

Trade Openness and Government Spending in Developing Countries

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This paper examines a fundamental question about the effects of globalization on national governments' autonomy. Recent theories suggest that globalization puts pressure on governments to cut spending. Empirical studies have found evidence of this with respect to social welfare spending in developing countries. However, these studies leave open the possibility that globalization has different effects on different types of spending. It may be the case that governments cut spending on some programs, such as social welfare, but maintain or even increase spending on other programs in response to political pressures. To address this possibility, we analyze spending on both social welfare programs and sector-specific programs, such as subsidies and grants, in 44 developing countries from 1981 to 1997. We find, as previous studies do, that trade openness reduces social welfare spending in developing countries. However, sector spending increases in response to greater trade flows. The implication is that governments in developing countries have at least some capacity to manage the pressures of globalization.

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A vigorous debate exists about the effects of globalization on the sovereignty of national governments. Some recent theories suggest that globalization curtails governments' autonomy over spending decisions. These theories argue that globalization puts pressure on governments to cut spending, particularly in developing countries (e.g. Kaufman and Segura-Ubiergo 2001; Garrett and Mitchell 2001). The logic is that globalization exposes domestic producers to increased foreign competition. In order to maximize the competitiveness of domestic producers, governments are compelled to reduce spending. By cutting spending, governments can lower payroll taxes and thereby reduce the cost of labour.¹

This logic suggests that governments have an incentive to reduce government spending levels. However, it remains unclear how governments actually achieve spending reductions. Do they cut spending across the board or do they target cuts to select budget items? This question remains largely unanswered, in part, because previous empirical studies have tended to focus on one budget item – namely social welfare spending. This is particularly true of developing country studies (e.g. Rudra 2002; Kaufman and Segura-Ubiergo 2001). The exclusive focus on social welfare spending necessarily limits the conclusions that can be drawn about the effect of globalization on government spending. It leaves open the possibility that globalization has different effects of different types of spending. Governments may cut spending on some types of programs, like social welfare, but maintain or even increase spending on other programs.

We examine this possibility by analyzing spending on both social welfare programs and sector-specific programs, such as subsidies and grants, in 44 developing countries from 1981 to 1997. These budget items are the focus of investigation

¹ Lower spending levels may also help to reduce interest rates and the exchange rate.

because both types of programs can insulate citizens from the costs of economic openness. Sector spending can help to prevent layoffs (e.g. Corden 1957; McGillivray 2004). Social welfare spending can compensate workers for lost jobs (and income). In this sense, sector spending is relatively more proactive in protecting citizens from the costs of openness.

Given that sector programs can protect citizens from the costs of openness *ex ante*, it is somewhat surprising that this type of spending has been largely absent from the large and still growing literature on openness and spending. The lack of scholarship on sector-specific spending is particularly puzzling given the frequent (and increasing) use of sector programs by national governments and their obvious political importance, as demonstrated by the suspension of the Doha Round.

Using cross-nationally comparable spending data, we address this oversight by explicitly examining the effects of globalization on sector spending programs. We find that although globalization reduces social welfare spending in developing countries (as reported in previous studies) it actually *increases* sector spending. Governments in developing countries, who face tight budget constraints, appear to prioritize sector spending in response to increased economic openness. We argue that this is because sector spending proactively protects politically powerful citizens from the costs of economic openness.

This novel finding has several important implications. First, it suggests that governments in developing countries have at least some capacity to manage the pressures of globalization. Governments are not compelled to cut spending across the board. Instead, they target cuts to select budget items, such as social welfare spending. Some of the monies cut from social welfare programs are reallocated to sector spending programs. This suggests that governments in developing countries can and

do work to protect their citizens from the costs of economic openness. However, they do so using sector spending programs rather than social welfare programs. This point has been overlooked by studies focusing exclusively on social welfare spending.

Second, it suggests an alternative mechanism through which globalization might affect incomes and income distribution within countries. By changing governments' spending priorities from social welfare to sector subsidies, globalization may have an indirect effect on income distribution via its impact on fiscal policy. Social welfare spending and sector spending have quite different distributive effects.

Third, these findings suggest that political logic prevails over efficiency considerations. Social welfare programs are relatively more efficient than sector-specific programs. In general, they do not distort prices or discourage the reallocation of factors. In fact, social welfare programs often encourage factors to move out of inefficient uses by providing compensation only after such moves have been made. In contrast, sector programs tend to discourage the reallocation of factors and distort relative prices. Efficiency considerations might therefore suggest social welfare programs as the obvious fiscal mechanism to offset the costs of openness. Yet governments tend to choose to sector spending rather than social welfare spending. We argue that they do so because sector spending programs provide proactive protection to politically powerful constituents. In short, political logic prevails over efficiency considerations.

Context

Previous studies of developing countries' responses to globalization find a negative relationship between trade openness and social welfare spending (e.g. Kaufman and Segura-Ubierno 2001; Rudra 2002; Wibbels 2006). What is the causal path? Why would greater economic openness lead governments in developing countries to cut

social welfare expenditures?² One possible explanation is that social welfare spending requires higher payroll taxes that increase the cost of labor (Pfaller, Gough, and Therborn 1991). As economic openness increases, governments may come under pressure to cut social spending to facilitate the price competitiveness of exports (Pfaller, Gough, and Therborn 1991; and Drache 1996). This is the basic logic of the efficiency hypothesis (e.g. Garrett 1998).

Other possible explanations make explicit reference to the unique characteristics of developing countries. For example, Rudra (2002) suggests that weak bargaining power of labor and near absence of labor unions in developing countries explains why governments cut social welfare spending in response to increased trade. Where strong, encompassing labor unions do not exist, it may be difficult to organize workers in support of social welfare spending. Social welfare programs benefit large groups of workers and thus give rise to free-rider problems. Perhaps this is why Garrett (1998) finds a strong positive correlation between trade and social welfare spending in countries with strong labor unions.

