal shocks; examples include a change in a country's terms of trade, or an increase in productivity.

Ex-ante simulation studies include fiscal incidence analysis, which is the general term given to research that tries to understand or assess how government fiscal policies affect the distribution of income (see Martinez-Vazquez 2004). This includes tax incidence analysis (analysis of who ultimately bears the burden of government taxes, and by how much) and benefit incidence analysis (analysis of who benefits from government spending, and by how much). Not all fiscal incidence studies are relevant to this review, however – only those which calculate the effects of government taxes and/or spending on a measure of income poverty are relevant.

The ex-ante simulation studies included in this review encompass a variety of methods, from the simple to the more complex, depending mainly on how the likely behavioural responses of economic agents are dealt with. The simplest approach, which includes so-called standard fiscal incidence analysis, assumes there are no behavioural responses to government policy changes. Households and individuals are assumed to have perfectly inelastic supplies of the factors of production that they own (e.g. labour, human capital), and consumers are assumed to have perfectly inelastic demand for commodities (Martinez-Vazquez 2004, van de Walle 1998). This approach is clearly not particularly realistic, but is often justified as being relatively straightforward to implement, and providing a reasonable 'first approximation' to the results that would be obtained if behavioural responses were included.

The more complex approach is applied general equilibrium analysis, which studies the incidence of taxes or spending in the context of a computable general equilibrium (CGE) model of the whole economy, allowing for some (not necessarily all) behavioural responses. In theory, CGE models should provide more accurate estimates of impact. However, they rely on the accuracy of the equations and parameters which are used to construct them; they are also computationally complex and the results are often sensitive to modelling choices. More importantly, CGE estimates do not always differ that much from estimates obtained from standard fiscal incidence analysis – as is the case where elasticities are low, even if not zero.

A3 DETAILS OF DATABASE SEARCHES

Electronic databases

EXPORT DATE	# HITS	DATABASES	SEARCH STRING
12/06/2014	5447	EBSCO EJS	AB ((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))
12/06/2014	413	Science Direct	(title-abstr-key((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))) [All Sources(Social Sciences)].
12/06/2014	3707	Scopus	TITLE-ABS-KEY ((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation)) AND SUBJAREA (mult OR arts OR busi OR deci OR econ OR psyc OR soci)
12/06/2014	711	JSTOR	(ab:(polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND ab:(growth) AND ab:(poverty OR pro-poor OR 'the poor' OR 'poor people' OR deprivation))
12/06/2014	3601	Web of Knowledge (Social Science Citation Index)	TOPIC: (((((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation)))))
12/06/2014	1258	IBSS (International Bibliography of the Social Sciences)	AB((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))
12/06/2014	251	ASSIA (Applied Social Sciences Index and Abstract)	AB((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))
12/06/2014	3619	Econlit (Ebsco)	AB ((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))

12/06/2014	198	Research for Development (R4R)- DFID	polic* and growth and poverty
12/06/2014	107	Scielo	((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'poor people' OR 'the poor' OR deprivation))
12/06/2014	1311	PROQUEST Dissertations and thesis	AB((polic* OR intervention* OR program* OR instrument* OR tool* OR reform* OR legislation* OR govern*) AND (growth) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation))
12/06/2014	440	Google scholar	allintitle: (growth) AND (policy OR intervention OR program OR instrument OR tool OR reform OR legislation OR government) AND (poverty OR 'pro-poor' OR 'the poor' OR 'poor people' OR deprivation)

Note: Due to the fact that some search engines only allow a limited number of operators, a long and a short version were used, as previously described in the initial draft of the protocol. Although an attempt was made to used 'the poor' instead of 'poor' in order to exclude some non-relevant results, not all databases recognise the use of stop words.

Online databases searches

SCREENING BY ASBTRACT DATE	# HITS	DATABASES	SEARCH STRING
06/11/2014	144	IDEAS	'income poverty' policy
06/11/2014	11	NBER	income poverty
25/09/2014	180	SSRN	'income poverty'
06/11/2014	99	3IE Impact Evaluation Database	income poverty
06/11/2014	141	Eldis	'income poverty'

SCREENING BY ASBTRACT DATE	# HITS	DATABASES	SEARCH STRING
02/10/2014	280	World Bank Open Knowledge Repository	'income poverty'
07/1102014	176	OECD iLibrary	income poverty and policy
10/11/2014	369	International Labour Organization	income poverty and policy
10/11/2014	69	Chronic Poverty Research Center	*(assets and inequality area)*
10/11/2014	280	Overseas Development Institute	'income poverty'
11/11/2014	12	Center for Global Development	poverty
11/11/2014	104	International Policy Center for Inclusive Growth	poverty
12/11/2014	580	JOLIS (IMF and World Bank databases)	Keywords anywhere 'income poverty' AND keywords anywhere 'policy'
11/11/2014	8	Millennium Challenge Corporation Independent Evaluations	'income poverty'
11/11/2014	22	USAID Development Experience Clearing House	income and poverty
14/11/2014	565	African Development Bank Evaluation Reports	*does not allow to write a search string. All results were screened*
19/11/2014	333	Asian Development Bank Evaluation Resources	poverty
11/11/2014	36	Inter-American Development Bank	poverty

SCREENING BY ASBTRACT DATE	# HITS	DATABASES	SEARCH STRING
17/11/2014	1000	CLASE (Citas Latioamericana en Ciencias Sociales y Humanidades)	Pobreza*
14/11/2014	298	e-revistas-Plataforma Open Access de Revistas Cientificas Electronicas	Pobreza*
13/11/2014	140	REDALyC	'income poverty'

Notes: *'pobreza' is the Spanish word for poverty

A4 LIST OF INCLUDED STUDIES

EX-POST OBSERVATIONAL STUDIES

Synthesis, government spending (28)

Abdelhak, S. & Sulaiman, J. (2012). Social protection and poverty reduction in four selected Southeast Asian countries: An analysis of the healthcare sector towards pro-poor growth. Asian Social Science 8: 270–284.

Agenor, P-R. (2002). Does globalization hurt the poor? Policy research working paper. Washington DC: World Bank.

Arimah, B. (2004). Poverty reduction and human development in Africa. Journal of Human Development 5: 399–415.

Asra, A., Estrada, G., Kim, Y., Quibria, M.G. (2005). Poverty and foreign aid. Evidence from recent cross-country data. African Development Bank.

Bahmani-Oskooee, M. & Oyolola, M. (2009). Poverty reduction and aid: Cross-country evidence. International Journal of Sociology and Social Policy 29: 264–273.

Baldacci, E., Mello, L.D., Inchauste, G. (2002). Financial crises, poverty, and income distribution. IMF working paper. Washington DC: International Monetary Fund (IMF).

Calderon, C. & Yeyati, E.L. (2009). Zooming in: From aggregate volatility to income distribution. Policy research working paper. World Bank.

Carmignani, F. (2011). The making of pro-poor growth. Scottish Journal of Political Economy 58: 656–684.

Dastagiri, M.B. (2010). The effect of government expenditure on promoting livestock GDP and reducing rural poverty in India. Outlook on Agriculture 39: 127–133.

