

# On Economy-Wide Shocks, Models and Politics

*Michael Walton*

When a society suffers a big economic shock, what should be done? How does what should be done relate to what is typically actually done in practice? And where there is a difference, how can technical analysis serve to understand and reduce this gap?

At first sight, the question of what should be done looks simple. Big adverse shocks are surely less subtle in their policy demands than solving questions of long-run growth, industrial policy, or service delivery. The problems are clear, there is political pressure to do something, and the motivation to act is much higher, amongst government agencies and civil society. Or at least the problem *should* be clear, since the classic shocks—commodity price changes, sudden stops in financial flows, international slowdowns, harvest failures, floods and so on—are, unfortunately, repeated again and again. There should be substantial experience of the consequences of the shocks, and of alternative responses. Then the task of government, and of supporting external agencies, is to adjust policy to provide greatest relief to those hardest hit, and those most likely to be permanently hurt.

Both interpretation and policy design is, however, a lot murkier and more complicated than this account would suggest. As the 2010 debates in the post-financial crisis industrialized world illustrate, there is even substantial professional and political disagreement over the basic intertemporal decisions over optimal deficit and debt management for the whole economy. Beyond aggregate choices the questions are deeply distributional, with respect to short and long-run effects across households, individuals, and groups. This substantially complicates matters. Transmission mechanisms from shocks to different groups and their behavioral responses are often ill-understood, and only weakly integrated into a coherent overall account. Working out what is optimal is not trivial.

When we turn to what is typically done in practice, further complications arise. There are two kinds of reason why actual responses can diverge from what is optimal. First, as just indicated, optimal policy may itself be unclear, especially where short-run information on actual effects is unavailable. Systematic information collection in developing countries almost always comes with a lag, sometimes of years (for example, for national household surveys in poorer countries). Second, when many individuals, firms, or groups are taking a hit, the natural tendency is to act to protect your assets, consumption, or other dimension of (household or firm) well-being. Yet the capacity to act, in terms of information, resources, political influence, or other connections, is likely to be highly heterogeneous, and much more likely to be positively correlated with wealth, sta-

tus, and power. And this will often be exactly the opposite of the simple view on optimal policy suggested above.

All this underlies the potential desirability of an approach to analysis and policy interpretation that combines:

- Practicality and timeliness
- Enough sophistication to capture the heterogeneity of transmission mechanisms and behavioral responses
- Political salience.

This is a tall order. But it is an important challenge for development practitioners, with precisely the kind of technical and political economy mix that should lie at the heart of development work.

The point of departure of this essay is a reaction to a set of practical models for analyzing the poverty and distributional impacts of crises. These lie precisely in this domain. These are described in other contributions to this volume. They were sponsored by, and in many cases undertaken within, the World Bank. However, most of the issues at stake actually have nothing to do with the World Bank itself—since both the questions and the modeling approach are of general concern and practice. The bulk of this essay will assess the approach in this broader context. At the end I briefly discuss the specific question of the World Bank's role.

The technical work was inspired by the series of economy-wide shocks that have hit developing countries in the last few years—from big increases in food and oil prices, to the more complex shocks associated with the international financial crisis, which affected both external demand for goods and international financial markets. The concern is with systemic shocks experienced by a country, as opposed to the individual shocks that households suffer owing to idiosyncratic influences, for example from ill-health, job loss, or a business failure in normal economic times.

There are two features of the general approach that cut across the particularities of the models. First, they are concerned with mapping economy-wide developments on to the conditions of individuals and households. Second, they seek to be practically, and politically, relevant—that is to provide information to policy makers and interest groups in time to shape policies.

These two considerations drive the main design choice of developing models that link macroeconomic or sectoral developments to the characteristics of individuals and households, via existing labor market or household surveys, and then develop a capacity to simulate alternative scenarios. This is often called a microsimulation approach. Linking economy-wide developments to households (and firms) is an obvious requirement. The use of simulations flows from the typical absence of up-to-date information on outcomes. And the link to households and firms is essential to assess impacts and responses, and also, if less obviously, to the interpretation of political economy.