We offer an alternative explanation for the previously reported negative correlation between trade and social welfare spending in developing countries. We argue that governments facing tight budget constraints reduce spending on social welfare programs in order to increase spending on other budget items – namely items that provide greater political benefits in the face of globalization. One such budget item is sector-specific spending programs like subsidies and grants to manufacturers. We hypothesize that governments in developing countries reduce spending on social welfare programs in order to increase spending on sector-specific programs. This appears to have been the case in Turkey for example. Following trade liberalization,

² This is perhaps even more puzzling given that studies of developed countries consistently find a positive correlation between trade openness and social welfare spending (Wibbels 2006).

the government reallocated monies from social welfare programs to sector spending programs (Boratav, Yeldan, and Kose 2001). This was done in an attempt to shield domestic producers from the price effects of increased import competition via (Öniş and Webb 1994, 136; Wacziarg and Wallack 2004). The logic of this fiscal response is developed further in the following section.

Argument

Governmental budgets invariably operate under some type of constraint. In developing countries, budget constraints may be particularly tight because poorer countries tend to have limited access to capital markets and more significant incentives to balance their budgets (Wibbels 2006). Given these constraints, governments decide how to best allocate their available resources across different fiscal programs to maximize their chances of retaining power and maintaining economic openness.³ To this end, sector programs have unique benefits that lead governments to prioritize sector spending following trade liberalization.

Sector programs provide unique, proactive benefits that insure citizens against the costs of openness. For example, sector subsidies can prevent layoffs (e.g. McGillivray 2004). In contrast, unemployment insurance, a key component of many social welfare programs, provides compensation only after workers have lost their jobs. For example, in the United States, workers qualify for unemployment benefits via the Trade Adjustment Assistance program only after they demonstrate evidence of real income losses from trade. Because citizens prefer to keep their jobs rather than be compensated ex-post for trade-induced losses, they will arguably prioritize demands

³ See, for example, Meltzer and Richard (1981) and Rodden (2003). This is arguably true even in non-democratic states where leaders must maintain the support of a critical portion of the population to retain office (Bueno de Mesquita et al. 2003).

for sector spending following trade liberalization. This is not to say they are uninterested in social welfare programs. However, sector spending and social welfare spending are not perfect substitutes. Sector programs provide more proactive protection than social welfare programs. As a result, citizens prefer governments prioritize sector spending over social welfare spending when budget constraints rule out similar spending (and/or spending increases) on both.

Sector programs benefit only those citizens who own production factors (i.e. land, labor or capital) employed in the privileged sector. This gives sector beneficiaries at least two political advantages. First, citizens that stand to benefit from sector spending tend to be fewer in number and relatively more concentrated than the beneficiaries of social welfare programs. As a result, the benefits of sector programs tend to be greater per-person (Alt and Gilligan 1994) and the beneficiaries of sector programs are able to organize more easily (Grossman and Helpman 2002; Olson 1965). Second, the incomes of sector groups tend to be more highly correlated than the incomes of factor owners outside the sector. Income correlation makes sectors politically cohesive (Echenique and Equia 2007). This is because income shocks are shared within a sector, particularly when adjustment costs are high (Jones 1971). Correlated incomes and small numbers give the beneficiaries of sector programs unique political advantages. They are able to organize relatively easily to press for greater sector spending in response to trade liberalization.

In contrast, the beneficiaries of social welfare programs are politically disadvantaged, particularly in developing countries where labor unions tend to be weak or non-existent. Social welfare programs benefit large groups of workers and thus give rise to free-rider problems (Olson 1965). This free-rider problem is compounded by the fact social welfare programs benefit not only workers made worse

off by trade but also other vulnerable groups (Burgoon 2001). Every potential beneficiary has an incentive to free-ride on the lobbying efforts of others because the benefits of social welfare programs cannot be restricted to citizens who lobby for them. Because the number of potential beneficiaries of social welfare spending is large, it is virtually impossible to monitor lobbying efforts or provide select incentives to overcome the costs of collective action (Olson 1965).

This is particularly problematic in countries without strong labor unions, as is the case in much of the developing world (e.g. Kaufman and Segura-Ubiergo 2001, 558; Rudra 2002). Where strong, encompassing labor unions do exist, the free-rider problem has already been overcome. A strong union can lobby for increase social welfare spending in response to trade liberalization and may discourage workers from seeking sector-specific deals. Furthermore, a strong union can counterbalance the political weight of sector groups. In the absence of strong labor unions, sector groups will have the bulk of the political power and will be uniquely positioned to press for greater sector spending in response to increased trade.

Politically powerful sector groups make new claims on government's resources in response to increased trade openness. Factor owners that stand to lose from trade openness previously earned rents from barriers to trade. As these barriers are eroded, factor owners demand a continuation of their rents in order to avoid a reduction in income. One way for governments to provide continued rents is via sector spending. Demands for continued rents can therefore be seen as a new claim on governments' fiscal resources.

To meet this demand, governments prioritize spending on sector programs. Every additional dollar allocated to sector programs is an additional dollar of protection. In contrast, only part of any increase in spending on social welfare

programs goes to those citizens that lose from economic openness. This is because social welfare programs address the needs of many vulnerable groups, not just those made worse off by trade (Burgoon 2001). Some part of any spending increase on social welfare programs will go to citizens that are not made (any) worse off by globalization. For governments facing tight budget constraints, prioritizing sector spending is a way to get the most ‘bang for their buck’. In sum, governments in developing countries increase sector spending shares in response to greater trade openness because sector programs protect politically powerful constituents from the costs of openness.

Data and methods

Using an unbalanced panel of 44 developing countries from 1981 to 1997, we test this argument.⁴ All developing country-years for which the data are available are included in the sample. The sample is relatively heterogeneous and includes countries from Latin American, Africa, South Asia, and the Caribbean.

Two key dependent variables are used: (1) the percentage of total government expenditures devoted to social welfare programs and (2) the percentage of total government expenditures devoted to sector programs.⁵ These data come from the IMF’s Government Financial Statistics (IMF 2001a). Social welfare programs

⁴ The World Bank’s income classification is used to identify developing countries.

