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INSTITUTIONAL INNOVATION IN GLOBAL HEALTH:
CHANGING ROLES OF STATE AND NON-STATE ACTORS
IN GOVERNANCE OF VACCINE PREVENTABLE DISEASES

by

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ABSTRACT OF THE DISSERTATION

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This dissertation examines the changes in global governance of vaccine preventable diseases precipitated by the transformations of national infrastructures and international institutions since the 1990s. Neoliberal policies promoted by the transnational elites prompted privatization of healthcare and decline in public healthcare expenditures and resulted in concentration of economic and political power, crumbling of the welfare state, and deepening inequalities. Emergence in public health of a new institutional form -- Public-Private Partnership (PPP), signals a reconfiguration of the governance space.

I focus on one such PPP -- the Global Alliance for Vaccines and Immunization (GAVI). GAVI's philanthropic goals are balanced against accountability to its partners. Collaborating with the pharmaceutical industry to further its philanthropic objectives,

GAVI mediates the market's pull by effecting state policies. I document the vectors of power that GAVI both exerts and is subjected to in its institutional entanglement with the states, multilateral agencies, and the industry. These mechanisms of influence are functionally different from market pressures or 'soft' rules of traditional multilateral organizations and forge new paths for exercising power within PPPs.

Finally, I examine the networks of vaccine trade between countries from 1996 to 2010. Trade networks retain a pronounced core-periphery structure, and the majority of countries lack capacity for vaccine production. Over time some traditionally strong vaccine producers scale down, and some export-oriented developing countries, -- scale up their vaccine production. Congruent with the industrial convergence hypothesis, I find that industry late-comers no longer accrue significant returns and that some of the formerly dominant vaccine-exporting countries engage in innovative funding ventures, such as GAVI's Advanced Market Commitment (AMC). AMC creates stable demand for new patent-protected and expensive vaccines, subsidizing the industry. I also find that industrial growth does not always reduce inequality for populations most affected by endemic diseases. I take a closer look at India as a country which houses both a thriving vaccine-producing industry and a third of the world's un-immunized children, and examine the rift between capital accumulation and state decision making.

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For my mom, Larissa Kolesnikova.

Thank you for setting the bar high

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CHAPTER I

INTRODUCTION

Neoliberal Globalization and Its Discontents

One of the more contentious areas of debates in various literatures on globalization centers around questions of broad societal changes that globalization has wrought and its consequences that reverberate through political, economic, social and cultural spheres of modern existence. Globalization is often conceptualized as increasing economic integration, which results in and is further fueled by ever-increasing cross-border flows of money, goods and services, information, people and culture (Held et al. 1999), and the accompanying expansion and intensification of cross-border and large-scale networks (Tilly 1995).

Mainstream perspectives on globalization that focus on what Susanne Soederberg (2006) called “the harmony of difference” tend to optimistically portray the new global governance as converging towards cosmopolitan democracy (Held and McGrew 2003; Held 2006), ‘flattening out’ (Friedman 2005), or evolving into a borderless world (Ohmae 2005). These perspectives share a teleological orientation and view globalization processes as essentially progressive, irreversible, and encouraging integration and breaking down of borders to an unprecedented degree. For instance, in his bestselling book, Thomas Friedman (2005) introduces a metaphor of the ‘flat world’ – a vision of the world that has become a level playing field for commerce and competition. Among the ‘flatteners,’ Friedman cites world-historic events like the collapse of the Berlin Wall, technological advances in communication that made internet widely accessible to the public and enabled widespread online collaboration, innovations like workflow software

and outsourcing that transformed the workplace, and transformations of the production cycle like offshoring and supply-chaining. Similarly, Kenichi Ohmae (1990; 2005) argues that factors such as advances in global communications, growth of transnational corporations, emergence of the global consumer and unrestricted flow of capital has rendered national borders irrelevant and geography dead. Likewise, David Held and Anthony McGrew cite the end of the Cold War as the main precipitating event that contributed to the dramatic changes in the hierarchical world order, increased blurring of the boundaries between domestic and foreign politics, and led to the eventual unraveling of the sovereignty of the state under pressure from transnational pressure groups and protest movements (Held and McGrew 2003).

Such benign conceptions of globalization fail to address the inequalities that are inherent in global structures, they tend to treat globalizing processes as inevitable, and they either normalize and legitimate or simply ignore the “increasingly austere forms of capitalist restructuring” that accompany neoliberal capitalism (Soederberg 2006:4). More critical takes on globalization attuned to issues of power however, recognize that as a historical process, it is an outcome of purposive actions undertaken in the 1980s and 1990s by transnational political and economic elites who promoted neoliberalism and the ideology of the free market, policies such as deregulation of labor and financial markets, liberalization of trade to allow greater mobility of goods and services, and privatization of many institutions and services. Globalization is thus a ‘project’ (McMichael 2000b) that was institutionalized in the 1980s under the auspices of the Washington consensus and replaced “development,” seeking to create a single global economy with largely harmonized trade rules set by the private capital.

The origins of the contemporary world order can be traced to the inauguration of the system of financial and trade institutions at an international conference in Bretton Woods, New Hampshire in 1944. Collectively, these institutions came to be known as the Bretton Woods system and include the International Monetary Fund (IMF), the World Bank (WB) (initially called the International Bank for Reconstruction and Development), and the General Agreement on Tariffs and Trade (GATT)(superseded in 1995 by the World Trade Organization (WTO)) (McMichael 2000b; Gereffi 2005). Establishing an international institutional framework, the Bretton Woods system sought to regulate international financial transactions between nations on the basis of fixed currency exchange rates vis-à-vis the U.S. dollar (Dicken 2003). In Philip McMichael's (2000b, 48) wording, the Bretton Woods system of institutions managed the transactions between the First and the Third Worlds in a manner that "resembled the colonial division of labor, at a more intensive remove." The Bretton Woods system encouraged rapid industrialization with the aid of multilateral loans and the adoption of industrial and capital-intensive production technologies in the Third World. In the context of the development project, the WB underwrote loans that supported economic growth and financed large scale projects in infrastructure building, export agriculture, transportation, and energy. This extensive borrowing from Western banks created a self-perpetuating debt trap for the Third World countries, who came under tight control of these financial institutions (So 1990). Promoted as a multilateral attempt to raise living standards on a global scale, the Bretton Woods system "stimulated industrialization on the Western scale, often paid for through private investments, increasingly made by foreign corporations and complemented by bank funds" (McMichael 2000b, 51). But overall,

capital was “constrained by the priorities of rebuilding, stabilizing and constructing national economies” (McMichael 2000a, 673). Meanwhile, the state has expanded its role in capital accumulation and economic regulation (Gereffi 1983) as well as social protection. By the late 1970s, two successive oil price increases, growing inflation and stagnation in the North, and increases in the cost of imports for the South, compounded by decline in the value of exports, precipitated a serious financial crisis for all but the oil-exporting states (Wallerstein 2005).

The debt default of Latin American countries in the early 1980s and the collapse of the Soviet Union and subsequent dismantling of Eastern European state socialist economies in the late 1980s created a unique and fertile ground for the spread of neoliberal doctrine. Import- substitution industrialization became passé, state-building deconstructed as “feeding a bloated bureaucracy” (Wallerstein 2005, 1265) and protectionist measures like financial aid were rapidly losing legitimacy as viable foreign policy tools (Abrahamsson 2003).

The resulting ‘Washington Consensus,’ which emerged between the Bretton Woods institutions and the U.S. administration (Abrahamsson 2003, 37), was rooted in neoliberal ideology, which, in Immanuel Wallerstein’s (2005, 1265) sardonic formulation, meant that

loans to states in distress, to be beneficial, needed to be hedged by requirements that these states cut wasteful state expenditures on such deferrable items as schools and health. It was further proclaimed that state enterprises were almost by definition inefficient and should be privatized as rapidly as possible, since private enterprises were again almost by definition responsive to the “market” and therefore maximally efficient.

These shifts prompted a massive restructuring of loans and ultimately resulted in even closer scrutiny and tighter oversight of the debtor nations by international financial institutions. To reduce government deficits, countries were pressured to undertake economic restructuring that cut social expenditures, contained wages, and auctioned off state properties (Smith et al. 1999). Among the austerity measures – or conditionalities¹ - - applied by the Western banks to ameliorate the financial crisis, were “massive reductions in government spending, such as cancellation or reduction of social spending on welfare, education, health care” as well as reduction in foreign imports and increase of exports (So 1990, 119).

Thus were instituted the mainstays of neoliberal policy of the 1980s -- Structural Adjustment Programs (SAPs) and loans, which McMichael (2000b, 361) defines as “the reallocation of economic resources by a state, typically under conditions laid down by the Bretton Woods institutions, to pursue efficiency in the global economy by shrinking government expenditure, reducing wages, removing barriers to investment and trade, and devaluing the national currency.”

Originally stemming from the works of Friedrich von Hayek and Milton Friedman, an Austrian (and later British) and an American economist respectively, both of whom received Nobel Prizes in economic sciences in the mid-1970s, neoliberalism

¹ Although rather awkward semantically, the term ‘conditionality’ is routinely used in international development and political economy literatures to refer to specific, legally binding conditions that the lending institutions attached to SAPs. WB defines it as “the specific conditions attached to [the] disbursement of policy-based lending or budget support,” while independent researchers state it is the “the application of specific, pre-determined requirements that directly or indirectly enter into a donor’s decision to approve or continue to finance a loan or grant.” In either case, I use the term ‘conditionality’ as distinct from ‘condition’ to refer specifically to conditions attached to WB and IMF lending. For an in-depth discussion of the concept and practice of conditionality see http://aseed.net/pdfs/ASEED_Report_on_Worldbank_Conditionalities.pdf

became a consolidated, normalized, and institutionalized economic paradigm (Hay 2004) in Britain and the US, buoyed by “Thatcherism” and “The Reagan Revolution” (Overbeek and Pijl 1993). Propagated from the Chicago School of Economics and taken up by Reagan and Thatcher and then spreading across the globe, neoliberalism combined an unswerving ideological commitment to the free market and contempt for state intervention, an ideology in stark contrast with the Keynesian post-World War II interventionist consensus (Harvey 2005). With the demise of communism as a viable “living political movement,” neoliberal ideology became the new normalcy in the West and eventually worldwide – “self-evident [and] near impossible to contradict or even doubt” (Overbeek and Pijl, 1993, 1-2).