This approach is in contrast to one that relies primarily on gathering real information on actual impacts and responses. While the two approaches are obviously complementary, the whole point of undertaking a structured, microsimulation approach is to provide information that is both sufficiently timely to be of practical relevance and hopefully to be politically salient.

The approach has one enormous strength: it allows systematic, illustrative exploration of alternative policy choices—or indeed alternative views on the behavior of different actors. These can be developed for policy makers as they assess what to do. This work can be undertaken by a ministry's technical staff or by an external actor, such as a domestic think tank or the World Bank.

But the approach also has a potentially large weakness: it may get responses wrong, and deliver misleading results. We are dealing with highly complex systems. As noted above, it is hard enough to model responses to shocks in the macroeconomy. When the task is to include the behavioral responses of the large, heterogeneous range of household and firm actors in a society, the systemic effects may be of bewildering complexity.

The main response to the systemic challenge is to choose to analyze partial equilibrium effects on part of the system—for example, on household consumption or unemployment, and often limit this to first-round impact effects. This is good for tractability and transparency: it is relatively easy to understand what is going on, and this is surely better than a modeling approach that adds more complexity but becomes a black box, obfuscating rather than improving the informational basis of policy and public debate. But the nature of second-round and systemic effects cannot be ignored. This includes the potential behavioral response of one of the most important actors—the government—and so inevitably gets into political economy.

The remainder of this comment has two themes. First, that second-round and systemic effects can be of major, and sometimes first-order, significance to technical and political economy analysis. And second, that it is important to have an explicit view on what might be termed the practical political economy of information—that is on how information, in this case from analysis and modeling, can lead to changes in public action.

### **When Are Second-Round and Systemic Effects a First-Order Concern?**

An *ex ante*, first-round, empirically informed impact analysis of the effects of shocks on part of the households and firm system clearly contributes to the interpretation of the consequences of crises. As several studies (including those described in Chapter 1) illustrate, this type of analysis suggests distribution matters (in the sense that impacts vary across households), that effects can differ from initial intuitions (so the complexity of the modeling adds something), and that these potentially make a difference for policy choice (see Ajwad et al., 2010, Ferreira et al., 2010, Habib et al., 2010)

So far, so good. But are there conditions in which a first-round impact analysis is sufficiently incomplete or misleading to make a large difference to both interpretation and policy? There are a number of reasons for thinking this could often be the case. To fully work through this would require a careful comparison between an *ex ante* modeling analysis and *ex post* experiences. That is not done here—though it would surely be valuable to do so in the future. So the argument is suggestive.

It is useful to distinguish two kinds of reasons: second-round effects; and things happening in response to a shock outside the part of the system being analyzed.