⁵ Spending on both social welfare programs and sector programs are reported as a percentage of total government expenditures. This captures the theoretical concept of interest, namely government’s spending priorities. I am ultimately interested in whether trade leads to a reallocation of monies across different spending programs. In other words, do governments’ spending priorities change in response to trade liberalization? This question can be addressed using spending shares as is done here. This measurement strategy has been widely used in studies of governments’ spending priorities and budget composition (e.g. Dreher et al., 2008; Rudra and Haggard, 2005).

include, for example, severance payments, unemployment benefits, and active labor market programmes, all of which could serve to compensate workers for trade induced losses. Sector programs include expenditures provided to owners of production factors employed in a given sector of the economy. For example, programs for the manufacturing sector include grants, loans and subsidies to support manufacturing enterprises; and the development, expansion or improvement of manufacturing (IMF 2001b).

To estimate total sector spending, I calculate the sum of all monies provided to tradable sectors (i.e. manufacturing and agriculture) as a percentage of total government expenditures.⁶ Tradable sectors are the sectors most vulnerable to the price effects of increased trade and are therefore the sectors most relevant for this study. Using the sum of spending targeted to tradable sectors by-passes the problem of context-specific party-sector relationships.

These data have several important characteristics. First, all outlays targeted to a particular sector of the economy are reported in one category regardless of how the outlays are implemented. So, for example, subsidies, grants, and subsidized loans to the manufacturing sector are all included in the manufacturing category. This provides an estimate of total government spending on any given sector. Second, these data permit comparisons across countries and over time (IMF 2001b). Conventional government accounts are generally not suitable for these purposes because they reflect the organizational structures of government. Given this, time-series may be distorted by organization changes (IMF 2001b). These data avoid the problems of

⁶ Agriculture includes forestry, fishing and hunting. Manufacturing includes mining and construction. Unfortunately, it is not possible to separate out these subcategories because of data limitations. This will bias against finding supportive evidence.

organizational differences between countries, thereby allowing for meaningful cross-national comparisons over time.

Trade openness is measured using a conventional measure (imports plus exports as a percentage of GDP) (World Bank 2007).⁷ This makes possible direct comparisons with previous studies. Several important control variables are included. Following Garrett (2001) and others, GDP per capita is included to account for variation in economic development amongst the sample countries. Although some countries in the sample are more developed than others, the inclusion of GDP per capita as a control variable holds per capita income constant and allows for comparisons between like countries. GDP per capita also controls for the possibility that richer citizens may be less sensitive to the income effects of trade openness, in part, because they are better able to self-insure against income loss.

The dependency ratio, measured as the percentage of the population younger than fifteen or older than 64, is a common control variable in studies of the globalization-spending nexus, particularly those that focus on social welfare expenditures.⁸ This is because social welfare expenditures include spending on old age pensions and child allowances. It is not possible to exclude these programs because of data limitations thereby necessitating the inclusion of the dependency ratio as a control variable.

⁷ See, for example, Cameron 1978; Burgoon 2001; Huber and Stephens 2001; Rodrik 1997; Rudra and Haggard 2005; and Garrett, 2001. Avelino, Brown, and Hunter 2005 use trade measured as a percentage of GDP based on purchasing power parity. Because purchasing power parity conversions do not exist for the dependent variables, I use the standard trade openness measure to maintain consistency in measurement.

⁸ See, for example, Burgoon 2001; Garrett 2001; Rudra and Haggard 2005.

Democratically elected governments may be more responsive to the demands of citizens exposed to the price effects of trade. Democratization may also shift political influence from capital to labor (Kono 2008; Milner and Kubota 2005). If sector programs benefit both capital and labor and welfare programs benefit primarily labor, democratization may serve to shift resources from sector programs to social welfare programs. To account for this, democracy is included as a control variable in all estimated models.⁹

Government ideology is also included in all estimated models because left governments have been shown to sustain higher levels of welfare spending (Garrett 1998). Left governments may therefore prioritize social welfare spending over sector spending.¹⁰

I analyze these data using an error correction model (ECM). The ECM is based on the idea that long-term trends in the independent variables are causally related to long-term trends in the dependent variable but that there are short-term transitory effects which must also be modelled.¹¹ Specifically, I estimate the following model:

$$\Delta(\text{spending}_{it}) = \beta_0 + \beta_1 \cdot (\text{spending}_{it-1}) + \gamma \Delta X_t + \lambda X_{t-1} + \varepsilon_{it} \quad (1)$$

⁹ One might reasonably expect other political institutions to matter as well. For example, politicians elected from single-member districts may be predisposed to sector spending because sector programs are more ‘targetable’ than social welfare programs (Persson and Tabellini 2004). However, preliminary tests find that electoral institutions have no mediating effect.

¹⁰ Although unemployment may be a potentially important control variable, the paucity of data on unemployment in the sample countries makes its inclusion here impossible. However, this arguably makes it more, rather than less, difficult to find systematic trade effects on spending shares. Similarly, it is not possible to control for union size or strength due to data limitations.

¹¹ See Greene (2000) for an introduction to ECMs and Franzese (2002) for applications.

where the dependent variable is the annual change in the percentage of total government expenditures devoted to either social welfare programs or sector-specific programs. ΔX_t is a vector of annual changes in all right-hand-side variables, X_{t-1} is a vector of one-year lags of all right-hand-side variables, and γ and λ are vectors of coefficients for the first-differences and lagged independent variables, respectively. Coefficients for the change variables (γ) measure the short-term, transitory effects of a once-off change in that variable. The estimated coefficients for the level variables (i.e. lagged variables) (λ) capture the permanent, lasting effect of a once-off change in the variable. The total effect of a once-off change on the share of the budget devoted to social or sector spending (i.e. the immediate impact plus all lagged effects) is equal to the variable's lagged coefficient divided by the coefficient on β_1 .

By using an ECM, it is possible to directly examine the longitudinal question of whether changes in openness inspire changes in spending shares. This question has been frequently overlooked in previous cross-national studies of the openness-spending nexus, which say little to distinguish whether openness can cause, not just facilitate maintenance of, welfare expansion (Burgoon 2001, 511). By differencing the series, the ECM has the additional benefit of minimizing the potential for spurious correlation between two series exhibiting a time trend (De Boef and Granato 1997; De Boef 2001; Huber and Stephens 2001; and De Boef and Keele 2006). Differencing the series also helps to eliminate concerns over the distribution of spending shares. The proportion of spending devoted to either social welfare programs or sectors programs is right-skewed because these proportions cannot be less than zero. However, the year-to-year changes in spending shares can be (and frequently are) less than zero. This eliminates concerns about the distribution of the two dependent variables.¹²

¹² Both are normally distributed.