In his seminal volume, David Harvey (2005, 2) defines neoliberalism as a theory of political economic practices which promotes liberating individual entrepreneurial freedoms “within an institutional framework characterized by strong private property rights, free markets, and free trade.” The role of the state in that view, is to create and preserve an institutional framework conducive to such pursuits. As Philip Cerny and colleagues (2005, 12) put it, the key to understanding neoliberalism is the assertion that “the market is the core institution of modern – capitalist – societies and that both domestic and international politics and policy-making are (and should be) primarily concerned with making markets work well.” In practice, neoliberalism became a political project that (re)established conditions for capital accumulation and preserved the power of the transnational economic elite.

Neoliberal globalization has been “promoted, facilitated and (sometimes) enforced by political choices” of economic elites and national governments both

individually and through multilateral institutions like the WB, the IMF, and the WTO (Labonte and Schrecker 2007a, 3). Harvey (2005, 3) further suggests that proponents of neoliberalism “now occupy positions of considerable influence (education, media, corporate boardrooms and financial institutions, key state institutions (Treasury departments and central banks) and international institutions like the IMF, the WB, and the WTO... Neoliberalism, in short, has become hegemonic as a mode of discourse.”

McMichael (2000, 187) identifies the core features that characterize the neoliberal globalization project: 1. Consensus among global policymakers who favor market-based rather than state-managed development strategies; 2. Centralized management of global market rules by hegemonic states; 3. Implementation of these rules by powerful multilateral agencies; 4. Concentration of market and financial power in the hands of TNCs and transnational financial institutions; 5. Subjection of all states to global institutional and financial forces, but with considerable variation according to their position in the world system; and 6. Countermovement at all levels contesting unfettered market rule. In the broad context of the neoliberal globalization ‘project,’ policies promoted by transnational elites resulted in deregulation of labor and financial markets, liberalization of trade to allow greater mobility of goods and services, and privatization of many institutions and services. Referring to the sweeping changes brought about by the latest wave of economic globalization, Peter Dicken (2003, 580) observes that the “massive international flows of goods, services, and especially, of finance in its increasingly bewildering variety, have created a real world whose rules of governance have not kept pace with such changes.” The resulting economic governance system is a

‘confusion’ of governance structures and institutions, operating at different but interconnected scales (international, regional, national, and sub-national).

Global Governance and the State

One of the consequences of neoliberal globalization is a reported increase in both the number and degree of influence of non-state actors engaged in global governance. Richard Dodgson and colleagues (2002, 8) refer to this as the “hybridization of governance mechanisms,” – an apparent increase in the prominence of non-state actors in setting the agenda and mobilizing the resources to address certain issues. On the most basic level, governance is defined as purposeful action adopted to deliver solutions to common goals as agreed on by the actors, and encompasses all purposive collective action directed to attain some communal goal that may or may not be backed by formal authority. Although often used, this definition is lacking, as it skirts the issues of power by omitting the question of who is governed by whom and to what end. A more nuanced view of governance recognizes the role of

not only the formal institutions and organizations through which the rules and norms governing world order are (or are not) made and sustained – the institutions of the state, intergovernmental cooperation and so on – but also those organizations and pressure groups – from MNCs, transnational social movements to the plethora of nongovernmental organizations – which pursue goals and objectives which have a bearing on transnational rule and authority systems (Held et al. 1999, 50).

In a similar vein, James Rosenau states that governance “encompasses the activities of governments, but it also includes the many other channels through which ‘commands’ flow in the form of goals framed, directives issued, and policies pursued” (quoted in Weiss 2005, 68). Likewise, the highly influential Report of the Commission on

Global Governance, which was created with the expressed purpose of defining new ways for international cooperation in the wake of the Cold War, argues that the authority of the state and of intergovernmental organizations mediating interactions between states, has been eroding as a result of increasing global interdependence. At the same time, a multitude of other actors with varying degrees of authority have entered the world stage, at times playing roles formerly in the domain of the state, and at times carving out new roles (Wilkinson 2005, 9). The Commission, thus defines governance as the “sum of the many ways individuals and institutions, public and private, manage their common affairs. It is the continuing process through which conflicting or diverse interests may be accommodated and cooperative action may be taken. It includes formal institutions and regimes empowered to enforce compliance, as well as informal arrangements that people and institutions either have agreed to or perceive to be in their interest” (quoted in Weiss 2005, 70). While commendable for its humanitarian concerns, the Commission’s definition of governance does not reflect the power differentials and inequalities inherent in contemporary globalizing processes and governance structures.

It would be a mistake to adopt a non-critical definition of global governance, and it is crucial to recognize the historical context which underpins the power relations that comprise its multi-level structure (Soederberg, 2006). Susanne Soederberg (2006, 21) identifies three common assumptions that characterize the mainstream and non-critical conceptions of global governance: 1. It is seen as a by-product of globalization, which is itself considered as external and inevitable, and that has decreased the power and authority of states, 2. It is characterized by an absence of hierarchical power relations, and 3. Embracing common values that underpin global governance is beneficial for the

development of the South. She challenges these assumptions by suggesting that rather than being simply ‘caused’ by globalization, global governance is itself a product of the spread of neoliberal capitalism, which occurs between states as well as through international organizations.

Adoption of neoliberal policies worldwide however, is widespread due both to the lack of perceived alternatives and entrenched self-interests of ruling elites as well as tremendous pressure on governments by powerful international lending agencies (Miraftab 2004). Moreover, it is usually weak governments – economically and politically that “opt for decentralizing their responsibilities or decision-making power downward to local governments or outward to nongovernmental institutions” including community based organizations and for-profit private sector firms (Miraftab 2004, 94). Because neoliberal doctrine is deeply antithetical to state interventionist theories (Harvey 2005), this orientation abandons the support of ‘statist’ and ‘inward-looking’ strategies that characterized most policies of the development project of the 1960s and 1970s and promoted and strengthened capital-friendly and ‘outward-looking’ strategies (Arrighi et al. 2003). Under neoliberal dogma, the role of the state is reconfigured to strengthen market rule and minimize welfare provision (Harvey 2005). The resultant subordination of most states to the hegemony of private capital (Arrighi 1999), marks the transition to a ‘second modernity’ (Beck 1999), where the very idea of a sovereign nation-state is called into question.

Other studies in critical political economy also recognize that adoption of neoliberal policies worldwide results in a tremendous variance of responses, which nevertheless exhibit systemic features and can be described as ‘diversity within

convergence' (Cerny et al. 2005, 2). Philip Cerny and colleagues argue that globalization is a *political process* of convergence on neoliberal ideology and practices and the restructuring of "domestic political institutions and practices around the competition state" (Cerny et al. 2005, 2-3). Instead of a simply 'retreating' state, they describe a changing *mode* of state authority, at times drawing back and hollowing out, and at times expanding and deepening its various roles (Cerny et al. 2005, 6). The complex interaction of uneven and even incompatible trends that constitute globalization as a political process leads to the

growth of new multidimensional and multilayered forms of politics, above, cutting across, and below the nation-state, enmeshing states in uneven global political webs. Those webs involve both a newer and wider range of political playing fields – often called 'multi-level governance' – and of cross-cutting processes of politicking – which we call 'multi-nodal politics'.

Saskia Sassen suggests that globalization processes signal the withdrawal of the state from domestic governance, but obscure the accompanying transformations within states as well as state participation in creating new governance structures. The new actors are primarily – although not exclusively – private, and they have "absorbed some of the international functions carried out by states in the recent past" (Sassen 1999, 159). In fact, the latest wave of globalization has embodied "the relocation of national public governance functions to transnational private arenas and ... the development inside the national states ... of the mechanisms necessary to accommodate the rights of global capital in what are still national territories under the exclusive control of their states" (Sassen 1999, 159).

McMichael (1995, 37) introduces the concept of 'new colonialism,' suggesting that in the late 20th century, transformations of the global system led to an increase in the

power assumed by non-state actors in policing labor and enforcing market rules. Global SAPs enforced by the IMF and the WB, pressure from multilateral agencies and global firms, as well as stringent trade agreements led to the states increasingly surrendering “the organizational and ideological initiative to transnational forces.” McMichael further suggests that these trends unravel the century-long process of construction of citizenship that accompanied the formation of nation-states and undermine the system of entitlements that evolved alongside it. To understand the implications of these changes, McMichael posits that it is crucial to distinguish between *nation*-states, which are losing salience, and states, which are not in decline but are rather being transformed. Governance – as practice and agenda – itself is being relegated to actors operating above and below the state, and the state is becoming “more and more a transnationally organized one” (McMichael 1995, 38).

Neoliberal Globalization and the World System

As József Böröcz and David Smith (1995) point out, corporate ‘colonization’ of states is not a fundamentally new phenomenon, even if the forms that it takes currently – is. As Philip McMichael (2000, 671) puts it, “since capitalism has always been global, the current emphasis on globalization and ‘free trade’ needs to be explained as well as historically specified.” Immanuel Wallerstein (1974) first formulated his concept of the ‘world-system’ in the mid-1970s. Tracing the origins of a global economy to the European trading Empires that emerged in the 15th century, Wallerstein argued that the global system of trade and exchange connected the world into a capitalist world-system. The geographically dispersed and vast world-economies were “uneven chains of

integrated production structures dissected by multiple political structures” (So 1990, 177). In the networks of these emerging global markets, surplus was distributed in favor of those who were able to achieve monopoly and to expand and spread geographically, absorbing the mini-systems. By the late 19th century, for the first time ever, the capitalist world-economy became the first singular world-system that encompassed the globe.