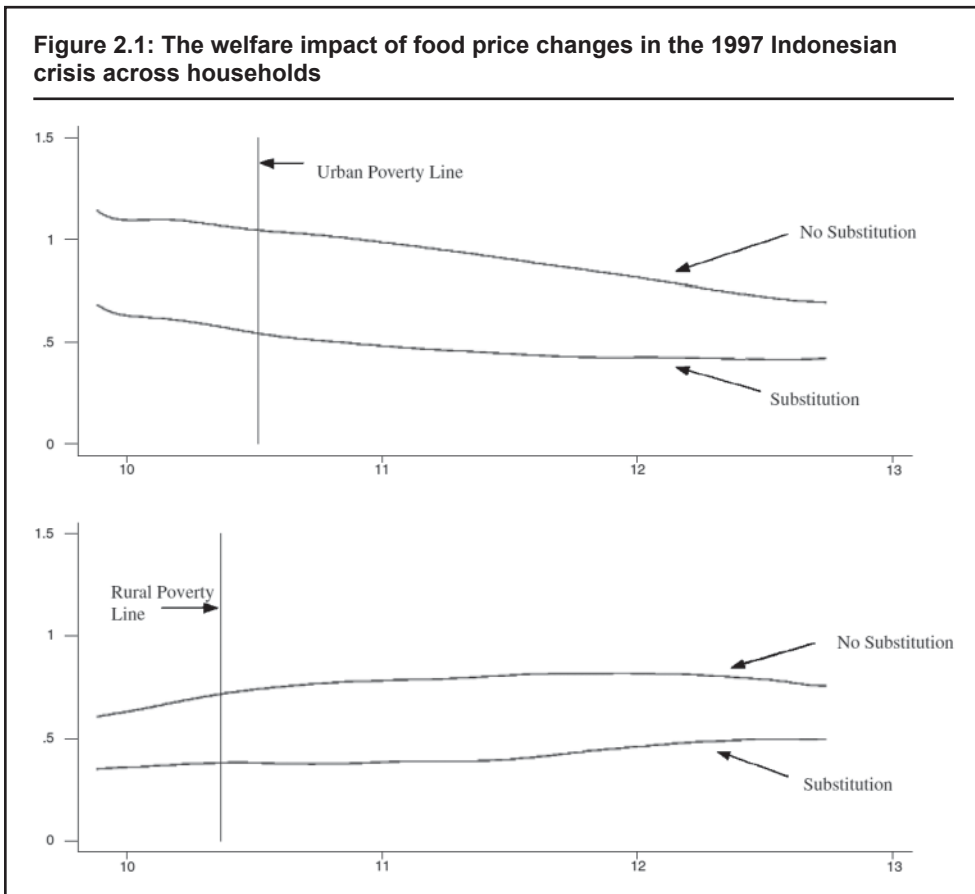
#### ***Second-Round Effects***

Here I give illustrations of three areas associated with household responses in response to changes in market conditions after a shock.

(A) HOUSEHOLD CONSUMPTION

The first point is obvious: households respond to changes in prices of goods by changing consumption patterns. Is this sufficiently large and heterogeneous enough to be practically important? There are at least indications that this can be the case. A survey of Turkish households found that almost three quarters shifted consumption patterns into cheaper items (see Chapter 3). For an illustrative systematic analysis of what this kind of response means in welfare terms, Friedman and Levinsohn (2002) use an ex ante modeling of the welfare impact of food price changes in the Indonesian crisis using empirically estimated substitution effects and an approximation of welfare effects. This found that the welfare impact—as measured by the compensating variation—compared with no substitution is substantial. Estimated total welfare losses decline by between a third and a half across the household distribution compared with a scenario of no substitution, with larger reductions in urban than rural areas, and in the middle of the rural distribution of expenditure (see Figure 2.1).

As this analysis is also ex ante, it is only illustrative. Moreover, since it is based on an econometric analysis of substitution effects, it almost certainly underestimates heterogeneity across households driven by interactions between household preferences, needs,



Source: Friedmann and Levinsohn, 2002.

and local market conditions. Thicker local markets for consumption goods will allow more opportunities for substitution, and potentially less extreme price effects, especially when thinner local markets lead to local hoarding or exploitation of scarcity by traders with market power.

For policy purposes the issue of heterogeneity will often be more important than getting better estimates of the size of effects. In the wake of a crisis, we want to know if adverse effects are “large” or “small”—and the mitigating influence of substitution itself is unlikely to influence this assessment. But getting a good enough grip on who is suffering most does matter, and can be relevant to policy design and modeling strategy.

#### (B) LABOR MARKET RESPONSES

A lot of the action in response to shocks happens in the labor market. Here too specific mechanisms matter. Again the structure of the issue is how individuals in households behave in response to potential changes in labor market functioning.

How firms and firm-households respond to a shock determines the labor market opportunities available to households. In effectively all developing countries, employment is distributed between formal and informal sectors. Formal firms may respond by reducing wages, reducing profits, reducing hours worked, or laying off workers, depending on expectations of the length of the shock, the potential to reduce wages and the cost of firing. This can make a large difference to implications for worker-households. High levels of layoffs both have the sharpest effect on those who lose their work and put additional pressure on the informal labor market.