Additionally, a fully-specified ECM imposes fewer restrictive assumptions than other time-series models (De Boef and Keele 2006). The error correction model in combination with robust standard errors produces quite conservative results. While this carries some risk that true causal hypotheses will be discarded prematurely (i.e. Type II error), it increases our confidence in the results that do emerge as significant.

Results

Trade openness has a significant and lasting effect on the allocation of government expenditures. In developing countries, trade reduces the share of government spending devoted to social welfare program and *increases* the share of spending devoted to sector programs. These results are discussed in greater detail below.

Trade has a negative short-term effect on social welfare spending, as demonstrated by the statistically significant negative coefficient on $\Delta Trade$ in Column 1 of Table 1. Trade also has a robust permanent effect on social welfare spending, as demonstrated by the significant negative coefficient on $L.Trade$. These results are consistent with previous studies of developing countries (e.g. Kaufman and Segura-Ubiergo 2001; and Wibbels 2006).

Ultimately, we are interested in the *total* impact that a change in trade openness has on welfare spending (i.e. the immediate impact plus all lagged effects). To find the total effect, I calculate the long-run multiplier (LRM) by dividing the lagged trade coefficient ($L.Trade$) by the coefficient on lagged spending shares (β_1). To generate standard errors for the LRMs, I employ a transformation first proposed by Bewley and discussed in detail by De Boef and Keele (Bewley 1979; and De Boef and Keele 2006). The LRMs for all lagged explanatory variables and the corresponding standard errors are reported in Columns 2 and 5 of Table 1. The LRMs mirror the immediate and lagged coefficients, but the LRMs are larger because they

incorporate all immediate and lagged effects. The *total* impact of increased trade on the share of government expenditures devoted to social spending is negative and highly significant. Substantively, a once-off ten percentage point increase in trade has the total effect of reducing social welfare spending shares by 3.4 percentage points.

As reported in Column 3 Table 1, trade has a positive and significant permanent effect on the share of government spending devoted to sector programs in developing countries.¹³ A once-off ten percentage point increase in trade openness has the total effect of increasing sector spending shares by 0.5 percentage points, as reported by the LRM in Column 5 of Table 1.¹⁴ This result suggests a novel explanation for the negative correlation between trade openness and social welfare spending; governments may cut social welfare spending to fund sector spending programs. Arguably, this is done in response to the demands of citizens. Sector programs protect citizens from the costs of openness while social welfare programs compensate citizens *ex-post* for trade-induced losses.¹⁵ As a result, citizens and subsequently governments prioritize sector spending over social welfare spending.

¹³ Trade has no statistically significant *immediate* effect on sector spending.

¹⁴ Interestingly, the trade-induced increase in sector spending shares is smaller than the corresponding decrease in social welfare shares. This suggests that not all of the monies cut from social welfare programs are redirected to sector programs. Some monies may be reallocated to other compensation or insurance programs, such as health or education. Alternatively, the reduction in social welfare spending shares may represent a real contraction in government expenditures. This would be consistent with the expectations derived from the logic of the efficiency hypothesis.

¹⁵ It may also be the case that labor in developing countries gains from trade. Labor tends to be relatively abundant in most developing countries and as such labor is predicted to win from trade by the Stolper-Samuelson theorem. If workers are made better off by trade in developing countries and social welfare programs go primarily to workers, it may come as no surprise that spending on social welfare declines following trade liberalization in developing countries.

Several additional findings deserve mention here. First, government ideology appears to have no direct effect on social welfare or sector spending shares. This may be because the type of compensation preferred by left governments is conditional on the magnitude of increases in trade openness, as suggested by Cao et al. (2007). Second, the dependency ratio affects social welfare budget shares but not sector spending shares. The dependency ratio has a significant, permanent effect on the percentage of government expenditures devoted to social welfare programs.¹⁶

Democracy has no systematic effect on the allocation of resources across the two fiscal compensation mechanisms. Like Kaufman and Segura-Ubiergo (2001), I find that democracies spend no more or less on social welfare programs than autocratic regimes. Holding regime type constant, trade systematically reduces the share of government spending on social welfare programs and increases the budget share of sector spending. This finding challenges the idea that autocratic regimes can ignore the domestic costs of openness. Adserá and Boix (2002), for example, credit the cuts in social welfare spending that followed trade liberalization in Spain to the autocratic regime. They argue that the regime was insulated from citizens' demands for compensation because it was not democratically elected. However, the Spanish government was not impervious to the costs of openness. Following trade liberalization, the Spanish government increased spending on sector programs in an attempt to insure citizen's incomes from the price effects of international trade (Bermeo and Garcia-Duran 1994). This spending increase may have been funded, in

¹⁶ Although one might have expected countries with larger shares of dependent populations to have more generous social welfare programs, the estimated coefficient for L.Dependency is negative. A one standard deviation increase in the dependency ratio permanently reduces the social welfare budget share by slightly more than one percentage point. This result is consistent with findings by Razin, Sadka and Swagel (2002). They argue that a higher dependency ratio increases the demand for more generous social welfare programs but at the same time reduces the willingness of the working-age population to accede to higher taxes and transfers, since current workers are net losers from the welfare state (Razin, Sadka and Swagel, 2002). The tax effect dominates in countries where the median voter is not retired, as is the case for all of the sample countries.

part, by some of the monies cut from social welfare spending (Bermeo and Garcia-Duran 1994). In sum, the reallocation of resources from social welfare programs to sector-specific programs is a function of developing countries exposure to international trade and appears to occur regardless of a country's regime type.¹⁷

Robustness checks

Despite the inclusion of key theoretically motivated control variables, readers may still be concerned about the possible effects of unmodelled heterogeneity. The sample of countries under investigation here is certainly diverse; it includes countries from different regions with different historical experiences and different levels of economic development. In an attempt to account for any unmodelled heterogeneity, I re-estimate all models reported in Table 1 with country fixed effects. The key findings are robust to the inclusion of country fixed effects; trade permanently reduces the share of the budget devoted to social welfare programs and increases the share for sector spending programs. The key trade findings are robust to the inclusion of another potentially important variable, namely external debt as a percentage of GDP. External debt is not a robust predictor of changes in either sector spending shares or social welfare spending shares. The changes in public spending priorities reported here are not debt-induced but rather trade-induced.