Din, N.U., Zaman, K., Ashraf, S., Sajjad, F., Saleem, S., Raja, U. (2014). Quality versus quantity in health care and educational reforms: Combating poverty. Quality and Quantity 1–27.

Hasan, R., Mitra, D., Ulubasoglu, M. (2006). Institutions and policies for growth and poverty reduction: The role of private sector development. Asian Development Bank.

Hasan, R., Quibria, M.G., Kim, Y. (2003). Poverty and economic freedom: Evidence from cross-country data. East West Center working papers: economics series. Honolulu: East West Center.

Iradian, G. (2005). Inequality, poverty, and growth: Cross-country evidence. IMF working paper. Washington DC: International Monetary Fund.

Jeanneney, S.G. & Kpodar, K. (2005). Financial development, financial instability and poverty. CSAE working paper. Oxford: Centre for the Study of African Economies.

Kalirajan, K. & Singh, K. (2009). The pace of poverty reduction across the globe: An exploratory analysis. International Journal of Social Economics 36: 692–705.

Kappel, V. (2010). The effects of financial development on income inequality and poverty. Economics working paper. Zurich: Center of Economic Research, Swiss Federal Institute of Technology.

Kraay, A. (2006). When is growth pro-poor? Evidence from a panel of countries. Journal of Development Economics 80: 198–227.

Kwon, H-J. & Kim, E. (2014). Poverty reduction and good governance: Examining the rationale of the millennium development goals. Development and Change 45: 353–375.

Mahmood, H. & Chaudhary, A.R. (2012). A contribution of foreign direct investment in poverty reduction in Pakistan. Middle East Journal of Scientific Research 12: 243–248.

Mirza, F.M. (2005). Poverty in Pakistan. Iranian Economic Review 10: 103–126.

Mosley, P. (2004). Severe poverty and growth: A macro-micro analysis. CPRC working paper. Manchester: Chronic Poverty Research Centr.

Mosley, P., Hudson, J., Verschoor, A. (2014). Aid, poverty reduction and the 'new conditionality'. The Economic Journal 114: F217-F243.

Thirtle, C. & Piesse, J. (2007). Governance, agricultural productivity and poverty reduction in Africa, Asia and Latin America. Irrigation and Drainage 56: 165–177.

Tsai, M-C. (2006). Economic and non-economic determinants of poverty in developing countries: Competing theories and empirical evidence. Canadian Journal of Development Studies–Revue Canadienne D Etudes Du Developpement 27: 267–285.

Verschoor, A. & Kalwij, A. (2006). Aid, social policies and pro-poor growth. Journal of international Development 18: 519–532.

Wagle, U.R. (2010). Does low inequality cause low poverty? Evidence from high-income and developing countries. Poverty and Public Policy 2: 490–515.

Wagle, U.R. (2012). The economic footing of the global poor, 1980–2005: The roles of economic growth, openness and political institutions. Journal of International Development 197: 173–197.

Youssouf, K., Kossi, A., Abdoulaye, T. (2013). Social protection for poverty reduction in times of crisis. Serie etudes et documents du CERDI. Clermont Ferrand: Centre D'Etudes et de Recherches sur le Developpement International (CERDI).

Synthesis, taxation (3)

Akmal, M.S., Ahmad, Q.M., Ahmad, M.H., Butt, M.S. (2007). An empirical investigation of the relationship between trade liberalization and poverty reduction: A case for Pakistan. Lahore Journal of Economics 12: 99–118.

Mirza, F.M. (2005). Poverty in Pakistan. Iranian Economic Review 10: 103–126.

Santarelli, E. & Figini, P. (2004). Does globalization reduce poverty? Some empirical evidence for the developing countries. In: Lee, E. & Vivarelli, M. (eds) Understanding globalization, employment and poverty reduction. Palgrave Macmillan.

Synthesis, trade policy (4)

Agenor, P-R. (2002). Does globalization hurt the poor? Policy research working paper. Washington DC: World Bank.

Bergh, A. & Nilsson, T. (2011). Globalization and absolute poverty: A panel data study. IFN working paper. Stockholm: Research Instiute of Industrial Economics.

Hasan, R., Mitra, D., Ulubasoglu, M. (2006). Institutions and policies for growth and poverty reduction: The role of private sector development. Asian Development Bank.

Yasmin, B., Jehan, Z., Chaudhary, M.A. (2006). Trade liberalization and economic development: Evidence from Pakistan. *Lahore Journal of Economics* 11: 19–34.

Mapping only (59)

Abou-Ali, H.E.H., Heba, E., Haughton, J., Khandker, S. (2010). Evaluating the impact of Egyptian social fund for development programmes. Journal of Development Effectiveness 2: 521–555.

Agrawal, P. (2007). Economic growth and poverty reduction: Evidence from Kazakhstan. Asian Development Review 24: 90–115.

Amjad, R. & Kemal, A.R. (1997). Macroeconomic policies and their impact on poverty alleviation in Pakistan. Pakistan Development Review 36: 39–68.

Araujo, J.M.D., Alves, J.D.A., Besarria, C.D.N. (2013). O impacto dos gastos sociais sobre os indicadores de desigualdade e pobreza nos estados brasileiros no período de 2004 a 2009. Revista de Economia Contemporânea 17: 249–275.

Baba, S.H., Wani, M.H., Sharma, K.D. (2010). Impact of government expenditure on poverty in Himachal Pradesh. Asian Economic Review 52: 139–156.

Balakrishnan, R., Steinberg, C., Syed, M. (2013). The elusive quest for inclusive growth: Growth, poverty, and inequality in Asia. IMF working paper. Washington DC: International Monetary Fund.

Balisacan, A.M. (2003). Poverty comparison in the Philippines: Is what we know about the poor robust? In: Edmonds, C.M. (ed.) Reducing poverty in Asia: Emerging issues in growth, targeting, and measurement. Cheltenham: Edward Elgar Publishing.

Balisacan, A.M. & Fuwa, N. (2004). Going beyond crosscountry averages: Growth, inequality and poverty reduction in the Philippines. World Development 32: 1891–1907.

Besley, T. & Burgess, R. (2000). Land reform, poverty reduction, and growth: Evidence from India. The Quarterly Journal of Economics 115: 389–430.

Bhatacharya, G. & Haldar, S.K. (2013). Does spending on human capital reduce fertility and poverty in India? A panel data study. Asia-Pacific Social Science Review 13: 1–23.

Bhattacharyya, S. & Resosudarmo, B.R. (2013). Growth, growth accelerations and the poor: Lessons from Indonesia. Working papers in trade and development. The Australian National University, Arndt-Corden Department of Economics.

Biradar, R.R. (2008). Growth of rural non-agricultural employment and poverty alleviation in India: What does emerging evidence indicate? Journal of Social and Economic Development 10: 274–301.

Cain, J., Hasan, R., Mitra, D. (2012). Trade liberalisation and poverty reduction: New evidence from Indian states. In: Bhagwati, J., Panagariya, A. (eds) India's reforms: How they produced inclusive growth. Oxford and New York: Oxford University Press.

Castilho, M., Menendez, M., Sztulman, A. (2012). Trade liberalization, inequality, and poverty in Brazilian states. World Development 40: 821–835.