Furthermore, different labor markets have different closures. This is partly influenced by the degree of flexibility of formal work, but of equal or greater importance are options for informal work. In Latin America, for example, the labor markets of Argentina and Chile have typically closed with higher levels of open unemployment, while those of Mexico and Peru—and to some extent Brazil—in lower earnings. Elsewhere, in South Africa the labor market primarily closes in higher open unemployment, while in Indonesia and India it closes mainly in shifts into lower paying informal work.

Then the response of households matters. In Indonesia and Thailand, there was reported to be significant reverse migration to rural areas after the 2007/08 crisis, in response to sharp falls in employment opportunities in urban areas. An informal survey by the Self-Employed Women’s Association of India in 2009 also found many of their members were moving back to villages, especially in Gujarat (that has a high level of connection to export markets). Labor reallocations also occur within households—for example with women or children increasing their labor force participation to compensate for lost income from declining wages or work of primary wage-earners.

The pattern of changes in the labor market can again make significant differences to the size of welfare effects, and, more important, these can be heterogeneous across households, depending, in these examples, on connections to rural areas, and the potential to increase household labor supply.

#### (C) BEHAVIOR AFFECTING ASSET CHANGES

A third category of response concerns assets. It is both a standard part of economic analysis, and generally observed, that households respond to a shock by changes in their asset position. This can involve drawing down financial savings, selling cattle, gold, or other physical assets, or borrowing. Or it can involve changes in human asset accumula-

tion, for example by taking children out of school (to save on fees or put them into work) or postponing health-related spending. The last may be exacerbated for those who lose job-related health insurance.

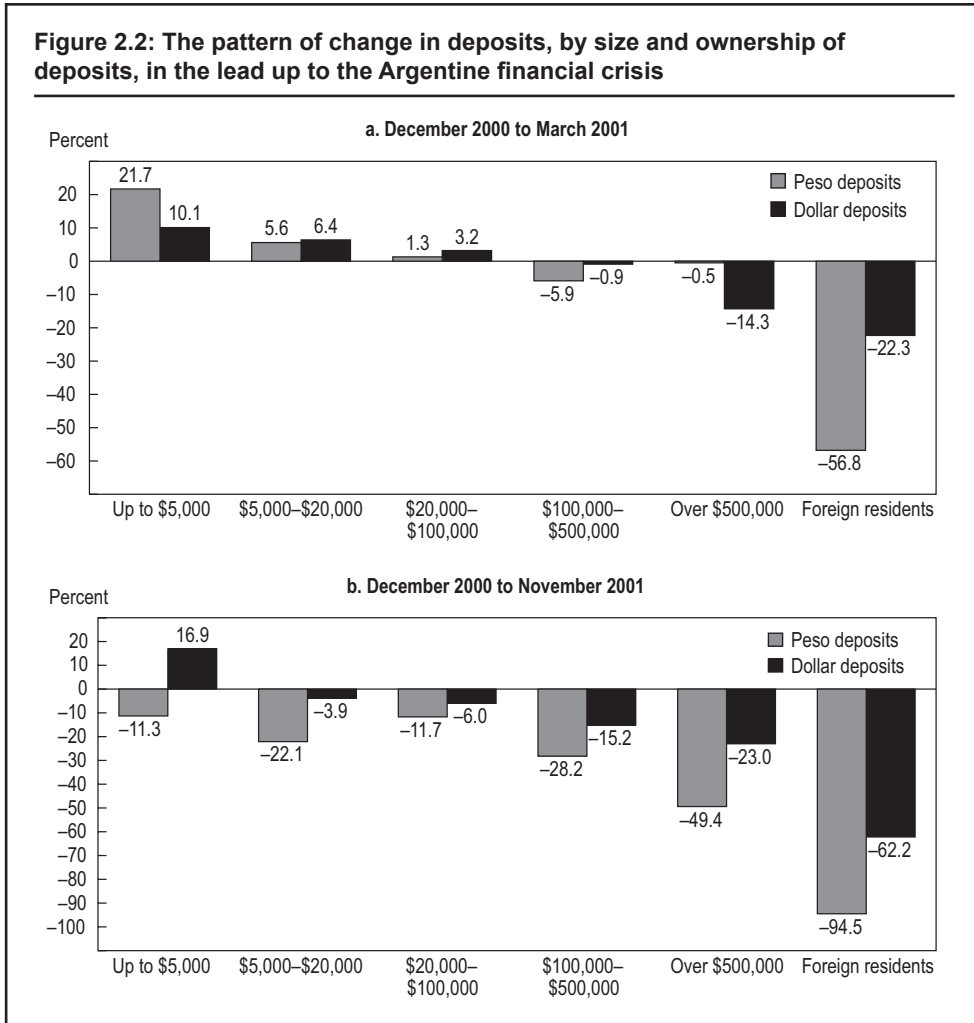
There is evidence that this is significant. As Leipziger reports in Chapter 3, according to Crisis Response Surveys conducted by the World Bank's Europe and Central Asia group, 29 percent of Turkish households in the bottom quintile postponed health spending, and 14 percent reduced education spending. In Armenia in the bottom quintile, almost 60 percent of households stopped visiting health centers or purchasing medicine (World Bank, 2010a). However, it is not necessarily the case that children shift into work—Schady (2004) found that school attendance actually rose in response to severe economic crises in Peru, which the author interpreted as a response to a fall in work opportunities for children.