As a robustness check, I test to see if the same result hold for developed countries. We would not expect them to for several reasons. First, the budget constraints facing governments in developed countries are not as restrictive those in developing countries (Wibbels 2006). As a result, governments in developed countries

¹⁷ Democracy does not mediate the effect of a trade shock on spending shares, as demonstrated by the interaction term ($\Delta Trade * L.Polity$). These results are not reported here but are available from the author upon request.

are less likely to need to cut spending on one program to finance increases in another. Second, labor unions are far stronger in developed countries, as compared to developing countries (Rudra 2002; Kaufman and Segura 2001). As a result, there is likely to be greater political resistance to cuts to social welfare spending in developed countries. Strong encompassing labor unions would likely resist any attempts to shift monies away from social welfare programs towards sector programs. Electorally minded governments cognisant of retaining power would be hesitant to make such changes in the allocation of government expenditures. Third, in developed countries the use of sector subsidies is frequently restricted by international agreements, such as the EU Agreement on State Aid and the WTO Agreement on Subsidies and Countervailing Measures.¹⁸ These restrictions generally do not apply to developing countries.¹⁹ As a result, governments in developed countries cannot turn to sector spending to protect citizens from the costs of economic openness as easily or frequently as governments in developing countries. We therefore expect that the results found in developing countries will not hold for developed countries. Indeed, this is what we find. Governments in developed countries do not significantly change

¹⁸ Despite these considerations, several recent studies have examined the effect of globalization on the composition of government expenditures in OECD countries. See, for example, Cao, Prakash and Ward (2007); Dreher, Sturm, and Ursprung (2008); and Gemmell, Kneller, and Sanz (2008). However, no similar study exists for developing countries. To the best of my knowledge, this research represents the first attempt to examine the allocation of resources across fiscal mechanisms in developing countries where budget constraints are likely to be particularly acute.

¹⁹ The EU restrictions are obviously irrelevant for developing countries. The WTO restrictions do not apply to the developing country-years included in this sample. If they did, it would bias against finding supportive empirical evidence. The same would be true if countries cut sector spending in anticipation of the WTO restrictions taking effect.

their spending priorities in response to increased openness. Arguably, this result provides indirect evidence in support of the causal mechanisms identified here.

The key trade effects are robust to alternative model specifications.²⁰ For example, estimating the following model:

$$\Delta(\text{spending}_{it}) = \beta_0 + \beta_1 \cdot (\text{spending}_{it-1}) + \gamma \Delta X_{t-1} + \lambda X_{t-1} + \varepsilon_{it} \quad (2)$$

where the change variables are lagged by one year produces very similar results to those reported above. However, lagging the change variables makes it difficult to interpret the long-run multipliers. Furthermore, the argument suggests that when people start to become unemployed because of trade openness, which likely occurs only after some non-insignificant period of time, they will prefer social welfare spending to sector spending. Given this, it would be theoretically inappropriate to lag the trade change variable ($\Delta Trade$) for any significant length of time. Modified jackknife tests demonstrate that the results are not driven by any single country in the sample.

Openness to international trade is unlikely to be a randomly assigned treatment. I address this possibility by using geographic instruments, as suggested by Frankel and Romer (1999). Specifically, I use a country's size measured by the natural log of area in square kilometres and a dummy variable indicating whether the country is landlocked. Both variables have been shown to significantly affect a country's exposure to international trade.²¹

²⁰ Using Seemingly Unrelated Regression (SUR) techniques to allow for nonzero covariance between the error terms of the expenditure share equations, I find similar trade results.

²¹ See, for example, Frankel and Romer 1999; and Trisman 2007. Another possible instrument is the average distance of a country's capital from the world's 20 major exporters. However, this instrument is more strongly correlated with uninterrupted democracy since 1945 and with the natural log of per capital GDP than it is with imports rendering it a dubious instrument for trade (Trisman 2007).

Using *Area* and *Landlocked* as instruments for trade for causal inference requires them to be: (1) correlated with the endogenous regressor (*L.Trade*) and (2) uncorrelated with the error term of the main estimating equation. To test for the first condition, I examine the first-stage F-values of the excluded instruments. Staiger and Stock suggest that the F-values must be larger than 10 (Staiger and Stock 1997). Here, $F(2, 349) = 165.19$ for models of social spending, which is significant at less than the 0.001 level. For models of sector spending, $F(2, 291) = 218.28$, which is significant at less than the 0.001 level. This, along with the highly significant coefficients on *Area* and *Landlocked* in both first-stage regressions, is evidence that the instruments are correlated with the endogenous regressor (*L.Trade*). Sargan's and Basman's chi-squared test of overidentifying restrictions verify the validity of the excluded instruments (Sargan 1958; and Basman 1960). Chi-squared equals 0.449 ($p = 0.503$) in estimates of social spending and 2.784 ($p = 0.095$) in estimates of sector spending. Given these values, I cannot reject the null hypothesis that the instruments are valid.

The results of the instrumented trade models are reported in Columns 3 and 6 of Table 1. Both models confirm the key results reported above. Trade has a negative and significant permanent effect on social spending and a positive and significant permanent effect on sector spending.

One might reasonably expect the allocation of government resources across social welfare programs and sector programs to depend, in part, on the mobility of domestic production factors. Mobility refers to the costs of moving production factors (i.e. land, labor, and capital) between uses in the domestic economy. Mobile factors face relatively low adjustment costs. Factors that face high adjustment costs and are employed in import-competing sectors stand to lose in real terms from increased trade openness, as demonstrated by Jones (1971) and Samuelson (1971). Owners of

immobile factors employed in import-competing sectors will unite to press for protection from the price effects of increased trade (Frieden 1991; and Hiscox 2002). Governments may therefore face greater pressure for sector spending when factors are immobile.

