



# Europe and central Asia's great post-communist social health insurance experiment: Aggregate impacts on health sector outcomes

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## ABSTRACT

The post-Communist transition to social health insurance in many of the Central and Eastern European and Central Asian countries provides a unique opportunity to try to answer some of the unresolved issues in the debate over the relative merits of social health insurance and tax-financed health systems. This paper employs regression-based generalizations of the difference-in-differences method on panel data from 28 countries for the period 1990–2004. We find that, controlling for any concurrent provider payment reforms, adoption of social health insurance increased national health spending and hospital activity rates, but did not lead to better health outcomes.

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## 1. Introduction

All but two of the OECD's 30 countries—Mexico and the United States—finance the majority of their health spending publicly, with half operating broad-based 'tax-financed' health systems (e.g. Canada and the United Kingdom) and half operating payroll-based 'social health insurance' (SHI) systems (e.g. Germany and Japan).<sup>1</sup> Outside the OECD, the fraction of countries financing the majority of their health spending publicly is smaller (56%), and only one fifth of these countries finance the majority of their government spending through SHI.<sup>2</sup>

The relative merits of SHI and tax finance is an old debate, but one that has recently resurfaced. In part this is due to the fact that three of the world's oldest SHI countries—France, Germany and the Netherlands—are in the process of reducing their reliance on payroll contributions in favor of a broader financing base.<sup>3</sup> But the renewed interest in the SHI vs. tax-

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<sup>1</sup> Figures calculated from data in the World Health Report annexes. Korea is around 50% public-private. Mexico's public share is increasing quickly (OECD, 2005).

<sup>2</sup> These countries are almost all in Europe and Latin America.

<sup>3</sup> France widened the tax base from earnings to include nonwage income, Germany has decided that from 2009 onwards it will reduce the emphasis on payroll taxes, while the Netherlands introduced a reform in 2005 where insurers receive only half their income from payroll revenues (albeit channeled through a central fund), the rest coming from flat-rate direct contributions from members (with offsetting income supplements for low income groups). For further details, see e.g. Gottret and Schieber (2006) and the Health Policy Monitor website <http://www.hpm.org/en/index.html>. In addition, to these changes, it is worth noting that Iceland and Spain both shifted wholesale from SHI to tax-finance in the late 1980s.

finance debate also stems from the current interest in SHI in the developing world.<sup>4</sup> Many developing countries that have relied largely on general revenues (and out-of-pocket payments) to finance their health systems have introduced SHI, or are thinking about doing so.<sup>5</sup> And countries that have a fledgling SHI scheme in place are redoubling their efforts to expand its reach, especially to the informal sector.<sup>6</sup>

Despite the topicality and vibrancy of the SHI vs. tax-finance debate, the evidence base is surprisingly thin. Some comparisons have been undertaken, especially on distributional issues: payments for health care tend to be more progressive or less regressive in tax-financed systems than in SHI systems; and tax-financed systems seem to be more successful at ensuring universal coverage within a single health system.<sup>7,8</sup> But on aggregate system-wide differences, there appears to be no rigorous evidence. We do not know whether SHI systems spend more on health care, and if they do whether this translates into higher levels of throughput and better health outcomes.

Getting at these questions through a cross-country econometric analysis where some systems are financed through SHI contributions and others are financed through general revenues would be problematic because there are likely to be unobservable variables that would be correlated with the type of financing system in place and the outcomes of interest (i.e. SHI is likely to be endogenous). A more promising strategy would be to look for *changes* in the way countries finance their health care, exploiting the variations in changes across countries to eliminate (time-invariant) unobservable variables. The difficulty with this approach is that in the group of countries that have the best data (those in the OECD), there have been very few switches between the SHI and tax-financed camps (six “old” OECD countries abandoned SHI in the 1970s and 1980s, notably Denmark, Greece, Iceland, Italy, Portugal and Spain) and the transitions occurred some time ago, so the available data are very limited.