Chhibber, A. & Nayyar, G. (2008). Pro-poor growth: Explaining the cross-country variation in the growth elasticity of poverty. International Journal of Development Issues 7: 160–176.

Christiaensen, L., Demery, L., Paternostro, S. (2003). Macro and micro perspectives of growth and poverty in Africa. The World Bank Economic Review 17: 317–347.

Crisp, B.F. &, Kelly, M.J. (1999). The socioeconomic impacts of structural adjustment. International Studies Quarterly 43: 533–552.

Datt, G. & Ravallion, M. (1998). Why have some Indian states done better than others at reducing rural poverty? Economica 65: 17–38.

Datt, G. & Ravallion, M. (2002). Is India's economic growth leaving the poor behind? Journal of Economic Perspectives 16: 89–108.

Desai, B.M. & Namboodiri, N.V. (1998). Policy strategy and instruments for alleviating rural poverty. Economic and Political Weekly 33: 2669–2674.

Diaz Gonzalez, E., Turner Barragan, E. (2012). Pobreza y politica social en Mexico y estados de la frontera norte (Poverty and social policy in Mexico and the northern border states. With English summary). Analisis Economico 27: 23–46.

Emerson, M., Fabricio, L., Guaracyane, C. (2011). Os programas de transferência de renda do governo impactam a pobreza no Brasil? Revista Brasileira de Economia 65: 267–288.

Fan, S., Gulati, A., Thorat, S. (2008a). Investment, subsidies, and pro-poor growth in rural India. Agricultural Economics 39: 163–170.

Fan, S., Hazell, P., Thorat, S.K. (2000). Impact of public expenditure on poverty in rural India. Economic and Political Weekly 35: 3581–3588.

Fan, S., Hazell, P.B.R., Thorat, S. (1998). Government spending, growth and poverty: An analysis of interlinkages in rural India. EPTD discussion paper. Washington DC: International Food Policy Research Institute.

Fan, S., Huong, P., Long, T. (2004a). Government spending and poverty reduction in Vietnam. Washington DC: International Food Policy Research Unit.

Fan, S., Linxiu, Z., Xiaobo, Z. (2002). Growth, inequality, and poverty in rural China: The role of public investments. Research report. Washington DC: International Food Policy Research Institute.

Fan, S., Yu, B., Jitsuchon, S. (2008b). Does allocation of public spending matter in poverty reduction? Evidence from Thailand. Asian Economic Journal 22: 411–430.

Fan, S., Zhang, L., Zhang, X. (2004b). Reforms, investment, and poverty in rural China. Economic Development and Cultural Change 52: 395–421.

Fan, S. & Zhang, X. (2008). Public expenditure, growth and poverty reduction in rural Uganda. African Development Review/Revue africaine de developpement 20: 466–496.

Fan, S.G. & Hazell, P. (2000). Should developing countries invest more in less-favoured areas? An empirical analysis of rural India. Economic and Political Weekly 35: 1455–1464.

Ferreira, F., Leite, P., Ravallion, M. (2010). Poverty reduction without economic growth? Explaining Brazil's poverty dynamics, 1985–2004. Journal of Development Economics 93: 20–36.

Gupta, I. & Mitra, A. (2004). Economic growth, health and poverty: An exploratory study for India. Development Policy Review 22: 193–206.

Hasan, R., Mitra, D., Ural, B. (2007). Trade liberalization, labor market institutions and poverty reduction: Evidence from Indian States. In: Bery, S., Bosworth, B., Panagariya, A.E. (eds) India Policy Forum 2006/07. Los Angeles and London: Sage Publications.

Hong, H. & Ahmed, S. (2009). Government spending on public goods: Evidence on growth and poverty. Economic and Political Weekly 44: 102–108.

Imai, K.S., Gaiha, R., Thapa, G. (2011). Role of agriculture in achieving MDG 1 in Asia and the Pacific region. Discussion paper series. Research Institute for Economics, Business Administration, Kobe University.

Islam, I. (2005). Circumventing macroeconomic conservatism: A policy framework for growth, employment and poverty reduction. International Labour Review 144: 55–84.

Justino, P. (2007). Social security in developing countries: Myth or necessity? Evidence from India. Journal of International Development 19: 367–382.

Kang, S.J., Chung, Y.W., Sohn, S.H. (2013). The effects of monetary policy on individual welfares. Korea and the World Economy 14: 1–29.

Kumar, R. & Mitra, A. (2009) Growth, health and poverty: A cross-country analysis. Journal of International Economic Studies 73–85.

Laabas, B. & Limam, I. (2004). Impact of public policies on poverty, income distribution and growth. Kuwait: Arab Planning Institute.

Leibovich, J. & Nunez, J. (1999) Assets and resources of the poor in Colombia. Trimestre Economico 66: 501–551.

Mallick, S.K. (2013). Disentangling the poverty effects of sectoral output, prices, and policies in India. Review of Income and Wealth 60: 773–801.

Marinho, E., Linhares, F., Campelo, G. (2011). Do government income transfer programmes impact on poverty in Brazil? Revista brasileira de economia 65: 267–288.

Mbabazi, J., Morrissey, O., Milner, C. (2003) The fragility of empirical links between inequality, trade liberalization, growth and, poverty. In: Van Der Hoeven, R. & Shorrocks, A. (eds) Perspectives on growth and poverty. New York: United Nations University Press.

Platschorre, B. & Bulte, E. (2011). A note on banking reform and poverty: Revisiting the Indian social banking experiment. Review of Development Economics 15: 535–540.

Ravallion, M. (2006). Looking beyond averages in the trade and poverty debate. World Development 34: 1374–1392.

Ravallion, M. & Chen, S. (2007). China's (uneven) progress against poverty. Journal of Development Economics 82: 1–42.

Ravallion, M. & Datt, G. (2002). Why has economic growth been more pro-poor in some states of India than others? Journal of Development Economics 68: 381–400.

Rivera, J.L. (2013). Programas sociales: Transferencias publicas y privadas en Mexico en relacion con la inequidad y la pobreza, 2006–2010. Economia: Teoria y Practica 39: 59–87.

Roy, B.C. & Pal, S. (2002). Investment, agricultural productivity and rural poverty in India: A state-level analysis. Indian Journal of Agricultural Economics 57: 653–678.

Sepulveda, C.F. & Martinez-Vazquez, J. (2011). The consequences of fiscal decentralization on poverty and income equality. Environment and Planning C: Government and Policy 29: 321–343.

Singh, R.J. & Huang, Y. (2011). Financial deepening, property rights and poverty: Evidence from Sub-Saharan Africa. IMF working paper. Washington DC: International Monetary Fund (IMF).

Topalova, P. (2007). Trade liberalisation, poverty and inequality: Evidence from Indian districts. In: Harrison, A. (ed.) Globalization and poverty. Cambridge MA: National Bureau of Economic Research (NBER).

Topalova, P. (2010). Factor immobility and regional impacts of trade liberalization: Evidence on poverty from India. American Economic Journal-Applied Economics 2: 1–41.

Valero, J.N., Trevino, L., Chapa, J., Ponzio, C.A. (2007). Poverty, economic cycles and governmental politics in Mexico (1992–2002). Trimestre Economico 74: 441–465.