This points to the potential importance of controlling for factor specificity. However, doing so is not an easy task. There are surprisingly few empirical measures of factor specificity; particularly given the theoretical importance afforded it in theories of international trade (Hiscox 2002). To estimate the level of factor mobility in a given country, I calculate the rate of labor movement between industries in the manufacturing sector.²² This measure was first developed by labor economists and is widely used in studies of labor mobility (Davis, Haltiwanger, and Schuh 1996; Wacziarg and Wallack 2004; Nickell 1986; and Hammermesh 1993). It builds on the partial-adjustment idea that larger adjustment costs are reflected in slower employment adjustment to shocks (Hammermesh 1993). Higher values of this variable (*Mobility*) indicate higher levels of labor mobility (i.e. lower adjustment costs).

This measure has some obvious drawbacks. First, it directly estimates only the adjustment costs facing labor. Second, it estimates the adjustment costs only in the manufacturing sector. However, the costs of moving between industries within the manufacturing sector likely contain some information about the costs of moving between (and within) different sectors of the economy. This is because some part of adjustment costs is a function of country-specific characteristics (Hiscox 2002). These country-wide costs are faced by all factors in a given economy regardless of factor type or sector of employment.

²² Precise details on how this measure is constructed can be found in Appendix A.

The mobility results are reported in Table 2. The key trade finding is robust to the inclusion of labor mobility. Trade reduces social welfare spending shares and increases sector spending shares regardless of the level of labor mobility in a country. *Mobility* does not have a statistically significant effect on the budget share of either social welfare programs or sector programs. Neither does *Mobility* mediate the effect of trade openness on spending shares, as reported by the interaction term $\Delta Trade * L.Mobility$ in Columns 2 and 6 of Table 2. Interestingly, the statistically insignificant coefficient on the interaction term in Column 6 Table 2 is negative, indicating that the marginal positive effect of trade on sector spending declines as labor becomes more mobile as one might expect.

The non-finding with respect to factor mobility may be due to noise in the empirical measure of mobility. Alternatively, the non-finding may be the result of competing mobility effects. Mobility may make sectors more cohesive in their demands for sectors transfers. However, sector transfers provide important benefits when factors are relatively mobile, as demonstrated by Acemoglu and Robinson (2001). These two competing effects might wash each other out resulting in the non-finding reported here. Then again, it may simply be naive to expect factor mobility to influence the government's choice of compensation mechanism, as argued by Cao et al. (2007).

Another possible explanation for the reduction in social welfare spending shares in developing countries may be conditions imposed in exchange for IMF loans. Critics of IMF programs argue that these conditions force governments to reduce

social spending.²³ I test to see if being under an IMF program changes the budget shares of social welfare spending or sector spending using Vreeland's dichotomous IMF participation indicator (2003, 2007).

More than half (54 percent) of the sample country-years involve an IMF program. However, the key trade findings remain robust to the inclusion of the IMF program indicator variable. An increase in trade openness reduces social welfare spending shares and increases sector spending shares, controlling for countries' participation in IMF programs. Being under an IMF program has no robust effect on either social welfare or sector spending shares. This may be due, in part, to the problems of compliance with IMF conditions. Alternatively, it may be due to the fact that not all IMF programs contain the same conditions. Conditions vary significantly across IMF programs (Caraway, Anner and Rickard 2009) and may help to explain why we do not see a common fiscal response to being under an IMF program.

Here, a country's trade openness is estimated using the standard measure: imports plus exports as a percentage of GDP. However, some scholars have suggested examining the effect of imports separately from exports. For example, Hays et al. (2005, 467) argue that rising imports create economic losers that demand compensation, while rising exports do not. Although there are theoretical and empirical reasons to be cautious of this strategy,²⁴ I test to see whether imports have a

²³ Although IMF programs often require reductions in government expenditures, they typically do not identify which spending programs should be cut. Instead, politicians in borrowing countries decide how budgetary cuts are distributed.

²⁴ Theoretically, the gains (and losses) from trade are the result of cross-industry shifts in demand for production factors. Both imports and exports contribute to these cross-industry shifts in demand. Empirically, imports and exports are highly correlated. Introducing them into the same model generates high levels of multicollinearity.

substantively different effect than total trade by re-estimating the main equation with both the lagged and change measures of imports (as a percentage of GDP) and exports (as a percentage of GDP).²⁵

This may help to alleviate concerns about reverse causality. Sector spending figures may include export subsidies. However, it is not possible to separate out spending on export subsidies due to data limitations.²⁶ Given this, the observed positive correlation between trade and sector spending could, in theory, be due to changes in exporters' behaviour in response to more generous export subsidies. Income-maximizing exporters may increase the amount of goods shipped abroad to take advantage of more generous export subsidies. Increases in export subsidies may therefore result in greater trade flows. In short, the possibility of reverse causality is not trivial. However, by isolating the effect of *imports* on sector spending shares, the potential for reverse causality is minimized.²⁷

Imports have a similar effect on spending shares as total trade, as reported in Table 4. A ten percentage point increase in imports has the total effect of reducing social welfare spending by 7.2 percentage points and increasing sector spending

²⁵ Including exports in the model generates high levels of multicollinearity. However, it is important to include exports for both theoretical and practical reasons. Theoretically, exporters may oppose large increases in spending (Steinmo 1994). Practically, including exports ensures comparability with previous studies, such as Hays et al. 2005.

²⁶ This may bias downwards the reported positive effect of trade on sector spending. This is because increases in trade typically reduce government spending on export subsidies, particularly when increases in trade reflect a reduction in import restrictions (Harrison, Rutherford and Tarr 1993). Export subsidies are typically provided to reimburse exporters for duties paid on imported inputs (Rodrik 1994).

²⁷ In columns 3 and 6 of Table 2, *L.Imports* is instrumented using *Landlocked* and *Area*. Appropriate tests show that these are strong, valid instruments.

shares by 4.6 percentage points. However, these results have to be viewed cautiously given the high level of multicollinearity in the estimated models.