Drawing down on assets or postponing investments can be an efficient response to an adverse shock for a household. However there are two issues of concern for interpretation and policy. First, there is likely to again be substantial heterogeneity, depending on initial assets, financial savings, social connections, forms of finance for education and health, and so forth. Local market and community conditions matter, especially as we are concerned here with covariate shocks—prices of some assets (cattle for instance) fall if many households are selling, and opportunities for borrowing or other support also diminish when many are hurt. Second, there is the possibility of persistent effects, which are of particular concern if they affect human capital, whether of children or adults.

#### *System-Wide Factors beyond Households*

Since the immediate concern is with the distributional effects on households, there is a tendency to focus analysis on patterns of impacts in the household sector. Yet this may miss the big action in loss allocations across groups in response to a shock. This is particularly important where the shock involves the nexus of financial, macroeconomic, and corporate sector interactions. Analyzing specific distributional effects across the distribution from data available in surveys could be second-order relative to the distribution between holders of financial assets and others, and fiscal action to support the financial-corporate sector.

Take the characteristic sequence of emerging market crises. As awareness of the impending crisis spreads, holders of financial assets start moving out of domestic currencies and the domestic financial system. Typically those with larger holdings—and so more information and international financial connectivity—move earlier. Figure 2.2 illustrates for the lead up to the Argentine crisis: in December 2000 to March 2001, domestic assets below US\$100,000 were actually rising, while larger holdings and foreign asset holders were already moving their money out. As expectations of a collapse—and the likely abandonment of the peso-dollar peg—became widespread, shifts out of peso assets spread down the size distribution, but the *proportional* change in larger and foreign-owned assets remained much higher. The aggregate effect was of large-scale capital flight, of some US\$13 billion between the end of 2000 and the first quarter of 2002: the peg was indeed abandoned in January 2002, and the peso lost 75 percent of its value in a few months. The smaller depositors who had shifted into domestic dollar assets (Figure 2.2) meanwhile suffered an effective expropriation, as their deposits were converted into pesos at the old 1:1 exchange rate. Those who got their money out actually experienced capital gains with respect to Argentine assets.



Source: Central Bank of Argentina, as calculated and presented in Halac and Schmukler (2004).

Note: The figure shows the cumulative percent change in peso and dollar private time deposits by residence and size of deposit for the periods December 2000 to March 2001 and December 2000 to November 2001. The dollar sign (\$) stands for both U.S. dollars and Argentine pesos, as the exchange rate was still one peso per dollar.