The concept “dealt a fatal blow” (McMichael 2000, 668) to the ‘master concept’ of development by emphasizing “its misapplication as a national strategy in a hierarchical world where only some states can succeed.” Explaining world inequality was the concept’s main analytical concern, and it re-oriented the analytical frame of analysis of development by shifting the focus from the nation-states to the hierarchical system of states connected to each other through a single division of labor. The hierarchy of states is “expressed geographically, and understood phenomenally, in developmental terms (where core states monopolize the benefits of accumulation)” (McMichael 2000, 669). Mobility of nations into the core, periphery and semi-periphery is determined by their mode of incorporation into the capitalist world-system (Gereffi 2005).

What is ‘new’ about the global economy in the last half of the 20th century? In addressing this question, Gary Gereffi (2005, 161) identifies the “increasingly seamless web of international production and trade networks that girdle the globe” as the most prominent feature distinguishing this period. Peter Dicken (2003, 12-13) points out the co-existence of several sets of processes, namely internationalizing tendencies, which involve the “simple extension of economic activities across national boundaries,” and globalizing processes, which are distinguished by “functional integration” of such

internationally dispersed activities. He further argues that we are witnessing the “emergence of a new geo-economy that is *qualitatively different* from the past.

As discussed by Gereffi (2005), Wallerstein argues that the second half of the 20th century represents a typical Kodratieff cycle, with an A-phase of economic expansion occurring from 1945 to 1967-1973, followed by B-phase of economic contraction continuing to the present day. But while increased international trade, investment and finance mark this period as compared to the previous eras, it is the “deep integration” that goes beyond trade in goods and services and involves “*production* of goods and services in cross-border value-adding activities that redefine the kind of production processes contained within national boundaries” (Gereffi 2005, 163). This unprecedented reorganization of production and trade in the global economy was facilitated by transnational corporations (TNCs) that reached across borders in linking various processes into production networks (Dicken 2003; Gereffi 2005). To summarize Gereffi’s (2005) argument, contemporary international trade qualitatively differs from previous eras, particularly in the fragmentation of the international division of labor, which allows for formation of cross-border production networks for parts and components and the slicing up the value chain, which allows countries to capitalize on their comparative advantage and firms on their competitive advantage.

Neoliberal Globalization and Inequality

Immanuel Wallerstein (2005, 1268) argues that there is simply “no way in which, within the framework of a capitalist economy, we can approach a general equalization of

the distribution of wealth in the world.” A rich tradition in dependency studies operates from the same premise that the very existence of global capitalism is predicated on continual transfer of capital and resources from the periphery to the core. The cardinal idea of dependency theory is that the success of the First World and the underdevelopment of the Third World are not the isolated, separate stages of development but rather manifestations of the same historical process, -- the global expansion of capitalism (Gereffi 1983; So 1990). Underdevelopment “results at least partially from the structural integration of peripheral nations into the capitalist world economy on terms that are asymmetrical and exploitative in favor of the center countries” (Gereffi 1983, 13).

Proponents of neoliberal globalization argue that deregulation, privatization and liberalization of trade opens up opportunities for the Third World development and poverty reduction. Neoclassical economic theory postulates that international trade allows countries to specialize in the most efficient types of production and liberalizing trade enables economies to realize their comparative advantage. Since free trade allows for import of commodities and influx of capital, encourages entrepreneurship, and opens up new markets for export, liberalizing trade is thought to eliminate the handicap for countries with limited natural resources and accelerate development for those in the ‘lower’ stages. Robert Wade (2004) examines the evidence that undergirds the neoliberal argument that rising density of economic integration reduces extreme poverty and equalizes income distribution, and questions the empirical basis of the neoliberal argument. Evidence used by the WTO, the WB, the IMF and other multilateral economic organizations as the rationale for neoliberal policies seems to indicate that “more open

economies are more prosperous, and economies that liberalize more experience a faster rate of progress” creating a global level playing field “undistorted by state-imposed restrictions on markets” (Wade 2004, 567-568). Citing large margins of error in the WB’s data on poverty and inequality, inconsistent methodologies that make comparisons overtime invalid, and downward bias of certain estimates, Wade (2004, 579) argues that in reality, world inequality “measured in plausible ways is probably rising, despite China’s and India’s fast growth.” He further suggests that the rising integration of poorer countries into the world economy could not account for the allegedly positive trends. Wade concludes that the “need for deliberate international redistribution is underlined by evidence that world poverty may be higher in absolute numbers than is generally thought, and quite possibly rising rather than falling; and that world income inequality is probably rising too” (Wade 2004, 583).

Since its formulation in the mid-1970s, the world-systems perspective has provided profound insights into the structural determinants of a country’s capacity for economic growth and development. Contrary to the assertions of neoliberal economic theory that the global economy is an open system where movement up the income and wealth hierarchy is no longer constrained by the structure (Wade 2004), the world-system perspective maintains that a country’s position within the world-system is correlated with economic growth. From the world-systems perspective, the “possibilities open to a given country for capital accumulation or development are constrained by its structural positions within this division of labor and shaped by cyclical and secular trends in the evolution of the world system as a whole” (Gereffi 1983, 183).

To examine the theoretical postulates stemming from the world systems perspective empirically, David Snyder and Edward Kick (1979), for instance, use blockmodel analysis of trade networks, military interventions, diplomatic relations and joint treaty memberships within the world system from 1955 to 1970 to demonstrate the effects that a country's structural position within these networks has on economic growth. Their findings confirm significant and cumulative advantages of the core structural positions over the peripheral positions. Likewise, David Smith and Douglas White (1992, 886) use network analysis of international commodity trade data for 1965 to 1980 to empirically verify the persistence of core/semi-periphery/periphery structure of the world economy and argue that asymmetrical patterns of trade within the strata, particularly intracore, provide additional insight into "unequal exchange as a potential mechanism in the reproduction of global inequality and hierarchy." The authors also find that patterns of upward mobility within the semi-periphery are linked to particular types of international specialization, and point out the need for further examination of the role that politics and the state play in "determining development strategies and mediating international economic dependency" (Smith and White 1992, 887).

In fact, Volker Bornschier and Bruno Trezzini (1997) also argue that world structure is integrated not only economically but also politically and culturally. In their 1997 review of research on stratification and mobility in the world system these authors advance a conceptual construct of a "world market for protection and social order" as a model of the marketplace where "the interests of states, enterprises and populations are brought together" in a conflicting way (Bornschier and Trezzini 1997, 444). Aiming to explain the divergent trajectories of such semi-peripheral countries like Taiwan and

South Korea as compared to Mexico and Brazil, the authors argue that ‘social order’ and protection are a form of territorially bound public utility, and governments sell this public utility to both capitalist enterprises and its citizens. Thus, the interplay between internal social structures and country’s position in the international division of labor can account for the different patterns of mobility of semi-peripheral countries.

In a more recent study, Matthew Mahutga (2006) revisits the issues of structural inequality and mobility in the context of this new international division of labor, produced by the shift in manufacturing from developed to developing countries since the 1960s. Analyzing networks of trade for five commodity types spanning from “extraction based/labor intensive to production based/capital intensive” (Mahutga 2006, 1868) data for the period between 1965 and 2000, Mahutga aims to assess the persistence of the core-periphery hierarchical structure of trade and to establish whether the countries’ structural positions “remain unequal in levels of processing.” Expanding on the notion of a continuous rather than discrete nature of the core/periphery stratification (Smith and White 1992), the author uses measures of regular equivalency that allows him to identify actors who occupy equivalent positions in the network and relate with the other actors in the same way. The author finds a persisting trade asymmetry, where commodities with high levels of processing are traded between the core and the higher zones of the hierarchy for commodities with low levels of processing from lower zones. Moreover, he finds that with the exception of South Korea, Singapore, and Turkey, patterns of mobility into the more industrially sophisticated upper zones of the hierarchy overall do not support the claim that trade liberalization should accelerate mobility.

Finally, Mahutga and Smith (2011) are able to test hypotheses that allow them to differentiate between patterns of growth in the two different phases in the cycles of world-economic expansion and contraction. The authors build on Immanuel Wallerstein's (1976) assertion that during Kondratieff A phase of world-economic upswings, the rate of economic growth is faster for the core countries than either the periphery or the semi-periphery, because they are able to benefit from expansion. During the B phase however, when the world-economy enters a downturn, a change occurs that shifts the "relative profit advantage to the semi-peripheral nations" (Wallerstein 1976, 464, quoted in Mahutga and Smith 2011, 258). According to Wallerstein, the latest such shift occurred around 1967, when "select countries in the semi-periphery become the beneficiaries of the relocation of the global industries to non-core countries" (Mahutga and Smith 2011, 258). Indeed, the authors find that in the last three and a half decades of the 20th century, economic growth accrues more rapidly to the countries in the semi-peripheral positions. Moreover, the authors are able to draw some conclusions about the most upwardly mobile semi-peripheral countries in their sample – China, Spain, Thailand, South Korea and Indonesia, and argue that all five are "exemplars of state led development" (Mahutga and Smith 2011, 270). Suggesting that an 'active state' played a predominant role in these countries' upward mobility, the authors conclude that the structure of the world-economy "systematically favors some and not others, it is also likely that the structure simply sets broad constraints within which there is a significant degree of agency for social actors to improve upon the country's position, so long as these actors are attuned to the strengths and weaknesses such a position entails" (Mahutga and Smith 2011, 270). These empirical findings however, bring forth a theoretical question of great consequence, mainly,

whether or not such upward mobility measured in the growth of manufacturing activity of semi-peripheral countries translates into positive developmental outcomes.