Up to this point, I have focused exclusively on the effects of increased trade openness. However, it is possible that social welfare spending shares and sector spending shares may also respond to financial openness. To test for the potential effects of financial openness on budget shares, a measure of financial openness is substituted for trade openness. Like the trade measure, the financial openness variable is a volume based measure of international financial integration. Developed by Lane and Milesi-Ferretti (2006), it reports the sum of a country's stock of external assets and stock of external liabilities as a percentage of GDP. This measure is a more accurate indicator of financial openness than simple capital flows because it is less sensitive to short-run fluctuations in capital flows associated with factors unrelated to international financial integration (Edison, Levine, Ricci, and Sløk 2002).

The financial openness results are broadly consistent with the trade results. Increased financial openness reduces the share of government expenditures devoted to social welfare programs. This may be because investors are particularly intolerant of social welfare spending in developing countries, even when there is little or no risk of incurring debt (Mosley 2003). Financial openness has a positive effect on the percentage of government expenditures committed to sector programs; however this effect is not as robust as the trade effect.

Conclusion

We offer the first test of the effect of openness on sector-specific spending programs, such as subsidies and grants, in developing countries. We find that governments facing tight budget constraints (i.e. those in developing countries) prioritize spending on sector programs in response to globalization. As trade openness increases,

spending on sector-specific programs increases as a share of total expenditures. This is arguably an attempt by national governments to protect domestic citizens (producers) from the costs of economic openness. As trade barriers are eroded, governments may increase spending on sector-specific programs in an attempt to substitute fiscal protections for trade protections. As noted by the chairman of the Commission for Agriculture Costs and Prices in India, Abhijit Sen, “if tariffs are dismantled, the Commerce and Finance Ministries will have to intervene with a stronger package of subsidies.”²⁸

This research makes an important contribution to our understanding of how governments respond to globalization, particularly governments in developing countries that have access to relatively scarce resources and face tight budget constraints. Understanding how developing countries respond to globalization is increasingly important because the largest reductions in trade barriers today tend to occur in developing countries. The results reported here suggest that governments in developing countries have at least some capacity to manage the pressures of globalization. Cuts to social welfare spending in developing countries have been interpreted as evidence that globalization erodes the state’s ability to protect citizens from the costs of openness (e.g. Cerny 1995; Kurzer 1993; and Strange 1995). However, the findings reported here suggest that such concerns may be exaggerated. Governments in developing countries can and do protect citizens from the costs of openness, even in the face of rapid globalization. However, they do via sector spending programs rather than social welfare spending.

This finding demonstrates the potential weaknesses of examining only a single compensation (or protection) mechanism. Looking only at one possible mechanism,

²⁸ Quoted in Grunberg 1998, 599.

such as social welfare spending, may lead to erroneous conclusions about a government's ability and willingness to insulate citizens from the costs of openness. Governments have a myriad of mechanisms at their disposal to protect citizens from the costs of openness. Just because they do not use one particular mechanism does not mean that they are not using an alternative mechanism to offset the costs of openness. This suggests at least two possible avenues for future research. First, one might expand the universe of fiscal mechanisms that government could arguably use to protect citizens from the costs of openness. Here, we examine two of the most obvious fiscal mechanisms that arguably have a direct role in providing protection and compensation. However, other fiscal programs may play a less direct role in protecting citizens from the costs of openness. Although fiscal mechanisms are arguably the most transparent means by which governments can offset the costs of openness, other types of policies may do so as well. For example, regulations, taxes, and/or monetary policy could all potentially be used to compensate citizens for and/or insure them against the costs of openness. Although the possibility that governments use alternative means to protect citizens from the costs of openness biases against finding supportive empirical evidence for the argument made here, it points to a potentially fruitful and important area of future research. Of particular concern would be why governments might choose fiscal mechanisms over non-fiscal mechanisms or vice-versa.

Table 1: Estimated effect of total trade on spending shares

	(1)	(2)	(3)	(4)	(5)	(6)
	Welfare ECM	Welfare LRM	Welfare 2SLS	Sector ECM	Sector LRM	Sector 2SLS
<i>Lags</i>						
L.Trade	-0.031*** (0.012)	-0.339*** (0.076)	-0.046** (0.019)	0.009* (0.004)	0.050** (0.025)	0.016** (0.007)
L.Democracy	0.001 (0.031)	0.009 (0.34)	0 (0.031)	-0.046 (0.040)	-0.266 (0.21)	-0.045 (0.039)
L.Dependency	-6.307** (2.66)	-68.62*** (22.7)	-7.451** (3.04)	0.462 (2.19)	2.644 (12.7)	0.884 (2.19)
L.Left	0.102 (0.43)	1.115 (4.64)	0.273 (0.45)	-0.101 (0.40)	-0.576 (2.29)	-0.183 (0.41)
L.GDP per capita (log)	0.901*** (0.32)	9.797*** (2.82)	1.040*** (0.36)	-0.313 (0.28)	-1.789 (1.64)	-0.365 (0.28)
L.Spending Level	-0.092** (0.036)		-0.105*** (0.040)	-0.175*** (0.048)		-0.178*** (0.048)
<i>First Differences</i>						
ΔTrade	-0.098** (0.041)		-0.104** (0.041)	-0.016 (0.026)		-0.013 (0.026)
ΔDemocracy	-0.132 (0.095)		-0.144 (0.099)	-0.141 (0.11)		-0.134 (0.11)
ΔDependency	71.83 (47.5)		85.99* (51.2)	-8.047 (20.8)		-12.34 (21.6)
ΔLeft	0.832 (0.95)		1.01 (0.96)	-0.712 (0.53)		-0.801 (0.54)
ΔGDP per capita (log)	-18.32** (8.84)		-17.83** (8.36)	8.148 (5.91)		7.704 (5.73)
Constant	1.619 (3.06)		2.431 (3.20)	2.967 (2.93)		2.687 (2.85)
Observations	362		362	304		304
R-squared	0.17		0.16	0.14		0.13

Notes: Robust standard errors reported in parentheses; * significant at $p < 0.1$ in a two-tailed test; ** significant at $p < 0.05$; *** significant at $p < 0.01$. The variation inflation factor (VIF) for all variables included in Column 1 is less than 2. The variation inflation factor (VIF) for all variables included in Column 4 is less than 3.