Now this is only the beginning of the story in financial crises. Since the financial system is both central to economic functioning and generally carries substantial political influence, it typically becomes the recipient of large-scale government support, in the form of protection for deposit holders and bailouts. Fiscal and quasi-fiscal costs have been estimated at 19 percent of GDP for the Mexican 1994–96 crisis, 26 percent of GDP for the Republic of Korea, and 50 percent of GDP for Indonesia in the wake of the 1997–98 East Asian crisis (Honohan and Klingebiel, 2000). This comes at the cost of higher future taxes or lower expenditures, and so involves an intertemporal transfer. But it also has distributional effects across households, since the beneficiaries are those within the financial system (and in some egregious cases even the equity holders of banks) that typically exclude much of the population in a developing country. Moreover, where spending is



on an increasingly progressive path, as it was in Latin America in the 1990s and 2000s, the foregone spending has an additional regressive impact.

A final issue concerns wage and profit shares. There is some evidence that crises are associated with reductions in wage shares (Diwan, 2001). Indeed, Diwan suggests that crises work as a mechanism for resolution of distributional fights when mechanisms in normal economic times prove inadequate. A crisis forces a loss allocation process that often hurts labor incomes disproportionately. Most household surveys only capture labor incomes—or the consumption of households whose dominant source of income is from labor or the returns from self-employed activities—and so misses this action.

## Implications

What do these comments imply? Of course the world is more complex than can be captured in any modeling approach. The point is not to seek an ever-more complicated model—that comes at the cost of tractability and, even more important, transparency. However, I think there are three implications for the design and use of models, all of which go in the direction of pragmatic completeness.

- i. It will often be important to place specific modeling of part of the socio-economic system in the broader context of both system functioning and responses. This will frequently have to be somewhat ad hoc, in the sense of linking household impacts of a change in price or employment conditions to what is happening in the overall drivers and responses of the crisis—as illustrated for the financial-fiscal responses to emerging market financial crises. This assumes the goal is to assess overall distributional effects of a crisis, as I believe should be part of any technical input to crisis analysis. Sometimes, of course, the goal may be narrower; for example, comparing alternative instruments to reach a more specific objective, such as introducing price subsidies versus public works, or calculating the likely impact of specific policy interventions.
- ii. In modeling strategy there may be opportunities to explore particular aspects of heterogeneity and market context through imposition of alternative closures or potential responses. I have not worked through this in detail, but here are here a couple of intuitive examples. Alternative labor market closures could be explored both with respect to the extent to which firms lay off workers, as opposed to cutting hours and wages, and in terms of whether laid off workers lead to higher open unemployment or reduced labor incomes in the informal sector. And second-round household responses could be explored, in terms of consumption, household labor allocation, and asset responses.
- iii. The issue of the actual heterogeneity in impacts and responses should clearly also be explored empirically. In particular this suggests high priority for looking at historical episodes, in addition to new quick surveys (see World Bank, 2010a and 2010b). In either case the question is more about exploring any variation around an estimated pattern, and seeing if this is related to any observables, or not.

These considerations matter because they have a bearing on the interpretation of effects of shocks, with potentially large implications for policy. Each of the areas reviewed has potential consequences for policy. Where there is unknown heterogeneity in house-



hold impacts, there is a stronger case for self-targeting instruments—low-wage public works or subsidies to inferior goods for example. If asset drawdowns are expected to be significant, this can imply different instruments, such as school-related grants (as used in the response to the Indonesian 2008 financial crisis) or increased subsidies for use of health services. Understanding the nature of labor market closure will also influence the instrument mix, from supporting negotiations to reduce layoffs, to the mix of unemployment support and public works. And heterogeneity in conditions will generally support the need for use of a family of instruments and associated monitoring. For example, temporary increases in conditional cash transfers helps existing recipients, but not those falling into poverty as a consequence of the crisis.