Vegh, C.A. & Vuletin, G. (2014). Social implications of fiscal policy responses during crises. NBER working paper. Cambridge MA: National Bureau of Economic Research.

Wilson, E.J. (2005). Foodgrain price policies in India: The effects on foodgrain production and rural poverty, 1951–2001. Applied Econometrics and International Development 5: 27–48.

World, B. (2000). Making transition work for everyone: Poverty and inequality in Europe and Central Asia. Washington DC: World Bank.

Synthesis (82)

Abrahams, M.S., Lee, U., Ndlebe, A., Quene, K.M., Niekerk, I.V., Gandhi, V., Harigaya, T.C. (2004). The social and economic impact of South Africa's social security system. Cape Town: Economic Policy Research Institute.

Acosta, P., Leite, P., Rigolini, J. (2011). Should cash transfers be confined to the poor? Implications for poverty and inequality in Latin America. Policy research working paper. Washington DC: World Bank.

Amir, H., Asafu-Adjaye, J., Ducpham, T. (2013). The impact of the Indonesian income tax reform: A CGE analysis. Economic Modelling 31: 492–501.

Arauco, V.P., Molina, G.G., Aguilar, E.Y., Pozo, W.J. (2014). Explaining low redistributive impact in Bolivia. Public Finance Review 42: 326–345.

Arguello, R., Valderrama, D., Acerco, S. (2011). Poverty impacts of agricultural policy adjustments in an opening economy: The case of Colombia. Serie documentos de trabajo. Facultad de Economia, Universidad del Rosario.

Arndt, C. & Thurlow, J. (2010). Mozambique. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality and poverty. Washington DC: World Bank.

Boccanfuso, D., Coulibaly, M., Timilsina, G.R., Savard, L. (2013). Macroeconomic and distributional impacts of jatropha-based biodiesel in Mali. Policy research working paper. Washington DC: World Bank.

Bourguignon, F., Ferreira, F., Leite, P. (2004). Ex-ante evaluation of conditional cash transfer programs: The case of Bolsa Escola. In: World Bank (ed) Inequality and economic development in Brazil. Washington DC: World Bank.

Bourguignon, F. & Savard, L. (2008). Distributional effects of trade reform: An integrated macro-micro model applied to the Philippines. In: Bourguignon, F., Bussolo, M., Pereira Da Silva, L.A.E. (eds) The impact of macroeconomic policies on poverty and income distribution: Macro-micro evaluation techniques and tools. New York: Palgrave Macmillan.

Breisinger, C., Engelke, W., Ecker, O. (2012). Leveraging fuel subsidy reform for transition in Yemen. Sustainability 4: 2862–2887.

Bucheli, M., Lustig, N., Rossi, M., Amã¡Bile, F. (2013). Social spending, taxes and income redistribution in Uruguay. Policy research working paper. Washington DC: World Bank.

Bussolo, M., De Hoyos, R.E., Medvedev, D. (2011). Distributional effects of the Panama Canal expansion. Policy research working paper. Washington DC: World Bank.

Bussolo, M. & Round, J.I. (2003). Poverty reduction strategies in a budget-constrained economy. OECD Development Centre working paper. Paris: Organisation for Economic Co-operation and Development.

Carneiro, F.G. & Arbache, J.S. (2003). Assessing the impacts of trade on poverty and inequality. Applied Economics Letters 10: 989–994.

Cockburn, J., Corong, E., Decaluwe, B., Fofana, I., Robichaud, V. (2010). The growth and poverty impacts of trade liberalization in Senegal. International Journal of Microsimulation 3: 109–113.

Cogneau, D. & Robilliard, A-S. (2008). Simulating targeted policies with macro impacts: Poverty alleviation policies in Madagascar. In: Bourguignon, F., Bussolo, M., Pereira Da Silva, L.A.E. (eds) The impact of macroeconomic policies on poverty and income distribution: Macro-micro evaluation techniques and tools. New York: Palgrave Macmillan.

Corong, E., Dacuycuy, L., Reyes, R., Taningco, A. (2012). The growth and distributive impacts of public infrastructure investments in the Philippines. MPIA working paper. Partnership for Economic Policy, International Development Research Centre (IDRC).

Cororaton, C., Corong, E., Cockburn, J. (2010). Philippines. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Cororaton, C., Orden, D. (2010). Pakistan. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Cororaton, C.B., Cockburn, J. (2005). Trade reform and poverty in the Philippines: A computable general equilibrium microsimulation analysis. Working paper. Centre interuniversitaire sur le risque, les politiques economiques et l'emploi (CIRPEE).

Cororaton, C.B., Corong, E. (2009). Philippine agricultural and food policies: Implications for poverty and income distribution. Research report. Washington DC: International Food Policy Research Institute (IFPRI).

Cury, S., Coelho, A.M., Callegari, I. (2010). The impacts of income transfer programs on income distribution and poverty in Brazil: An integrated microsimulation and computable general equilibrium analysis. MPIA working paper. Poverty and Economic Policy Research Network, International Development Research Centre (IDRC).

Damuri, Y.R. & Perdana, A.A. (2003). The impact of fiscal policy on income distribution and poverty: A computable general equilibrium approach for Indonesia. CSIS Economics working paper. Jakarta: Center for Strategic and International Studies.

David, A.C. & Petri, M. (2013). Inclusive growth and the incidence of fiscal policy in Mauritius: Much progress, but more could be done. IMF working paper. Washington DC: International Monetary Fund.

Debowicz, D. & Golan, J. (2014). The impact of Oportunidades on human capital and income distribution in Mexico: A top-down/bottom-up approach. Journal of Policy Modeling 36: 24–42.

Decaluwe, B., Adjovi, E., Robichaud, V. (2008). Trade policy and poverty in Benin: A general equilibrium analysis. MPIA working paper. Poverty and Economic Policy Network, International Development Research Centre (IDRC).

Decaluwe, B., Cockburn, J., Emini, C.A. (2005). The poverty impacts of the Doha Round in Cameroon: The role of tax policy. Policy research working paper. Washington DC: World Bank

Dessus, S., Hoffman, J., Lofgren, H. (2012). Liberia: Strategic policy options for medium term growth and development. Policy research working paper. Washington DC: World Bank.

Development AI (2007). Social transfers in Armenia and their impact on poverty. Social Protection Systems Strengthening Project, USAID Armenia.

Emini, C.A., Cockburn, J., Decaluwe, B. (2005). The poverty impacts of the Doha Round in Cameroon: The role of tax policy. MPIA working paper. Poverty and Economic Policy Research Network, International Development Research Centre (IDRC).

Freije, S., Bando, R., Arce, F. (2006). Conditional transfers, labor supply and poverty: Microsimulating Oportunidades. Economia 73–124.

Fujii, T. & Roland-Holst, D. (2008). How does Vietnam's accession to the World Trade Organization change the spatial incidence of poverty. In: Nissanke, M. & Thorbecke, E. (eds) Globalization and the poor in Asia: Can shared growth be sustained? Palgrave Macmillan.