World systems scholars emphasize the persistence of world inequality, a theoretical orientation originating in Wallerstein's (1974) original assertion that underscores the advantages of uneven accumulation derived by the core. Citing previous studies of income divergence, Roberto Korzeniewicz and Timothy Moran (1997) for instance, note that most of the studies on the political economy of development converge on being skeptical of the equalizing forces of the market. But they also argue that where there has been an observable pattern of heterogeneity in the economic performance of peripheral and semiperipheral countries, it can be attributed to differing state policies. While world inequalities persist, the countries' status in the world system is "contingent upon an uneven ability of states and enterprises in rich and poor nations to engage in innovation" (Korzeniewicz and Moran 1997, 1008). Invoking Schumpeter, the authors state that "the very implementation of innovative practices initiates their diffusion, their eventual routinization, and the creation of new technological, organizational, and institutional rigidities" (Korzeniewicz and Moran 1997, 1008). In their own research, the authors find that for the period under consideration, while between-country inequality grew, that is not the case for within-country inequality. Using the decomposition of the Theil index, Korzeniewicz and Moran (1997, 1017) find that between 1965 and 1992, between-country inequality rose to 86 percent while within country inequality declined to 14 percent. While the world systems approach is consistent with the findings of growing between-country inequality, other theoretical perspectives might argue that such findings simply reflect the failings of some states to adopt the market-oriented strategies of

growth. Future studies should make it clear whether adoption of market oriented strategies will deliver on their allegedly great equalizing promise.

Giovanni Arrighi and colleagues (2003, 4) revisit the issue of income inequality and find that despite trends of industrial convergence, it “has *not been* accompanied by a convergence in the levels of income and wealth enjoyed on average” by the residents of what they call former First and Third Worlds. The authors address and seek to clarify a confusion in terms, pervasive in both popular and academic discourse, that conflates industrial with wealthy and non-industrial with poor, and thus, most problematically – industrialization with development. Using national GNP per capita and the proportion of a country’s GDP accounted for by manufacturing, the authors compare the income indicator and the industrialization indicator to gauge both the industrialization gap and the income gap between the First World and the Third World countries. Their findings confirm that there is a widespread tendency toward a narrowing of the industrialization gap – a result of both Third World successful industrialization and First World de-industrialization. However, in contrast to the industrialization convergence tendency, the authors find no such corresponding tendency in income levels. As Arrighi and colleagues put it, “in spite of widespread convergence in industrialization (the generally prescribed means of Third World development efforts) there was no narrowing of the income gap between First and Third World (the generally accepted objective of those efforts)” (Arrighi et al. 2003, 10-11). The authors further argue that these results cannot be explained by heterogeneous national experiences, but rather are the result of the absence of “any positive correlation between industrial and income performance.” Building on Schumpeter’s theory of innovations and the models of economic development it inspired,

the authors describe a self-reinforcing “virtuous circle” (Arrighi et al. 2003, 18) of high income and innovations, whereby innovations in wealthier countries yield abnormally high rewards relative to effort thereby improving the environment for further innovations. Conversely, the poorer countries reap few, if any, benefits of these innovations as they become routinized, and as a result, “by the time the “new” products and techniques are adopted by the poorer countries they tend to be subject to intense competition and no longer bring high returns they did in the wealthier countries” (Arrighi et al. 2003, 18). Indeed, in the past, world systemic hierarchies reflected advantages that industrial technology affords and tended to overlap with the commercial strength and military power of the states. As the hierarchy privileges industrial technology, it has tended to correlate with state commercial and military power. However, “when industrial and informational technologies are organized trans-nationally by strategic corporate alliances, and/or the fruits of such technologies are no longer guaranteed to their home states and citizens, world-systemic hierarchies coincide less and less with states and/or their labor relations” (McMichael 2000, 670).

In response to Arrighi, Silver, and Brewer’s argument, Glenn Firebaugh (2004) advances a critique of their findings on three grounds: 1. That empirical findings suggest that income inequality is indeed declining across nations, 2. That their claim that the object of development was reduction of inequality between nations is erroneous, and 3. That they misinterpreted the results of their central model. In defense of their position, Arrighi, Silver and Brewer (2004) respond with a rebuttal that refutes Firebaugh interpretation of their statistical model as well as measures used to access income inequality. But it is the second point of criticism that requires additional attention. In

regards to the second point in particular, Firebaugh (2004, 100) argues that while Arrighi and colleagues hold income *convergence* between the First and the Third World to be the objective of development, income *growth* could be considered as the developmental goal. He further contends that development policies “are considered to be successful if they produce sustainable income growth that raises the living standards among the masses.” Arrighi and colleagues (2004, 84) respond in part, that focusing “exclusively on national income growth, without paying attention to inter-country income inequality, may be good enough for economists but not good enough for sociologists.” Statistical and normative disagreements aside, this exchange puts into stark relief the limitations that concepts like income, income growth, or income convergence have in capturing the essence of the inequality.

Global Commodity Chains and Production Networks

One of the central concerns in critical literature on globalization revolves around the role of nation-states as the most salient actors on the global stage and the fundamental units of analysis. But while world systems theory offers a framework that is trained on the state or systems of states as units of analysis, as some scholars point out, “it is a framework that has yet to act as a significant guide to empirical work on contemporary problems of development” (Henderson et al. 2002, 437). What Jeffrey Henderson and colleagues are referring to is the concern that excessive attention to the state (or systems of states) level of analysis “is becoming less useful in light of the changes occurring in the organization of economic activities which increasingly tend to slice through, while still being unevenly contained within, state boundaries” (Henderson et al. 2002, 437). The

theoretical questions of global governance bolster the need to reexamine canonical institutional paradigms as well as local or regional frames of analysis (Gereffi 2005). Rather than focusing exclusively on countries or firms or even world-systems as units of analysis, an approach which highlights transnational linkages between the multitudes of global governance actors can shed light on the theoretical questions of how global governance structures are organized and how they change. In contemporary examinations of global governance, institutional paradigms and local or regional frameworks are no longer sufficient to understand power, structure and the unequal distribution of gains from globalization, and must be addressed by paying attention to transnational governance structures (Gerreffi 2005).

If territorial states and systems of states no longer 'contain' globalization processes, what other analytical constructs shed light onto contemporary processes and global structures? Saskia Sassen (2002, 9) for instance, identifies global cities as having created a "complex organizational architecture that cuts across borders and is both deterritorialized and concentrated in cities." Peter Taylor (2004) as well identifies cities – particularly former Third World cities -- as presenting a challenge to the basic core-periphery model in that their rise is becoming increasingly decoupled from the processes of national economic development. Both Taylor and Sassen see the world city system as increasingly decoupling from the world system at large. On the other hand, literature on dependent urbanization (Smith 1987) argues that cities are embedded in their respective national contexts, depend on national development and thus reproduce the hierarchy of the world system at large (Alderson and Beckfield 2004) or conversely, bolster the structure of the world system (Smith and Timberlake 1995). More recently, Mahutga and

colleagues (2010, 1940) offer a third alternative of partial convergence in the world city system in the rise of semi-peripheral cities in East Asia in their study of city-to-city network of global airline passenger flows, finding them “rising to challenge the historical dominance of those located in core countries.”

In the 1990s, a new conceptual framework emerged that provided insights into the type of actors who can exercise power in the networks of global production and distribution and raised further questions as to the mechanisms through which power is exercised. The concept is known in its various formulations as global commodity chains (GCCs) (Gereffi and Korzeniewicz 1994), global value chains (GVCs) (Gereffi and Kaplinsky 2001), and global production networks (GPNs) (Dicken et al. 2001). While these concepts differ somewhat in the location of their analytical focus, emphasizing internal structure and drive (GCCs) or external context (GVCs) of supply chains, or governance structure of production networks (GPNs), they all aim to describe the range of activities comprising the chain of processes that take a product or a service from its conception to production to distribution and to understand how they work and are governed. The GCC approach advanced by Gary Gereffi, operationalizes some of the cross-border processes and transactions that the world systems static spatial categories fail to capture and is able to “grasp the reality of the ‘new’ forms of industrial organization that had become the objects of scholarly attention during the 1980s and 1990s” (Henderson et al. 2002, 440).

As Gereffi and colleagues (1994, 2) define global commodity chains, they consist of “sets of interorganizational networks clustered around one commodity or product, linking households, enterprises, and states to one another within the world-economy.

These networks are situationally specific, socially constructed, and locally integrated, underscoring the social embeddedness of economic organization.” The four main features of GCCs are 1. a value-added input-output structure, 2. a territoriality, 3. a governance structure, and 4. an institutional framework (Dicken 2001). Explicating commodity chains allows us to analyze the processes of production, distribution, and consumption and understand how these processes are shaped by economic and social relations. The use of the chain metaphor emphasizes the “sequential and interconnected structure of economic activities, with each link or element in the chain adding value to the process” (Henderson et al. 2002, 439). However, the GCCs approach is criticized sometimes (Henderson et al. 2002) for its somewhat problematic bimodal typology of producer-driven vs. buyer-driven GCC governance structure, and for its lack of concern with the historical constraints and social relationships embodied in global chains as well as with the specific social and institutional contexts in which the chains are embedded at the national level (Henderson et al. 2002).