### **When Can Information Affect Government Behavior?**

When can the results of modeling—or indeed any analysis—affect government behavior? This is central to the approach under discussion here, since it is fundamentally motivated by the goal of achieving better outcomes for society in the wake of shocks. It is not an academic exercise. So we are deeply within the domain of the role of information in real decision-making, as it interacts with “technocratic” and political economy processes. Practical technical analysis often has an implicit theory of change, and of how information influences this. I think it is important to make this explicit.

Consider two kinds of case: where analysis can play a role under conditions of technocratic space, and where interests determine policy but information may influence political economy outcomes.

#### *Technocratic Space*

The implicit, or explicit, theory in much of the work here is of the political salience of well-intentioned technocrats—a view that has pervaded much development policy advice for decades. A strong version of this assumes the social welfare function of the government is aligned with the analyst, but policy makers lack information on how to achieve this. Suppose a government genuinely wants to provide support to those hurt most by a crisis. This will be some function of the interaction between the size of household-specific shocks and their initial level of deprivation. Then an empirically informed modeling approach—and even more one that embeds specific model-driven analysis with a pragmatic treatment of systemic and second-round effects—can both provide critical information on who should be targeted and on the likely efficacy of different policy instruments.

This view of the world may seem far from the reality of real government objectives, influences, and political constraints. However, a weaker requirement is that some segment of policy making has these technocratic characteristics. Perhaps a government is going to bail out rich bankers in any case, but still wants to allocate some resources to compensate middle and poor households, and has a technocratic group with the mandate to design an implementable approach.

Even in this technocratic case, I believe the analysis should go beyond the purely technical. In particular it is valuable to make explicit the information-based theory of change, and assess its realism. Here are three aspects of this.

- i. *Specific goals.* What specific goals underpin the technocratic space? If they are really to support a particular support base (laid-off formal workers, existing

patronage networks in poor areas) that may differ from a more general, distributionally weighted, social welfare function. At a more technical level, the above phrase that weights will be “some function of the interaction between the size of household-specific shocks and their initial level of deprivation” requires resolution in the context of local social and political priorities.

- ii. *Administrative feasibility.* The feasibility, leakage, scope for corruption and likelihood of local capture will both vary substantially across programs, and be quite context-specific.
- iii. *Political constraints.* Even a technical analysis needs to take account of political constraints—indeed, the more these are incorporated, the more useful will the technical analysis be.

Technical analysis, and exploration of optimal responses, can feed directly into policy design in cases of technocratic space, but even here supposedly “non-technical” considerations also intrude.

### *Information and the Political Economy of Interests*

A second category concerns the (more realistic) case in which political and economic interests are salient, and differ in the structure of influence from the social welfare function of the analyst. Here the role of information, and modeling or other analysis, is different: it is about changing the political dynamic. And this requires a different theory on the role of information.

Two things are likely to be useful here.

First, to be relevant, analysis needs to map on to politically relevant interest groups. Doing this systematically can itself be a useful exercise. In rich and poor societies alike, narratives over the beneficiaries of policy choices often have a weak relationship to reality. In the United States there seems to be some obfuscation over who benefited from tax cuts in the early 2000s: the discourse of “middle class” tax cuts hides the fact that the primary beneficiaries were the truly rich. In developing countries formal industrial workers and public school teachers—in Mexico and India for example—are often characterized as being amongst the relatively deprived. That may be true relative to the rich, but not to the bulk of the population. As a final example, and as the discussion above illustrates, it is important to bring in analysis of impacts on profits and holders of financial assets into an integrated analysis.

Second, it is useful to have an explicit account, or theory, of how new information may influence political dynamics. This could work, for example, via the accountability of politicians in a democracy: politicians depend, if via multiple and murky routes, on support from the electorate. Better information on the likely effects of policies could provide incentives for different behavior—for example, to provide more support for budgets and designs that favor more deprived groups hurt by a crisis. Now this also requires a strategy for making the new information salient, for example via civil society, parliament, and media.