This paper looks instead to a (mostly) different group of countries where transitions have occurred with greater frequency and more recently, namely the countries of (central and eastern) Europe and Central Asia (ECA).<sup>9</sup> Of the 28 ECA countries, 14 abandoned tax-finance and adopted SHI at some stage between 1990 and 2004 (and 4 other countries had adopted SHI prior to 1990). These countries are also data-rich countries, having inherited and largely maintained the Communist tradition of extensive data-gathering, and falling under the most data-rich regional office of the World Health Organization.<sup>10</sup> One dimension in which the database we have been able to assemble is especially rich is health outcomes; we have been able to assemble extensive information on mortality and disease incidence *by disease*. The fact that a sizeable fraction (perhaps 70–80%) of mortality is not amenable to medical care (cf. Nolte and McKee, 2008) probably helps explain why many cross-country regression studies have been unable to find a strong relationship between health spending and health outcomes (cf. e.g. Martin et al., 2008). The same fact might—in the absence of disease-specific mortality data—have made it hard for us to credibly establish whether, by increasing health spending or by raising the efficiency of health spending, countries that switched to SHI have been able to improve health outcomes.<sup>11</sup> The ECA health financing experiment thus affords a valuable “laboratory” to try to shed light on the question of how SHI systems fare vis-à-vis tax-financed systems in spending, throughput and health outcomes.

To shed light on these issues, we use regression-based generalizations of the differences-in-differences (DID) method, with data from (up to) 28 countries for 15 years (1990–2004). We pay particular attention to the issue of the possible endogeneity of SHI, since it seems likely that there may be events that occurred around the time SHI was introduced that we implicitly lump into our error term but which may affect outcomes. We employ three different approaches to allowing for this possible endogeneity. The first is a simple individual-specific effects model estimated along the lines of the classic DID model. This allows for the endogeneity of SHI only insofar as the unobservables that are correlated with SHI adoption and with our outcomes are time-invariant. This is the parallel trends assumption that is often considered the Achilles heel of the DID approach (cf. e.g. Blundell and Costa Dias, 2000). Because our database spans a relatively long period of time, we can explore two more flexible—and more robust—approaches to controlling for the potential endogeneity of SHI. The first is a random (linear) trend model: this allows for a country-specific unobserved linear time trend whose

<sup>4</sup> Two quite recent conferences focused on SHI in developing and transition economies, one in Berlin in November 2005, the other in Manila in October 2006. Details are to be found at <http://www.shi-conference.de/> and <http://www.shiconferencemanila.info/>.

<sup>5</sup> Examples include Vietnam (1993), Nigeria (1997), Tanzania (2001) and Ghana (2005). Discussions are underway in South Africa, Zimbabwe, Cambodia and Laos. Malaysia also recently began debating a shift to SHI. See Hsiao and Shaw (2007) on some recent experiences of SHI in the developing world.

<sup>6</sup> Examples include Colombia, Mexico, the Philippines, and Vietnam. Cf. Hsiao and Shaw (2007).

<sup>7</sup> Wagstaff et al. (1992, 1999) find that SHI is less progressive than tax-financed systems (in fact, is mostly regressive) in the OECD countries. O'Donnell et al. (2008) find the same in Asia.

<sup>8</sup> The European SHI countries studied by Carrin and James (2005) (Austria, Belgium, Germany and Luxembourg) took close to 100 years to achieve universal health insurance (UHI). Costa Rica, Japan and Korea, which achieved UHI in 1991, 1958 and 1989 respectively, took considerably less time, though Costa Rica's coverage rate in 1991 was still only 85%, and Japan and Korea were both at an advanced stage of economic development when they reached UHI.

<sup>9</sup> The countries treated as being in central and eastern Europe and Central Asia (the countries in the World Bank's ECA region) are listed in Fig. 1.

<sup>10</sup> The European office of the World Health Organization developed and has maintained a huge database to track progress towards its Health for All initiative. In addition, it is home to the European Observatory on Health Systems and Policies, which has produced detailed overviews of the health systems of the member countries (known as Health Systems in Transition (HiT) profiles), as well as a variety of volumes that discuss health systems and health policies in the region.

<sup>11</sup> The view that only amenable mortality responds to health spending may be overly pessimistic. Martin et al. (2008) actually find that health spending impacts favourably on mortality causes previously considered as being unavoidable and unamenable to better care, such as neoplasms and circulatory diseases.

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