Table 2: Estimated effect of total trade on spending shares controlling for labor mobility

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Welfare	Welfare	Welfare	Welfare	Sector	Sector	Sector	Sector
	ECM	ECM	LRM	2SLS	ECM	ECM	LRM	2SLS
L.Trade	-0.0225*	-0.0227*	-0.376**	-0.0406**	0.0126***	0.0137**	0.0919**	0.0203***
	(0.013)	(0.013)	(0.15)	(0.019)	(0.0048)	(0.0053)	(0.037)	(0.0068)
L.Mobility	6.209	6.814	103.5	11.96	7.103	5.815	51.85	4.481
	(6.61)	(6.57)	(131)	(7.88)	(14.1)	(11.5)	(98.1)	(13.6)
L.DV	-0.0600	-0.0601		-0.0786*	-0.137***	-0.153**		-0.147***
	(0.040)	(0.040)		(0.044)	(0.052)	(0.060)		(0.051)
Δ Trade	-0.0332	-0.0746		-0.0363	-0.0385	0.109		-0.0391
	(0.057)	(0.11)		(0.058)	(0.040)	(0.13)		(0.039)
Δ Mobility	11.69	11.50		13.13	29.48	30.68		28.32
	(13.0)	(13.5)		(13.2)	(32.6)	(28.7)		(30.8)
Δ Trade*L.Mobility		0.980				-3.323		
		(1.52)				(3.00)		
Constant	3.394	3.190		2.517	4.185	5.317		5.022*
	(4.21)	(4.27)		(4.09)	(3.00)	(3.45)		(2.99)
Observations	236	236		236	197	197		197
R-squared	0.18	0.18		0.16	0.16	0.22		0.16

Notes: The estimated models reported in Table 2 contain all variables included in Table 1. Due to space constraints, only the key variables of interest are reported. Robust standard errors reported in parentheses; * significant at $p < 0.1$ in a two-tailed test; ** significant at $p < 0.05$; *** significant at $p < 0.01$.

Table 3: Estimated effects of imports on spending shares

	(1)	(2)	(3)	(4)	(5)	(6)
	Welfare	Welfare	Welfare	Sector	Sector	Sector
	ECM	LRM	2SLS	ECM	LRM	2SLS
<i>Lags</i>						
L.Import	-0.07 (0.042)	-0.718*** (0.27)	-0.203* (0.11)	0.090* (0.051)	0.462** (0.23)	0.198** (0.090)
L.Export	0.012 (0.036)	0.128 (0.35)	0.153 (0.11)	-0.083 (0.055)	-0.425 (0.26)	-0.198** (0.098)
L.Democracy	0.001 (0.032)	0.011 (0.32)	0.001 (0.032)	-0.056 (0.040)	-0.285 (0.18)	-0.065 (0.041)
L.Dependency	-6.094** (2.59)	-62.81*** (22.3)	-5.725** (2.44)	-0.805 (2.48)	-4.122 (12.4)	-2.315 (2.48)
L.Left	0.06 (0.43)	0.621 (4.45)	-0.027 (0.43)	0.0555 (0.35)	0.284 (1.82)	0.229 (0.35)
L.GDP per capita	0.851*** (0.30)	8.770*** (2.85)	0.731** (0.30)	-0.252 (0.26)	-1.291 (1.36)	-0.193 (0.26)
L.DV	-0.097** (0.039)		-0.118*** (0.045)	-0.195*** (0.052)		-0.222*** (0.055)
<i>First Differences</i>						
ΔImport	-0.119** (0.055)		-0.202** (0.086)	-0.008 (0.093)		0.055 (0.11)
ΔExport	-0.078 (0.081)		0.003 (0.080)	-0.0152 (0.10)		-0.074 (0.11)
ΔDemocracy	-0.145 (0.097)		-0.192* (0.11)	-0.107 (0.11)		-0.063 (0.12)
ΔDependency	80.48 (52.3)		114.3* (62.0)	-19.56 (25.6)		-39.51 (30.9)
ΔLeft	0.824 (0.95)		0.859 (0.94)	-0.764 (0.54)		-0.861 (0.56)
ΔGDP per capita	-18.21** (8.74)		-17.38** (8.17)	8.282 (6.06)		7.344 (5.78)
Constant	2.052 (3.17)		3.724 (3.72)	3.329 (2.97)		3.688 (2.99)
Observations	362		362	304		304
R-squared	0.17		0.14	0.16		0.13

Notes: Robust standard errors reported in parentheses; * significant at $p < 0.1$ in a two-tailed test; ** significant at $p < 0.05$; *** significant at $p < 0.01$. The variation inflation factor (VIF) for all variables included in Column 1 and Column 4 is less than 3 with the exception of *L.Export* and *L.Import* whose VIF is greater than 10 and less than 11.

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Appendix A: Construction of labor mobility measure

To estimate the rate of labor adjustment, I calculate the movement of labor across manufacturing industries by isolating the fraction of jobs that move from industry to industry independently of overall employment gains or losses. This measure calculates the rate of change in the employment distribution across 28 industries within the manufacturing sector using employment data from UNIDO (2000). It is computed as:

$$IR_{t-z} = \frac{\sum_{i=1}^N |E_i^t - E_i^{t-z}| - \left| \sum_{i=1}^N E_i^t - \sum_{i=1}^N E_i^{t-z} \right|}{0.5 \sum_{i=1}^N (E_i^{t-z} + E_i^t)} \quad (1)$$

where E_i is employment in the i th of the N industries at times t and $t-z$ years. In the numerator, the term on the left represents the number of employment changes between t and $t-z$. The summation of absolute values counts each job gained or lost as a change in the structure of employment. The term on the right is the total number of jobs lost or gained and not offset by a gain or loss in other industries. These are the total numbers of uncompensated changes in employment. Subtracting one from the other gives the number of compensated changes in the structure of employment, or employment changes resulting from pure shifts of jobs across sectors. This value is divided by total employment in manufacturing (the average across t and $t-z$) to obtain a measure expressed as a rate rather than the number of job reallocations. Five year averages of this measure are used to minimize the influence of year-to-year business cycle effects.