The theory and empirics of such channels of influence are an ongoing area of research: for example Besley and Burgess (2002) provide an example of an empirical study that finds that local newspaper density increases the responsiveness of local governments to shocks. The point here is to explore hypotheses on how information can make a difference and explicitly introduce this into practical designs and experiments. Where

we are dealing with economy-wide shock this will typically not be via experiments using randomized controls trials (see Banerjee et al., 2009, for an example of the impact of information on voting). But making explicit the hypothesized channels and influence, and systematically tracking changes is still feasible.

### **Conclusion and a Note on the World Bank**

The systematic analysis of the effects of shocks across households is of huge interest and importance. An *ex ante* modeling approach, linking historical household information to macroeconomic and sectoral analyses of the structure and dynamics the shock makes a lot of sense, precisely because information on actual impacts typically comes with a lag—and too late for timely policy responses. The methodology outlined in Chapter 1 is a valuable addition to this approach. This note has offered two kinds of comments on the approach.

First, I have highlighted the potential importance of both second-round effects and changes in parts of the socioeconomic system that fall outside the domain of the model. These may be large enough to substantially change the interpretation of aggregate loss allocations and the distributional pattern of vulnerability. How to deal with this will vary from case to case, and can range from incorporation of second-round effects into a model estimated from historical information, exploration of how alternative assumptions on firm behavior or labor market closure affect simulations, or ensuring any analysis takes at least *ad hoc* account of responses elsewhere—especially in the financial-corporate-fiscal nexus. This can all make a difference to policy—either in choices over specific sectoral designs (for example, in labor market, education or financial bailout designs), or in shifting the emphasis to self-targeting mechanisms and an array of instruments to reach heterogeneous households.

Second, I have argued that technical analysis of the impact of shocks would benefit from an explicit theory of how new information can make a difference in the specific political economy of the case at hand. Sometimes a modeling approach will seamlessly feed into a situation of technocratic space. Even here considerations of administrative feasibility of alternative policy designs, and indeed political constraints, would be of value. More generally, the approach could be useful structured into hypotheses on the political economy of information, hypotheses that can be then assessed against the use of modeling results—even when the intrinsically economy-wide features of aggregate shocks preclude rigorous causal testing.

A final question concerns the role of the World Bank—since this work was sponsored by the World Bank. Does this make sense? The general answer is absolutely yes: the World Bank has technical expertise, and can in particular support the internalization of externalities inherent in the development of technical approaches that are applicable to many country settings, as well as facilitating cross-country learning. These issues form part of the overall question of the political economy of information, and the comment on making implicit theories of how information affects change applies with force to World Bank analysis. Over time, the goal should be to both ensure useful technical approaches are adopted in countries, in governments, think tanks and universities, and to support direct communication across countries.

There is, however, one apparent puzzle. The standard advice on the management of shocks is to prepare for them in normal times. Analysis and action after a shock hits

is likely to be late, fuzzy and (for policy) particularly susceptible to immediate political influences. Yet the World Bank has been deeply engaged with the kinds of issues thrown up the recent shocks in many previous episodes of shocks. Furthermore, the technique of linking economy-wide changes to micro distributional analysis has been around for many years, with World Bank research an important contributor to the approach (see Bourguignon et al., 2004). So why didn't the World Bank itself invest in this kind of approach in normal times, so that analyses could be quickly run out when new shocks arrive? I think the answer lies with internal incentives and pressures. Countries find it hard to develop policy instruments in "normal" times that can swiftly, or endogenously, kick in when shocks occur. Similarly, World Bank policy analysis concentrates on non-shock issues outside crisis periods. Of course real choices have to be made in relation to pressing priorities. A potential solution involves exploring technical approaches that are of value *both* in interpretation and policy design in "normal" times *and* in response to major shocks. The question of the distributional effects of economy-wide or sectoral developments have particular urgency when there are large, adverse shocks, but are just as important for the analysis of slower-moving developments or the assessment of idiosyncratic shocks.