Arguably, the most potent feature of the GCC approach is that it focuses explicitly on cross-border economic processes. As Jeffrey Henderson and colleagues (2002, 441) summarize, “interfirm networks link societies which exhibit significant social and institutional variation, embody different welfare regimes and have different capacities for state economic management: in short, represent different forms of capitalism.” The GCCs approach “carries forward the task of transcending the limitations of state-centered forms of analysis and in so doing highlights the restrictions on firm – and thus economic and social – development that arise from the structure of corporate power embedded in the intra and inter-firm networks which circle the globe” (Henderson et al. 2002, 442).

However, neither production nor distribution processes are vertical or linear. Instead they can be conceptualized as network structures with multiple intricate links – “horizontal, diagonal, as well as vertical – forming multidimensional, multi-layered lattices of economic activity” (Henderson et al. 2002, 442). Using the ‘chain’ metaphor to describe these horizontal, diagonal and vertical flows that characterize the production processes, creates an image of a linear process that fails to reflect its complexity.

One of the advantages of GPNs theoretical construct over the GCCs formulations is that it recognizes the salience of the question of power in the governance structure of production networks. Henderson and colleagues (2002) identify three forms of power significant within the GPNs: 1. Corporate power which is expressed in the ability of the lead firm within the GPN to influence decisions consistently in its own interest; 2. Institutional power, exercised by either the state or inter-state actors, the Bretton Woods institutions, various UN agencies, and credit rating agencies; and 3. Collective power, expressed in the actions of collective agents who seek to influence firms, governments or international agencies either locally or in regards to specific interests or issues.

Global Health

The International Sanitary Conference of 1851 can be considered the first event that institutionalized the shift from national to international governance of infectious diseases. It was organized and hosted by the French Government, which sought to standardize international quarantine regulations against plague, cholera, and yellow fever (Stern and Markel 2004). Alexandra Stern and Howard Markel report that the practical

results of the gathering of representatives from 11 European countries were limited because of “scientific disagreement about disease etiologies, coupled with the mercantilist prerogatives of participating nations to protect their boundaries and commerce” (Stern and Markel 2004, 1475). These setbacks notwithstanding, the inaugural conference marks the first efforts at creating multinational health organizations devoted to controlling infectious diseases.

With the inauguration of the World Health Organization (WHO) in 1948, a new definition of health emerged. This called for not just the “amelioration of disease but also... as the promotion of universal physical, mental, and social well-being” (Stern and Markel 2004, 1477). The WHO constitution asserts that the “health of all peoples is fundamental to the attainment of peace and security and is dependent upon the fullest co-operation of individuals and States.”² By late 1970s, in an attempt to move beyond disease-specific approaches to public health, the WHO declared that “the main social target of governments and WHO in the coming decades should be the attainment by all the citizens of the world by the year 2000 of a level of health that will permit them to lead a socially and economically productive life” (quoted in Stern and Markel 2004, 1477). As Stern and Markel put it, international health organizations have always “lacked the supranational power to require nations to follow internationally mandated health conventions” (Stern and Markel 2004, 1478).

In 1974, when the WHO launched its global Expanded Programme on Immunization (EPI)³, vaccines were available for the six target diseases (diphtheria,

² Constitution of the World Health Organization, available at http://www.who.int/governance/eb/who_constitution_en.pdf

³ EPI or Expanded Programme on Immunization was established in 1974 through a World Health Assembly resolution to capitalize on the successful eradication of smallpox. Traditional EPI

tetanus, whooping cough, polio, measles, and TB), but only five per cent of the world's children were immunized against them (Hardon and Blume 2004). By 1990, the WHO (1996) reported that 80 per cent of children under the age of 13 months worldwide were immunized against polio, TB, and measles. Arguably the WHO's most impressive achievement was the successful eradication of smallpox, which culminated in 1977, with the last naturally occurring case of smallpox in Somalia (Stern and Markel 2005). It is estimated that by achieving the eradication of smallpox, the US "recoups its contributions to the smallpox eradication programs once every twenty-six days (Archibugi and Bizzari 2005, 41).

In 1978, an International Conference on Primary Health Care produced a document which became known as the *Alma-Ata Declaration* and was unanimously adopted by all WHO member countries. The concepts framing the Primary Health Care (PHC) initiative were synthesized during the 1970s by the WHO and UNICEF, and were based on the success of a handful of programs delivering basic but comprehensive health services to the poor rural populations in China, Tanzania, Sudan, and Venezuela (Hall and Taylor 2003).

World governments adopted PHC as their "official blueprint for total population coverage with essential PHC services. Goals and targets were set for Achieving Health For All by the year 2000" (Hall and Taylor 2003, 18). Those goals included guidelines on what percentage of GNP was to be spent on health, targets for weight and nutrition for children, access to water and sanitation access to pregnancy and childbirth services as well as child care. The concept of PHC, which was thought to be "based on not only

vaccines included BCG, DPT, oral polio and measles, with a later introduction of HepB, Yellow Fever (for countries where the disease is endemic), and Hib conjugate vaccine (in countries with a high disease burden).

medical, but also social interventions governed by the communities and by the citizenry” (Navarro 2008), reflected the most powerful idea framing the Declaration. The Alma-Ata Declaration was a consensus document that went through multiple drafts and ultimately was based on a minimum common agreement among the participating governments. In part, the Declaration asserted that

health, which is a state of complete physical, mental and social wellbeing, and not merely the absence of disease or infirmity, is a fundamental human right and that the attainment of the highest possible level of health is a most important world-wide social goal whose realization requires the action of many other social and economic sectors in addition to the health sector (Declaration of Alma-Ata, 1978).

It is important to remember that the conference in Alma-Ata and the resulting Declaration were products of a socio-historical juncture where socialized medicine was a reality in large countries like the USSR and China and the “pre-eminent role of government in the provision of health, education and welfare services was taken for granted” (Hall and Taylor 2003, 17), and where a whole cohort of newly independent countries were formulating their policies on healthcare and other services. But the conditions of global inequality that gave rise to the political goal of the “Health for All” principle were not acknowledged, and as Abhay Shukla (2008, 164) puts it, “the massive structural barriers to people’s health, continued extraction of resources from the poor, the powerful vested interests responsible for widespread medical deprivation and exploitation are hardly mentioned.” Idealistic intentions of the Declaration notwithstanding, because the conditions that stood in the way of achieving “Health for All” were neither identified nor challenged, Alma-Ata goals remained out of reach. The Declaration appealed to the powers that be with a message that seemed to resonate at the time, but being normative

and prescriptive, it “[gave] remedies without clearly naming the maladies” (Shukla 2008, 164).

Gradually, the growing tendency of prioritization of health based on largely ‘technical’ as opposed to social or democratically set grounds (Green 2008) that crystallized in the early 1980s, became increasingly framed by the growing prominence of neoliberal ideology and the its attendant belief that solutions to global health problems lay in “structural reform, based on a market ideology” (Green 2008, 155). By the late 1980s and early 1990s, the salience of PHC was replaced by Health Sector Reform, which abandoned the ideal of health as a right and propounded instead, a belief in the economic benefits of better health of populations.

In 1993, the World Bank released its World Development Report which bears the subtitle *Investing in Health* that signaled a paradigm shift from treating health and access to care as a human right to understanding health as an investment and a path to development. This influential report promised that millions of lives and billions of dollars could be saved (World Bank 1993) by embracing Health Sector Reform. The Report promotes two overarching strategies: limiting investment by the state in health services geared to the poor, and greater private sector involvement (Muntaner et al. 2007) The report emphasized the cost effectiveness of select health measures, such as user fees, private health insurance, and cost recovery and framed health as an investment and focused on economic benefits that improved health promises. Thus, health improvement was seen, as John Hall and Richard Taylor put it, “in terms of improvement of human capital for development, rather than as a consequence and fruit of development” (Hall and Taylor 2003).

Solidifying this shift, the WHO's 2001 Commission on Macroeconomics and Health (CMH) put forth a Report titled *Investing in Health for Economic Development*. The Report was commissioned by the WHO director general to "debate, research, and reach conclusions about the *role of health in economic development*" (Feachem 2002, 87), reportedly under pressure from the governments who contribute the most to WHO. The Commission was chaired by Jeffrey Sachs, funded by the Gates and the Rockefeller Foundations, the governments of Luxemburg, Ireland, Norway, and Sweden, and supported by the UK Department of International Development and the UN foundation. It consisted of 18 commissioners (4 from the health sector, seen as 'special pleaders' (Feachem 2002, 87) for greater investment in health, and 14 others prominent in economics, finance, development, trade, and political leadership, having worked for WB, IMF, WTO, OECD or served as a director of a private company (Katz 2007).

One of the more significant shifts in the logic of dominant discourse on health at that time was the reversal from treating poverty as a major determinant of disease to viewing disease as a hindrance to economic development. Reducing mortality and morbidity from endemic diseases, according to the report, would increase life expectancy, workforce productivity, facilitate economic growth and attract investment in the poor economies (WHO 2001). As Howard Waitzkin (2003, 523) summarizes this shift, the report changes the emphasis from "the determinants of disease, such as class hierarchies, inequalities of income and wealth, and ethnic origin and racism." Abandoning the achievements of Alma-Ata, the CMH report advocates a revival of a vertical approach to disease eradication, rather than building or shoring up the comprehensive primary health care programs in the poor countries. Making the argument that drastic improvements in

health can be had without challenging the status quo, the CMH report frames health in terms of economic productivity. As Illona Kickbush (2002, 135) summarizes the report's ideological orientation, it is essentially about "how cheap it would be for the developed world to generate such enormous health benefits in the developing world and how great the contribution to global economic growth would be that follows."