Gassmann, F. & Behrendt, C. (2006) Cash benefits in low-income countries: Simulating the effects on poverty reduction for Senegal and Tanzania. Issues in social protection discussion paper. Geneva: International Labour Organisation

Habibov, N.N. & Fan, L. (2006). Social assistance and the challenges of poverty and inequality in Azerbaijan, a low-income country in transition. Journal of Sociology and Social Welfare 33: 203–226.

Hassine, N.B., Robichaud, V., Decaluwe, B. (2010) Agricultural trade, liberalization, productivity gain, and poverty alleviation: A general equilibrium analysis. MPIA working paper. Poverty and Economic Policy Network, International Development Research Centre (IDRC).

Herault, N. (2007). Trade liberalisation, poverty and inequality in South Africa: A computable general equilibrium-microsimulation analysis. Economic Record 83: 317–328.

Herault, N. (2010). Sequential linking of computable general equilibrium and microsimulation models: A comparison of behavioural and reweighting techniques. International Journal of Microsimulation 3: 35–42.

Herault, N. & Thurlow, J. (2010). South Africa. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Higgins, S. & Pereira, C. (2014). The effects of Brazil's taxation and social spending on the distribution of household income. Public Finance Review 42: 346–367.

Himanshu, A. (2013). In-kind food transfers - I: Impact on poverty. Economic and Political Weekly 48: 46–54.

Hodges, A., Dashdorj, K., Jong, K.Y., Dufay, A-C., Budragchaa, U., Mungun, T. (2007). Child benefits and poverty reduction: Evidence from Mongolia's Child Money Programme. Division of Policy and Planning working papers. New York: United Nations Children's Fund (UNICEF).

Ianchovichina, E., Nicita, A., Soloaga, I. (2002). Trade reform and poverty: The case of Mexico. The World Economy 25: 945–972.

Jaramillo, M. (2014). The incidence of social spending and taxes in Peru. Public Finance Review 42: 391–412.

Karl, E.C.R. (2004). How can tax policies and macroeconomic shocks affect the poor? A quantitative assessment using a computable general equilibrium framework for Colombia. Ensayos sobre Politica Economica 450–515.

Kinnunen, J., Lofgren, H., Sulla, V., Merotto, D. (2013). External shocks, fiscal policy and income distribution: Alternative scenarios for Moldova. Policy research working paper. Washington DC: World Bank.

Lambert, S., Schneider, H., Suwa, A. (1991). Adjustment and equity in Côte d'Ivoire: 1980–86. World Development 19: 1563–1576.

Leibbrandt, M., Woolard, I., Finn, A., Argent, J. (2010). Trends in South African income distribution and poverty since the fall of apartheid. OECD social, employment and migration working papers. Paris: Organisation for Economic Co-operation and Development.

Lustig, N. (2011). Fiscal policy and income redistribution in Latin America: Challenging the conventional wisdom. ECINEQ working paper. Verona: Society for the Study of Economic Inequality.

Lustig, N., Gray-Molina, G., Higgins, S., Jaramillo, M., Jimenez, W., Paz, V., Pereira, C., Pessino, C., Scott, J., Yanez, E. (2012). The impact of taxes and social spending on inequality and poverty in Argentina, Bolivia, Brazil, Mexico, and Peru: A synthesis of results. CGD working paper. Washington DC: Center For Global Development.

Mabugu, R., Chitiga Mabugu, M. (2014). Can trade liberalisation in South Africa reduce poverty and inequality while boosting economic growth? Macro-micro reflections. Development Southern Africa 31: 257–274.

Matković, G. & Mijatović, B. (2011). The effects of proposed tax changes on poverty and vulnerable groups in Serbia. Economic Annals 56: 27–58.

Nicita, A. (2004). Who benefited from trade liberalisation in Mexico? Measuring the effects on household welfare. Policy research working paper. Washington DC: World Bank.

Nielsen, H. & Lofgren, H. (2011). How important is the efficiency of government investment ? The case of the Republic of Congo. Policy research working paper. Washington DC: World Bank.

Niimi, Y. & Bussolo, M. (2006). Do regional trade pacts benefit the poor? An illustration from the Dominican Republic–Central American free trade agreement in Nicaragua. Policy research working paper. Washington DC: World Bank.

Odior, E.S.O. (2014). Government expenditure on education and poverty reduction: Implications for achieving the MDGs in Nigeria: A computable general equilibrium micro-simulation analysis. Asian Economic and Financial Review 4: 150–172.

Oktaviani, R., Hakim, D.B., Siregar, H., Sahara, S. (2007). Impact of a lower oil subsidy on Indonesian macroeconomic performance, agricultural sector and poverty incidences: A recursive dynamic computable general equilibrium analysis. MPIA working paper. Poverty and Economic Policy Research Network, International Development Research Centre (IDRC).

Osorio, R.G. (2008). The recent impact of government transfers on poverty in Honduras and alternatives to enhance their effects. IPC working paper. Brasilia: International Poverty Centre.

Paes, N.L. & Siqueira, M.L. (2008). Renda básica da cidadania versus imposto de renda negativo: O papel dos custos de focalização. Estudos Economicos 38: 583–610.

Ramirez, M., Acosta, O.L., Gracia, O. (2006). Fiscal adjustment, income distribution and poverty in Colombia: Value-added tax reform and public transfers. MPIA network session paper.

Ravallion, M. & Loshkin, M. (2008). Winners and losers from trade reform in Morocco. In: Bourguignon, F., Bussolo, M., Pereira Da Silva, L.A.E. (eds) The impact of macroeconomic policies on poverty and income distribution: Macro-micro evaluation techniques and tools. New York: Palgrave Macmillan.

Robinson, S. & Robilliard, A-S. (2005). The social impact of a WTO agreement in Indonesia. Policy research working paper. Washington DC: World Bank.

Rocchi, B., Romano, D., Hamza, R. (2013). Agriculture reform and food crisis in Syria: Impacts on poverty and inequality. Food Policy 43: 190–203.

Rocha, S. (2008). Federal income transfers: Targeting and impacts on poverty and inequality. Transferências de renda federais: Focalização e impactos sobre pobreza e desigualdade 12: 67–96.

Roelen, K. (2010). Social welfare in Vietnam: A curse or blessing for poor children? Asian Social Work and Policy Review 4: 66–83.

Sanchez, M. & Vos, R. (2010). Nicaragua. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Savard, L. (2010). Scaling up infrastructure spending in the Philippines: A CGE top-down bottom-up microsimulation approach. International Journal of Microsimulation 3: 43–59.

Scott, J. (2014). Redistributive impact and efficiency of Mexico's fiscal system. Public Finance Review 42: 368–390.

Skoufias, E., Lindert, K., Shapiro, J. (2010). Globalization and the role of public transfers in redistributing income in Latin America and the Caribbean. World Development 38: 895–907.

Ssewanyana, S. (2009). Growth, inequality, cash transfers and poverty in Uganda. IPC country study. Brasilia: International Policy Centre for Inclusive Growth.

Tavares, P.A., Pazello, E.T., Fernandes, R., Sousa Camelo, R.D. (2009). An evaluation of the Family Grant Programme: Targeting and impact on income distribution and poverty. Pesquisa e planejamento econômico 39: 25–58.