There is no shortage of thoughtful critiques of the CMH report and the ideological shift that it reflects. Alison Katz (2007, 381) asserts that the CMH report "ignores macroeconomic determinants and other root causes of both poor health and poverty; it reverses public health logic and history; it is based on a set of flawed assumptions; and it reflects on particular economic perspective to the exclusion of all others" – the neoliberal approach. She argues that if implemented, the recommendations contained in the CMH report are "likely to be harmful rather than merely ineffective" (Katz 2007, 383), since neoliberal policies that support the status quo of extreme wealth concentration and conditions in health care under which "profits are privatized and losses and debts are nationalized" (Katz 2007, 388) are equivalent to trying to fill a bucket that has holes in it rather than repairing the bucket.

Debabar Banerji (2007, 423-424) goes as far as calling the CMH report a new form of colonialism and imperialism, stating that instead of

giving primacy to the people in shaping their health services, the CMH calls for "donor's" impositions on the world's poor of prefabricated, selectively chosen, market- and technology-driven, externally monitored, and dependence producing programs.

Indeed, three and a half decades after the global community put forth the vision of health equity in Alma-Ata in 1978, the trends of growing inequality in various health outcomes worldwide (Labonte and Schrecker 2007a) suggest that the ambitious goal of health for

all is even further from becoming reality. Ample evidence suggests that the neoliberal policies had a profound negative effect for health of populations and health services not only in the most vulnerable countries of sub-Saharan Africa, but also the Eastern European and Latin American countries (UNDP 2003; Banerji 2007), who have embraced the “policy package of neoliberalism” (Smith et al. 1999, 5) most wholeheartedly.

Labonte and Schrecker (2007b), for example, enumerate a number of factors they term ‘social determinants of health’ which underscore the profoundly global nature of health in the context of neoliberal globalization: trade and financial liberalization, debt crisis and economic restructuring, the global reorganization of production and labor markets, and marketplace effects on health systems, among others. These issues are as diverse as the effects of the conditionalities that were attached to the World Bank’s SAPs and the resultant reduction of public expenditure on health care in many developing countries (Barlow 2002; Labonte et al. 2004; Navarro 2007). Labonte and colleagues for instance, cite a UNICEF study that found that adjustment policies that were required of the national governments as preconditions for receiving assistance from the WB or IMF, “had the effect of reducing such basic indicators of child welfare as nutrition, immunization levels and education” (Labonte et al. 2004). Another example of effects of the global level policies is the disastrous consequences of the WTO’s Trade Related Aspects of Intellectual Property Rights Agreement (TRIPS) on availability and affordability of essential drugs (Oxfam 2006; da Silva 2008).

One of the possible responses to the failings of the global order is a conscientious attempt to reconceptualize global health, spearheaded by select international agencies and

non-governmental organizations. Such approaches seek to refocus the international community's attention on social and economic conditions that underpin most of the world's persisting health problems (Labonte and Torgenson 2005), including pandemics of infectious, communicable and vaccine preventable diseases. Citing increasingly porous borders and growing cross-border activities, such reconceptualizations stress the *global* nature of public goods such as communicable disease control and assert that many public health goals can no longer be achieved by domestic policy action alone (Kaul and Faust 2001) or even international efforts which focus narrowly on individual national contexts.

Governments face two types of challenges as they undertake infectious disease control: horizontal challenges, which arise between states and vertical challenges, which are inside their territories. Neither of those challenges is easily addressed without cooperation between states. As David Fidler points out, "unilateral efforts have only "limited impact when the source of the problem is beyond national jurisdiction" (Fidler 2003, 285). It is also useful to distinguish three types of governance responses to globalization: national, international, and global. National response occurs when the state acts within its own borders, international governance involves states cooperating with each other to confront global challenges, and global governance engages states, international organizations and various non-state actors such as MNCs, NGOs and PPPs (Buse 2000; Dodgson 2002; Fidler 2003). Fidler (2003) documents three horizontal international regimes: classical (represented by International Sanitary Conventions of the 19th century), organizational (accompanied by the creation of international health organizations such as the WHO), and the trade regime (represented by the General Agreement on Tariffs and Trade). Fidler further argues that the transition from the

classical to the trade regime is particularly pronounced for infectious diseases. In turn, vertical international governance strategies (focusing on vertical public health strategies) seek to address the challenges that governments face within the state's territory. Fidler outlines three such vertical regimes: the soft law, the environmental, and the human rights regimes. The soft law regime represents non-binding policies and guidelines formulated by international health organizations for adoption by states. The environmental regime stems from international environmental laws that compel states to address environmental issues that lead to public health problems. Finally, the human rights regime seeks to impose obligations on governments for fair treatment of persons within their territories (Fidler 2003).

It is crucial to underscore the *global* nature of public health, particularly in reference to vaccine preventable diseases. In fact, there are two distinct features of this global nature that require explication. The first aspect is epidemiological and recognizes that diseases, particularly the infectious diseases, spill across national borders and spread with remarkable speed (Garrett 2000; Dodgson et al. 2002; Davis 2005). As Garrett (2000, 8) puts it succinctly, "... the idea that the health of every nation depends on the health of all others is not an empty piety but an epidemiological fact." Be it the resurfacing of old diseases or the appearance of new ones, increased trade and travel or massive migration, diverse populations across the globe are linked inextricably through both health and disease. Consequently, increasingly porous borders and growing cross-border activities mean that many public health goals, such as communicable disease control, can no longer be achieved by domestic policy action alone (Kaul and Faust 2001) or even by international efforts which focus narrowly on individual national contexts.

Thus, in contrast to national or even international health, global health – and global health governance – is marked by an increased non-state actor involvement (Fidler 2003) and appearance of new forms of governance, as well as formation of cross-border alliances between states.

The second aspect of the global nature of public health stems from the recognition of the global determinants of health and – in turn – health policy, particularly in the context of neoliberal globalization (Labonte 2004; Navarro 2007). Macro-level structures and policies, ranging from the organization of production and trade in pharmaceuticals to the conditionalities attached to SAPs, all have a profound effect on both health and health policies in communities across the globe.

Additionally, as Vicente Navarro (2007, 9) aptly points out, neoliberal policies such as privatization of health care and health insurance, support of a biomedical model of medicine and hospital-centric model of care and so on, could not have taken hold worldwide had it not been for the “alliance of the dominant classes of the rich countries with those of the so-called ‘poor’ countries. The promotion of neoliberalism in the health sector is supported not only by the dominant classes of the North, but also by the dominant classes of the South.” Navarro contends that the states remain important, and they are not mere instruments of the economic elites, but are rather subject to pressures and impacts from a range of other actors and power groups with various degrees of influence.

Such realities necessitate a systematic review of the global health situation, and invite an investigation of the specific mechanisms through which power and inequality are instituted in global economic, political, and social structures and processes.

Provision of health services globally is no longer in the exclusive domain of nation-states and the actors involved include citizens, governments, manufacturers of pharmaceuticals, supranational organizations, financial institutions, and trade regulating authorities, intertwined in a web of often conflicting interests. Vaccine-preventable diseases in particular entangle these state and non-state actors in coordinating their concerted efforts to contain diseases which, by definition, can be prevented.

Global Governance of Vaccine Preventable Diseases

Vaccines embody the singular most potent promise of biomedicine – disease prevention -- and are “powerful medical interventions that induce powerful biological, social, and cultural reactions” (Stern and Markel 2005, 612). Although there is evidence that some forms of inoculation were practiced in Africa, India and China long before the 18th century, its modern history begins in Great Britain. In 1796, a British country doctor Edward Jenner sent a manuscript to the Royal Society of which he was a Fellow, describing his experiments inoculating persons with extracts from cowpox lesions. He claimed that such inoculations offered protection against smallpox, a highly infectious disease that was more deadly and persistent than cholera and plague. His manuscript was returned and he was advised not to pursue such wild ideas if he valued his reputation. Undaunted by the chilly reception, Jenner proceeded to self-publish his manuscript and popularize the idea of inoculation with the British aristocracy, realizing that his ideas needed the patronage of the powerful in order to spread. Jenner’s efforts succeeded, and by 1803 the Royal Jennerian Society was established, boasting the King and Queen as patrons and the Prime Minister and the Archbishop of Canterbury as Vice-Presidents.

(Saunders 1982). Funds poured in from Britain's two most powerful financial institutions – the East India Company and the Corporation of London -- and thus began the Western world's crusade to vanquish infectious diseases through vaccination (Wilkenstein 1992). Immediately introduced in the military and spreading through the empire from Gibraltar to India, vaccination became the vehicle of the British state in public health as much as in military and imperial affairs. Vaccinating infants against smallpox became compulsory in England in 1853, in Netherlands in 1871, in Germany in 1874, and in France in 1902 (Blume et al. 2013). Through military medicine and via colonial exploits, the practice of vaccination has spread rapidly from Britain to Spain and France and Russia, and on to Asia and the Americas, becoming the first successful large scale international effort that – eventually, 180 years later -- resulted in eradication of a deadly infectious disease – smallpox.

It is also important to keep in mind that these scientific, medical, and public health initiatives were deeply entangled with colonialism. For instance, cholera was investigated in India and Egypt by European missions; the insect-vector transmission of yellow fever theory was tested in the wake of the US occupation of Cuba and Panama Canal (Stern and Markel 2004, 1475). Furthermore, some interventions reflected racist conceptions about health and race and ethnicity, such as perceptions of some immigrants as disease carriers in the US (Stern and Markel 2004, 1476). In colonial India, vaccination had become “an enactment of British imperialism penetrating, contaminating and possessing the body of India” (Lee and Fulford 2000, 14). Concerned with infectious diseases and how it affected their personnel, the British established about 15 vaccine institutes in India, beginning in the 1890s (Madhavi 2005). Indians however did not view

vaccination as a universal blessing, but rather resisted it because it violated their religious beliefs and it branded them as subjects of a colonial power. Gandhi for instance, declared it ‘a filthy process... little short of taking beef’ (quoted in Lee and Fulford 2000, 16). In fact, up until 1947, after which vaccination was made compulsory by the newly Independent Indian state, refusing immunization was actually a resistance strategy of non-cooperation.