Thurlow, J. (2007). Trade liberalization and pro-poor growth in South Africa. Journal for Studies in Economics and Econometrics 31: 161–179.

Tiberti, L., Maisonnave, H., Chitiga, M., Mabugu, R.E.E., Robichaud, V., Ngandu, S. (2013). The economy-wide impacts of the South African child support grant: A micro-simulation-

computable general equilibrium analysis. CIRPEE working paper. Centre Interuniversitaire sur le Risque, les Politiques Economiques et l'Emploi.

Van Den Berg, M. & Cuong, N.V. (2011). Impact of public and private cash transfers on poverty and inequality: Evidence from Vietnam. Development Policy Review 29: 689–728.

Vos, R. & De Jong, N. (2003). Trade liberalization and poverty in Ecuador: A CGE macro-microsimulation analysis. Economic Systems Research 15: 211–232.

Warr, P. (2010a) Indonesia. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Warr, P. (2010b) Thailand. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

World Bank (2008). Uruguay: Poverty and social impact assessment of the tax reform. Washington DC: Poverty Reduction and Economic Management Unit, World Bank.

World Bank (2009). Guatemala poverty assessment: Good performance at low levels. Washington DC: Poverty Reduction and Economic Management Unit, World Bank.

World Bank (2011). Republic of Fiji: Poverty trends, profiles and small area estimation (poverty maps) in Republic of Fiji (2003–2009). Washington DC: World Bank.

World Bank (2012). Poverty and the policy response to the economic crisis in Liberia. Washington DC: World Bank.

Yamada, G. & Castro, J. (2012). Poverty, inequality, and social policies in Peru: As poor as it gets. Documento de discusion. Departamento de Economia, Universidad del Pacfico.

Zhai, F. & Hertel, T. (2010) China. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Mapping only (30)

Agostini, C. & Brown, P. (2011). Cash transfers and poverty reduction in Chile. Journal of Regional Science 51: 604–625.

Annabi, N., Khondker, B., Raihan, S., Cockburn, J., Decaluwe, B. (2006). Implications of WTO agreements and unilateral trade policy reforms for poverty in Bangladesh: Short-run versus long-run impacts. In: Hertel, T.W. & Winters, L.A. (eds) Poverty and the WTO: Impacts of the Doha development agenda. New York: Palgrave Macmillan.

Barja, G., McKenzie, D., Urquiola, M. (2005). Bolivian capitalization and privatization: Approximation to an evaluation. In: Nellis, J. & Birdsall, N. (eds) Reality check: The distributional impact of privatization in developing countries. Washington DC: Center for Global Development.

Boccanfuso, D., Estache, A., Savard, L. (2009a). Electricity reforms in Mali: A macro-micro analysis of the effects on poverty and distribution. South African Journal of Economics 77: 127–147.

Boccanfuso, D., Estache, A., Savard, L. (2009b). A macro-micro analysis of the effects of electricity reform in Senegal on poverty and distribution. Journal of Development Studies 45: 351–368.

Bussolo, M. (2003). Examining the links between economic policy and poverty: Examples from Ghana and India. In: OECD (ed) Agricultural trade and poverty making: Policy analysis count. Paris: Organisation for Economic Co-operation and Development (OECD).

Casero, P. & Seshan, G. (2006). Fiscal and social impact of a nominal exchange rate devaluation in Djibouti. Policy research working paper. Washington DC: World Bank.

Chitiga, M. & Mabugu, R. (2008). Evaluating the impact of land redistribution: A CGE microsimulation application to Zimbabwe. Journal of African Economies 17: 527–549.

Cicoweiz, M., Diaz-Bonilla, C., Diaz-Bonilla, E. (2010). Argentina. In: Anderson, K., Cockburn, J., Martin, W. (eds) Agricultural price distortions, inequality, and poverty. Washington DC: World Bank.

Cicowiez, M., Alejo, J., Gresia, L.D., Olivieri, S., Pacheco, A. (2010). Export taxes, world prices, and poverty in Argentina: A dynamic CGE-microsimulation analysis. MPIA working paper. Poverty and Economic Policy Research Network, International Development Research Centre (IDRC).

De Sarralde, S.D., Garcimartín, C., Ruiz-Huerta, J. (2011). The paradox of progressivity in low-tax countries: Income tax in Guatemala. Cepal Review 85–99.

Dorward, A., Morrison, J., Wobst, P. (2004). Modelling pro-poor agricultural growth strategies in Malawi: Lessons for policy and analysis. African Development and Poverty Reduction: the Macro-Micro Linkage. South Africa: Somerset West.

Ennis, H. & Pinto, S. (2005). Argentina's privatization: effects on income distribution. In: Nellis J, Birdsall N (eds) Reality check: The distributional impact of privatization in developing countries. Washington DC: Center for Global Development.

Ferrando, M., Pérez Muñoz, C., Salas, G. (2012). Negative income tax in Uruguay: An alternative redistribution policy? Desarrollo y sociedad 70: 151–186.

Freije, S. & Rivas, L. (2005). Inequality and welfare changes: Evidence from Nicaragua. In: Nellis, J. & Birdsall, N. (eds) Reality check: The distributional impact of privatization in developing countries. Washington DC: Center for Global Development.

Galasso, E. & Ravallion, M. (2004). Social protection in a crisis: Argentina's plan jefes y jefas. World Bank Economic Review 18: 367–399.

Ganuza, E., Paes De Barros, R., Vos, R. (2002). Labour market adjustment, poverty and inequality during liberalisation. In: Vos, R., Taylor, L., Paes De Barros, R. (eds) Economic liberalization, distribution, and poverty: Latin America in the 1990s. Cheltenham: Edward Elgar.

Golan, J., Sicular, T., Umapathi, N. (2014). Any guarantees? China's rural minimum living standard guarantee program. Social protection and labour discussion paper. Washington DC: World Bank.

Ivaschenko, O. (2007). The welfare impact of the exchange rate adjustment in Seychelles and possible mitigation mechanisms. Journal of Policy Modeling 29: 463–472.

Klasen, S., Grosse, M., Lay, J., Spatz, J. (2007). Analysing pro-poor growth in Bolivia: Addressing data gaps and modelling policy choices. In: Grimm, M., Klasen, S., McKay, A. (eds) Determinants of pro-poor growth: Analytical issues and modelling policy choices. London: Palgrave Macmillan.

Lustig, N. & Pessino, C. (2014). Social spending and income redistribution in Argentina during the 2000s: The increasing role of noncontributory pensions. Public Finance Review 42: 304–325.

Mardones Poblete, C. (2010). Evaluating tax reforms in Chile with a CGE model. Estudios De Economia 37: 243–284.

Nahar, B. & Siriwardana, M. (2013). Trade opening, fiscal reforms, poverty, and inequality: A CGE analysis for Bangladesh. The Developing Economies 51: 145–185.

Naranpanawa, A., Bandara, J.S., Selvanathan, S. (2011). Trade and poverty nexus: A case study of Sri Lanka. Journal of Policy Modeling 33: 328–346.

Ojha, V.P. (2009). Carbon emissions reduction strategies and poverty alleviation in India. Environment and Development Economics 14: 323–348.

Salas, G. (2009). Disenos alternativos de un impuesto negativo a la renta en Uruguay. Documentos de trabajo. Instituto de Economia.

Sanchez-Cantillo, M.V. (2009). Trade policy reform and poverty: Successes and failures in Central America. Cepal Review 65–82.

Segal, P. (2011). Resource rents, redistribution, and halving global poverty: The resource dividend. World Development 39: 475–489.

Szulc, A. (2012). Social policy and poverty: Checking the efficiency of the social assistance system in Poland. Eastern European Economics 50: 66–92.

World Bank (1999). Poverty and social developments in Peru, 1994–1997. World Bank country studies. Washington DC: World Bank.

QUANTITATIVE CASE STUDIES

Amarante, V. & Perazzo, I. (2009). Crecimiento, economico y pobreza en Uruguay (1991–2006). Cuadernos de Economia 28: 99–124.

Azevedo, J.P. & Atamanov, A. (2014). Pathways to the middle class in Turkey: How have reducing poverty and boosting shared prosperity helped? Policy research working paper. Washington DC: World Bank.

Azevedo, J.P., Atamanov, A., Rajabov, A. (2014). Poverty reduction and shared prosperity in Tajikistan: A diagnostic. Policy research working paper. Washington DC: World Bank.

Helfand, S., Rocha, R., Vinhais, H. (2009). Poverty and income inequality in rural Brazil: An analysis of the recent decline. Pesquisa e planejamento econômico 39: 59–80.

Inchauste, G., Azevedo, J.O.P., Essama-Nssah, B., Olivieri, S., Van Nguyen, T., Saavedra-Chanduvi, J., Winkler, H. (2014). Understanding changes in poverty. Directions in Development: Poverty. Washington DC: World Bank.

Jitsuchon, S. (2006). Sources and pro-poorness of Thailand's economic growth. Thammasat Economic Journal 24: 68–105.

Szekely, M. & Rascon, E. (2005). Mexico, 2000–2002: Reduccion de la pobreza con estabilidad y expansion de programas sociales (with English summary). Economia Mexicana Nueva Epoca 14: 217–269.

A5 ADDITIONAL RESULTS, EX-POST OBSERVATIONAL STUDIES

Figure A5.1: Frequency distribution of the partial correlation coefficient

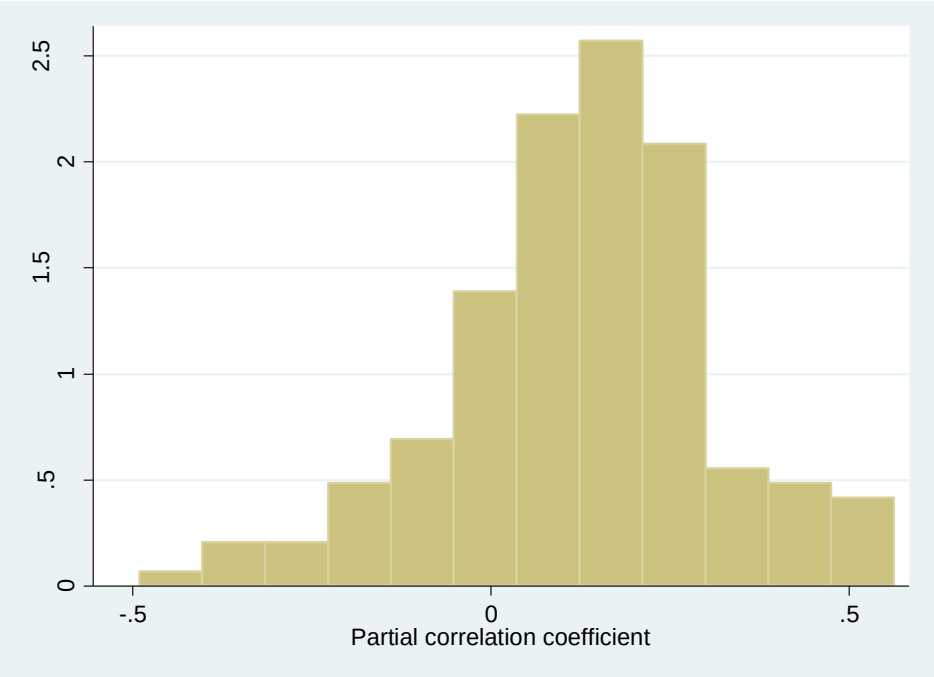


Table A5.1: Robustness checks using different weights (dependent variable=partial correlation)

	(1) FAT PETWLS	(2) WLS general	(3) WLS weights 1	(4) WLS weights 2	(5) WLS weights 3	(6) WLS weights 4
Standard error	1.564	-0.647	-1.121	0.973#	-0.815	0.138#
	(0.967)	(0.710)	(0.817)	(1.318)	(0.760)	(0.721)
Poverty gap		0.137**	0.146***	0.139***	0.074	0.011
		(0.051)	(0.049)	(0.046)	(0.055)	(0.013)
Poverty others		0.046	0.044	-0.002	0.044	0.016
		(0.048)	(0.045)	(0.042)	(0.055)	(0.050)
Developed		-0.115	-0.072	-0.019	-0.024	-0.020
		(0.074)	(0.098)	(0.082)	(0.089)	(0.030)
Unpublished		0.367***	0.366**	0.367**	0.352**	0.166**
		(0.091)	(0.146)	(0.152)	(0.140)	(0.065)
Year data		-0.008	-0.007	-0.005	-0.010	-0.005
		(0.006)	(0.008)	(0.008)	(0.007)	(0.003)
OLS		0.163***	0.054	-0.014	0.018	0.008
		(0.055)	(0.076)	(0.107)	(0.073)	(0.006)
SSA		0.075	-0.025	-0.109	-0.338	0.027
		(0.093)	(0.266)	(0.272)	(0.263)	(0.093)
Trade		-0.021	-0.056	-0.099	-0.100	-0.005
		(0.056)	(0.086)	(0.076)	(0.088)	(0.032)
Governance		-0.081	0.039	0.064	0.019	-0.012
		(0.087)	(0.110)	(0.101)	(0.107)	(0.039)
Inflation		-0.323***	-0.309**	-0.311**	-0.288**	-0.171***
		(0.073)	(0.130)	(0.127)	(0.137)	(0.053)
Inequality measures		0.032	0.098	0.082	0.023	0.064
		(0.109)	(0.104)	(0.113)	(0.091)	(0.055)
Education		0.107	0.150	0.208	0.139	0.128**
		(0.123)	(0.158)	(0.134)	(0.150)	(0.054)
Aid		0.381***	0.303**	0.290**	0.306***	0.203***
		(0.118)	(0.110)	(0.109)	(0.075)	(0.041)
Health government spending		-0.297**	-0.141	-0.096	0.112	-0.058
		(0.133)	(0.209)	(0.170)	(0.217)	(0.060)