The history of vaccination reflects its profoundly international nature. As a measure of public health, vaccination practices curbed epidemics, but as a matter of political practice, they afforded states a powerful mechanism of population control. As outcomes of the 19th century sanitary conferences, countries routinely imposed quarantines and surveillance of travelers in an attempt to prevent spread of infectious diseases across national borders (Blume et al. 2013). During Cold War for instance, both the US and the USSR set up disease eradication campaigns “in the very territories over which these two fought for influence or domination: Africa, Eastern Europe, South America, and Southeast Asia. These programs sought to win the hearts and minds of the indigenous peoples, whilst rendering them less infectious and so more easily governable” (Lee and Fulford 2000, 18).

These and other initiatives were often aimed at “improving the health and productivity of laboring populations and enhancing commercial and territorial dominion” (Stern and Markel 2004, 1475). According to Stern and Markel, these international efforts of spanning the 1850s to 1930s influenced international health and policy in numerous ways, including dissemination of scientific theories and harmonization of medical procedures, formulation of international quarantine regulations and medical

inspection of travelers and goods, and disease surveillance methods as well as disease classification (Stern and Markel 2004, 1476).

History of the final eradication of smallpox presents another fascinating story that involved international cooperation in battling a vaccine-preventable disease. In 1959, at the height of the Cold War, after vaccinating its entire population, the Soviet Union offered Sabin vaccine to any country that wanted to take it. By 1960, 50 million people were vaccinated across the globe (Music 2010) until finally in 1980, the WHO declared victory over smallpox. While attempts to eradicate the disease have been ongoing worldwide, it was the WHO operation, fueled by the initial donation from the Soviet Union that mobilized the resources and the political will to coordinate and execute the eradication campaign. Through the network of consultants worldwide, the WHO provided assistance to national containment, surveillance and vaccination activities, but progress was intermittent until in 1966 the World Health Assembly committed roughly \$ US 2.5 million for an intensified eradication effort (Henderson and Moss 1999). In the end, two particular measures proved to be particularly important for the success of the eradication effort. Because vaccines were produced in many countries, the first measure established international vaccine testing centers to ensure that all vaccines in the program met accepted standards⁴. The second was the switch to measuring progress not in terms of vaccinations performed but in tracing incidence of smallpox and verifying its decline (Henderson and Moss 1999). When in 1980 the World Health Assembly announced that naturally occurring smallpox was eradicated globally, the international community had spent an estimated \$ US 300 million, while the savings resulting from vaccination and quarantine measures are about US \$ 1 billion annually.

⁴ Incidentally, only about 10% of vaccines tested met the accepted standards.

The last two decades of the 20th century gave rise to a number of ambitious global immunization initiatives. The Universal Childhood Immunization (UCI) initiative was launched by UNICEF and the WHO in 1984 and set a goal of achieving universal childhood immunization by the year 1990 by accelerating the EPI. When at the 1990 World Summit for Children UNICEF announced that the UCI 80% immunization target had been reached, the initiative was declared a success. And yet the averaged results did not reveal that coverage was not reached in 107 countries, that “national success can conceal major pockets of failure, nor that coverage rates may differ significantly between the six antigens” (Hardon and Blume 2004, 347). In the midst of ‘donor fatigue’ that set in after the UCI objectives were purportedly met, another immunization campaign was initiated in 1988 at the World Health Assembly with the aim of eradicating polio by year 2000. Even though polio was already included in the EPI vaccination schedule, this refocusing of the global communities’ efforts to eradicate a disease entirely held a certain appeal for both the international health policy-makers and donors. This vertical, disease-oriented approach achieved an impressive measure of success and by 2003, the majority of only 700 reported polio cases were from the six polio endemic countries⁵ (WHO 2004). But at the same time, this success had an unintended consequence of diverting some international aid from other immunization efforts and health activities and at the global level, “shifted attention away from achieving equity in access to the six basic EPI antigens” by siphoning away donor funds (Hardon and Blume 2004, 348). Both the UCI and the Eradicate Polio campaigns resulted in further taxing the already overburdened system and skewing health services towards immunization campaigns, often aimed at eradicating a single disease, sometimes at the expense of other basic and preventative

⁵ Nigeria, India, Pakistan, Niger, Afghanistan, and Egypt.

health services. Another large scale global vaccine initiative, the Children's Vaccine Initiative (CVI) took shape in 1997 and aimed to encourage improvement of existing vaccines and to accelerate access to new vaccines to children in developing countries. It was formulated and promoted by senior UNICEF personnel and the Rockefeller foundation and later co-sponsored by the World Bank and UNDP. The initiative's launch caused considerable tension between various country donors to the UNICEF and WHO, as some felt that it again drew resources away from other underfunded vaccine programs and was "too focused on finding technological solutions for health problems in developing countries" (Hardon and Blume 2004, 350). While this initiative was not very successful in mobilizing needed resources, it did pave the way for the involvement of the multi-national pharmaceutical industry in new vaccine development by creating a potential for broader access to developing country markets.

After the Alma-Ata Conference and the resulting Declaration, the right-to-health ideology in global health underscored the need for preventive healthcare and strong health-delivery systems, but in the 1990s the paradigm shifted away from health as a right and increasingly to searching for a technological silver-bullet as an answer to health concerns. CVI emerged in the context where emphasis had shifted from viewing health as a right to considering it an investment and searching for the most cost-effective interventions. In that, CVI's approach echoed the WB 1993 *Investing in Health* report.

History is replete with triumphant accounts of vanquished plagues and conquered diseases, yet alongside them are numerous accounts of phenomenal failures of modern medicine and ineffective governance. Successful eradication of vaccine preventable diseases in the past has always relied on extraordinary international cooperation and

initiative of the state powers, and commandeered significant financial resources as well as sound public health infrastructure. Reduction of child mortality, and ‘halting’ or ‘reversing’ the spread of major infectious diseases remain among the goals presented in the UN Millennium Declaration. The pace of progress in improving health services worldwide has been uneven, and accounts of successful alleviation of the diseases’ burden abound alongside records of stagnant rates of improvement, while the elusive goal of *universal* immunization remains out of reach (World Bank 1993; WHO 2005). The United Nations estimates that a child born in a developing country is 13 times more likely to die within the first 5 years of his or her life than a child born in a developed country (UN 2008).

Benefits to immunization are not confined to preventing disease in single individuals alone. One of the unique properties of immunization is derived from the fact that for many vaccine-preventable diseases (smallpox, diphtheria, measles, polio), benefits for the population accrue when a large proportion of it is immunized (Blume et al. 2013). Because of that, effective organization of immunization programs is paramount.

Vaccines, as any other pharmaceutical product, are at the intersection of science/technology and markets; like any other commodity, they cross state borders, carried across by the geopolitical currents of the world economy. But unlike most of the commodities, vaccine are a rare and ‘imperfect’ commodity and vaccine trade relies heavily on public procurement from private suppliers, both by individual governments and agencies such as UNICEF (Batson 2005) and PPPs like Global Alliance for Vaccines and Immunization (GAVI). Additionally, such agencies are not the end users of the

vaccines, but rather acquire them for distribution and administration, making the vaccine market inherently 'imperfect' in economic terms. To paraphrase Lakoff (2006), the one who procures vaccines is not the one who consumes them, and the one who consumes them is often not the one who pays for them. Both of these factors create a unique situation on the demand side of vaccine trade, by instituting multiple regulatory barriers to entering the market, *and* simultaneously creating a more stable demand in an otherwise unstable market.

Historically, most of the complex research and development that went into vaccine production has been carried out in research laboratories funded publicly and supported by government grants (Milstien and Candries 2002; Basu 2003; Srinivas 2004). Vaccine production, however, is rarely carried out in government funded facilities, and the major vaccine producers are either divisions of global pharmaceutical houses or private firms that were able to capitalize on the existing infrastructure and develop process capacities. As Stern and Markel (2004) and Milstien and Candries (2002) indicate, however, instead of bringing the positive results of competition and lower costs, this shift of vaccine production into commercial hands resulted rather in a marked drop in the number of pharmaceutical companies producing vaccines worldwide *and* continually rising costs. Vaccines, when compared with other pharmaceuticals, are not a highly profitable business (Kremer and Snyder 2003). Tiered pricing allows vaccine manufacturers to sell at different prices, with lower prices ensured by bulk procurement for the developing countries and higher prices levied in the industrialized markets to ensure higher returns that allow manufacturers to recover costs of research and development and earn a profit (Buse and Walt 2000a; Batson 2005). Combined with

diverging lines of production, tiered pricing, and increased liability costs and regulatory oversight, the global vaccine market has seen a reduction in numbers of vaccine manufacturers. In part, the diminished ranks of vaccine producers is a function of the latest wave of consolidation in the pharmaceutical industry, which since the 1990s has witnessed a sweeping tide of mergers and acquisitions (Busfield 2003). But there is also indication that the global production capacity for vaccines has been reduced as well, with some major manufacturers phasing out the production of traditional vaccines or abandoning the vaccine market altogether and evidence of dwindling of the excess capacity or stockpiles of routine vaccines to points of shortfall (McKinney and Jarrett 2002; Plahte 2005; Milstien et al. 2006).

Double Movement

In my examination of global governance structures and mechanisms I adopt the concept of ‘double movement’ first articulated by Karl Polanyi in his 1944 probing critique of market liberalism (Polanyi [1944] 1957). Poignantly relevant today, Polanyi’s study of subordination of society to the principles of self-regulating markets in 19th century England documents the two “organizing principles in society” (Polanyi [1944] 1957, 132.).’ The first is the “principle of economic liberalism, aiming at the establishment of a self-regulating market” and the other one is the “principle of social protection aiming at the conservation of man and nature as well as productive organization” (Polanyi [1944] 1957, 132). Each of these principles sets particular institutional aims, and each benefits from the support of definite social groups. The

resulting ‘double movement’ between the self-regulating market and social protection results in waves of institutional innovation.