	(1) FAT PETWLS	(2) WLS general	(3) WLS weights 1	(4) WLS weights 2	(5) WLS weights 3	(6) WLS weights 4
Education government spending		-0.259*	-0.044	-0.033	0.053	0.035
		(0.143)	(0.229)	(0.202)	(0.202)	(0.065)
Health and education government spending		-0.279**	-0.232	-0.149	-0.133	-0.141*
		(0.109)	(0.190)	(0.166)	(0.132)	(0.069)
Social net government spending		0.077	0.336	0.268	0.066	0.178
		(0.239)	(0.277)	(0.343)	(0.224)	(0.130)
Government spending (consumption)		0.040	0.089	0.044	0.112	0.047
		(0.086)	(0.140)	(0.140)	(0.141)	(0.058)
Government spending others		-0.104	0.113	0.168	0.236	0.036
		(0.144)	(0.229)	(0.209)	(0.192)	(0.065)
Constant	-0.046	-0.024	-0.054	-0.130	0.239	-0.112
	(0.113)	(0.212)	(0.213)	(0.277)	(0.193)	(0.099)
N	164	164	164	164	164	164
R^2	0.092	0.677	0.630	0.619	0.515	0.761

Notes: Standard errors are reported in parentheses. All regressions use cluster standard errors to adjust for data dependence, i.e. multiple estimates per study. All columns use weighted least squares. # The standard error of the mean of the partial correlation coefficient is reported instead of the standard error of the partial correlation coefficient. Regression 3 uses the sum of precision squared (or inverse variance) for each study as weights. Regression 4 uses the sum of precision squared (or inverse variance) for each study as weights and the standard error of the mean of the partial correlation coefficient instead of the standard error of the partial correlation coefficient. Regression 5 uses 1/n as weights where n is number of estimates per study. Regression 6 uses the weighted mean of the partial correlation, the sum of precision squared (or inverse variance) for each study as weights and the standard error of the mean of the partial correlation.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

A6 ADDITIONAL RESULTS, EX-ANTE SIMULATION STUDIES

Table A6.1: Effects of cash transfers on income poverty (average incidence analysis): descriptive statistics disaggregated by income group, region and analytical approach

	Mean	Median	Standard deviation	Min. value	Max. value	Studies	Observations
By income group							
Low-income countries	-15.6	-6.9	18.3	-81.4	7.7	9	88
Middle-income countries	-19.3	-13.9	17.2	-78.6	4.2	21	291
By region*							
East Asia and Pacific	-10.6	-4.7	14.1	-58.2	-1.0	4	27
Eastern Europe and Central Asia	-31.8	-21.2	30.1	-81.4	-0.5	2	18
Latin America and Caribbean	-18.7	-13.6	16.5	-70.6	4.2	17	265
Sub-Saharan Africa	-16.6	-11.7	16.7	-69.9	7.7	6	68
By analytical approach							
Standard incidence	-18.7	-13.0	17.4	-81.4	0.0	24	298
Behavioural incidence	-16.1	-12.3	13.9	-55.6	-1.4	5	43
CGE model	-19.0	-12.3	21.9	-69.9	7.7	4	38

Notes: The numbers in this table refer to the percentage changes in a given measure of income poverty from a given base year. *One observation for Middle East and North Africa region not shown; no observations for South Asia.

Table A6.2: Effects of cash transfers on income poverty (average incidence analysis): frequency distributions disaggregated by income group, region and analytical approach

	Reductions in poverty[#]			No change	Increases in poverty[#]		
	Large	Moderate	Small		Small	Moderate	Large
By income category							
Low-income countries	28	24	32	3	-	1	-
Middle-income countries	99	141	46	1	4	-	-
By region*							
East Asia and Pacific	3	10	14	-	-	-	-
Eastern Europe and Central Asia	10	1	7	-	-	-	-
Latin America and Caribbean	91	126	43	1	4	-	-
Sub-Saharan Africa	22	28	14	3	-	1	-
By analytical approach							
Standard incidence	100	133	61	4	-	-	-
Behavioural incidence	13	20	10	-	-	-	-
CGE model	14	12	7	-	4	1	-

Notes: The numbers in this table refer to the percentage changes in a given measure of income poverty from a given base year; [#]small: less than 5 percent; moderate: between 5 and 20 percent; large: more than 20 percent. *One observation for Middle East and North Africa region (large reduction in poverty) not shown; no observations for South Asia.

Table A6.3: Cash transfers and income poverty: explaining differences in estimated effects

	1	*2*
Year of simulation	-0.58	-0.57
	0.36	0.36
GNI per capita	-9.09***	-12.35***
	1.35	1.91
Low-income country	-9.79***	-10.11***
	3.41	3.50
East Asia and Pacific	-11.09***	-7.34*
	4.15	3.97
Eastern Europe and Central Asia	-26.15***	-22.81***
	4.33	4.32
Sub-Saharan Africa	-7.70**	-10.07***
	3.20	3.32
Middle East and North Africa	-14.12	-16.35
	14.92	14.99
Poverty gap	-3.88**	-4.01**
	1.89	1.90
Squared poverty gap	-9.50***	-9.58***
	1.91	1.92
Year of publication	-1.20**	-1.22**
	0.55	0.56
Journal article	6.99***	6.68***
	2.47	2.47
Number of obs.	349	349
R-squared	0.27	0.26

Notes: This table reports the results of an OLS regression of the impact of cash transfers on income poverty (in percentage terms), in which the explanatory variables are the 11 moderator variables listed in the first column. The reference categories for the dummy variables are Latin America and Caribbean (region), middle-income countries (income group), headcount (poverty measure), and unpublished (e.g. working papers, book chapters). The dependent variable in each column is the percentage change in poverty resulting from cash transfers; results all derived from average incidence analysis. Regression (1) uses GNI per capita in US$ at official exchange rates; regression (2) uses GNI per capita in US$ using purchasing power parity (PPP) exchange rates.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table A6.4: Trade liberalisation and income poverty: explaining differences in estimated effects

	1	*2*
Year of simulation	0.69**	0.70***
	0.27	0.20
GNI per capita	-0.98	0.37
	1.21	0.96
Low-income country	2.93	3.48*
	2.61	1.75
East Asia and Pacific	5.22*	5.61***
	2.78	1.82
South Asia	2.92	3.34
	3.94	2.49
Sub-Saharan Africa	6.18***	5.42***
	1.60	1.18
Middle East and North Africa	0.01	13.34***
	3.00	2.53
Full trade liberalisation	-4.04***	-2.34***
	1.15	0.84
Poverty gap	-2.38*	-0.81
	1.21	0.89
Squared poverty gap	-1.80	-1.19
	1.30	0.93
Year of publication	-1.28***	-1.15***
	0.33	0.23
Journal article	2.61	1.19
	2.06	1.47
Number of obs.	125	121
R-squared	0.32	0.40

Notes: This table reports the results of an OLS regression of the impact of trade liberalisation on income poverty (in percentage terms), in which the explanatory variables are the 12 moderator variables listed in the first column. The reference categories for the dummy variables are Latin America and Caribbean (region), middle-income countries (income group), partial trade liberalisation, headcount (poverty measure), and unpublished (e.g. working papers, book chapters). The dependent variable in each column is the percentage change in poverty resulting from trade liberalisation; all results derived from CGE models. Regression (1) uses GNI per capita in US$ at official exchange rates; regression (2) uses GNI per capita in US$ using purchasing power parity (PPP) exchange rates.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$