While writing the *Great Transformation*, Polanyi ([1944] 1957, 142) stated that in retrospect, “our age will be credited with having seen the end of the self-regulating market.” Ironically of course, in the same year, 44 countries sent their delegates to Bretton Woods, New Hampshire to inaugurate the institutions that eventually buttressed the architecture of *neoliberalism* and championed the resurgence of *laissez-faire* capitalism at the close of the century.

Conceptualizing neoliberal globalization as a manifestation of Polanyi’s double movement underscores the rift and the tension between the two organizing principles in society -- the self-regulating market and social protection. Silver and Arrighi (2003, 347) argue that the “movement toward allegedly self-regulating markets (now masquerading under the label “globalization”) has called forth a countermovement of protection from the disruptions caused by intensifying worldwide competition for capital and markets.”

For Polanyi ([1944] 1957, 134), the ‘catastrophe’ that was the social history of the 19th century lay in the triumph of 19th c *laissez-faire* capitalism clashing with the movements of social protection in society to produce profound institutional strain, which was further compounded by ferocious class struggle. The principle of self-regulating markets not only shaped the production processes, but also sought to commodify labor and land – “no other than the human beings themselves of which every society consists and the natural surroundings in which it exists” ([1944] 1957, 71). Application of the doctrine of the self-regulating market to the economic as well as the political sphere resulted in subordination of “the substance of society itself to the laws of the market”

([1944] 1957, 71). Because, Polanyi argues, both land and labor are fictitious commodities, whose utter subordination to the market logic would result in nothing short of “the demolition of society”, an opposition to the all-penetrating principles of the market-controlled economy arose to resist it and for society to “protect itself against the perils inherent in the self-regulating market system” ([1944] 1957, 73-76).

A curious paradox however, is that according to Polanyi, while the *laissez-faire* economy was unquestionably the product of “deliberate state action” ([1944] 1957, 141), subsequent measures that sought to restrict it were spontaneous. The anti-*laissez-faire*, or collectivist trend in English public opinion seemed to appear subsequent to the actual state legislation that effectively restricted unfettered market rule, rather than preceding it. In Polanyi’s own words, the “legislative spearhead of the countermovement against a self-regulating market as it developed in the half century following 1860 turned out to be spontaneous, undirected by opinion, and actuated by a purely pragmatic spirit.”

In Philip McMichael’s (2000a) extrapolation of Polanyi’s argument, the contemporary neoliberal attempt to impose market rule requires an institutional strategy. That strategy is very different from the 19th century reality, and “expresses itself in the active decomposition of those social forms through which capitalism emerged and matured, namely, wage-labor and the nation-state” (McMichael 2000, 674). This decomposition of the nation-state in turn, manifests itself in the gradual shifting of the locus of power above and below the territorial state (Mittelman 2000) and the emergence of new institutional forms that in various configurations seek to take on the roles previously fulfilled by states and, in effect, changing the mode of state authority.

I argue that Polanyi's conceptual framework offers analytical tools to understand all of the core features of neoliberal globalization (McMichael 2000), from global market-led ideology to implementation of market-oriented policies by hegemonic states, multilateral agencies, TNCs and financial institutions, to, finally, countermovements contesting market rule. Moreover, I suggest that the concept of double movement can serve as a springboard for a thoughtful examination of contemporary institutional forms that are able to embody both of the principles *simultaneously*. By bringing the conceptual tools afforded to a critical reading of globalization, I examine the 'hybridization of governance mechanisms' (Dodgson et al. 2002) through the prism of 'double movement' (Polanyi [1944] 1957) and argue that the tug of war between the two organizing principles of global market expansion and social protection gives rise to institutional innovation. By examining these new institutional forms – Public-Private Partnerships (PPPs) – I offer a conceptual blueprint for understanding the reconfiguration of governance space in global health and the 'transnational spaces and actors' (Sassen 2004).

I suggest that PPPs, as institutional forms, belong functionally to the systemic realm of structures and processes that undergird the global expansion of capitalist mode of production and yet simultaneously fulfill some of the anti-systemic goals that aim to mitigate its disastrous consequences. Embodying both the principles of market expansion and social protection, these hybrid organizations present a paradox of contemporary global governance.

In this dissertation, I undertake an investigation of global governance structures and mechanisms through which global governance is accomplished. If the roles of the

state and non-state actors in contemporary global governance are the foci of theoretical significance, it is only appropriate to investigate a field in which the states, as well as systems of states, have historically played a crucial role and which are most affected by contemporary globalization processes. Therefore, I conduct a sociological investigation of institutional innovation and mechanisms of global governance by focusing on the ways in which individual states, for-profit corporations, non-profit corporate structures, societies, inter-governmental organizations and, ultimately, the entire global system, manage the distribution of technologies and products that help avoid vaccine-preventable diseases. In global political economy and comparative-historical sociology alike, any investigation of such scale must account for “histories of authority, power, knowledge and the geopolitical economy of the world as a system integrated by a set of networks specific to modern capitalism” (Böröcz 2009, 30). Only a truly critical understanding of the mechanisms of global governance and the relations of power that underpin them can help transform “the very foundation upon which ever-changing forms of political domination rest” (Soederberg 2006, 161). In my investigation, I adopt a global political economy approach and situate my investigation in the historical and political context in which global governance is carried out. I question the normative understanding of globalization as a natural, teleological (Cerny et al. 2005) and benign process of continuous expansion of global capitalism. I embrace the assertion that health is embedded in social relations of power (Labonte and Torgenson 2005; Navarro 2007) and offer an empirical investigation of these vectors of power connecting the various actors engaged in global governance of vaccine preventable diseases.

Chapters II and III focus on the issues of power and authority accorded to and wielded by a prominent new player in the field of global health governance – GAVI -- and the current mechanisms of the global governance of vaccine-preventable diseases. I examine its structure as an institution, its mission and objectives, and its strategic alignments with the pharmaceutical industry and donor-states as well as institutional shifts and the relocation of governance functions between the state and non-state actors in the decade since GAVI's founding. I document this through systematic analysis of the following records for each year from 1999 to 2010, totaling approximately 200 documents, listed in Appendix 1:

- Proto-Board and Board meeting minutes;
- Meeting minutes for the following Committees:
 - Investment Committee,
 - Programme and Policy Committee,
 - Governance Committee,
 - Executive Committee,
 - Audit and Finance Committee,
 - Evaluation and Advisory Committee.

To further investigate this new topography of vaccine-preventable disease governance, in Chapters IV and V, I turn to an empirical examination of the networks of vaccine trade between countries in the period from 1996⁶ to 2010. Documenting the overall structure of the networks of vaccine trade allows me to address the systemic features of the network of countries and serves as a starting point for a deeper examination of geopolitical patterns that emerge. Putting to the test the neoliberal argument that extoll the equalizing forces of the market, I assess the changes in countries'

⁶ The 1995 inauguration of the WTO included the signing of a smaller and a controversial 'side deal' - the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement, which serves as an instructive starting point as it intensified the subsequent clash of the "horizontal trade regime and the vertical human rights regime" (Fidler 2003, 288).

industrial capacity for vaccine production overtime. Furthermore, I empirically examine Giovanni Arrighi's (2003) 'industrial convergence' hypothesis to explore the question of whether a country's industrial development necessarily translates into reduced inequalities for its population. Using India as a case study, I examine the socio-historical and geo-political context of its industrial development against the backdrop of its public health situation and focus on the rift between capital accumulation and state decision making in order to specify the vectors of global influence that give shape to the dynamics of global health governance in a national context.

Chapter II

HYBRIDIZATION OF GLOBAL HEALTH GOVERNANCE STRUCTURES AND GAVI

Private Public Partnerships

The 1990s witnessed an explosion in the numbers of global PPPs involving collaborations between corporate and public sectors in fields as diverse as health, construction, environment, airspace, hospitality, and food security. Inge Kaul (2006, 219) reports that in the two decades following the mid-1980s, the number of these global partnerships has risen from fifty to at least four hundred. Understandably, this proliferation is reflected in the literature. Multilateral organizations advocate PPPs as instrumental to rapid development in the Third World (USAID 2002). They tend to confine their analysis to reporting the PPPs' achievements and are often funded or commissioned by development agencies as promotional material (Miraftab 2004). There has been a proliferation of explorations of PPPs' 'effectiveness' in terms of their specified goals (Muraskin 2004, Buse and Harmer 2006), multiple definitions of what constitutes a public-private partnership (Buse and Walt 2000a) and exhaustive operating typologies classifying their characteristics (Kaul 2006).

Some accounts document the global PPPs' emergence and achievements, but also examine the factors that have led to the convergence of public and private actors in global health. Ken Buse and Gill Walt⁷ (2000a; 2000b) for instance, offer an insightful analysis of the trends of collaboration between multilateral agencies, financial institutions and commercial entities and cite as their causes generic factors such as globalization and

⁷ Both are affiliated with the London School of Hygiene and Tropical Medicine.

disillusionment with the UN agencies and issues specific to the global health, such as market failure (Buse and Walt 2000a). Buse and Walt (2000a, 550) advance the definition of PPPs that is most commonly used in the global health arena, and define PPPs as

a collaborative relationship which transcends national boundaries and brings together at least three parties, among them a corporation (and/or industry association) and an intergovernmental organization, so as to achieve a shared health-creating goal on the basis of a mutually agreed division of labour.

These authors also examine the factors that motivate the UN agencies, for example, to enter into global PPPs as an opportunity to harness private sector strengths and secure financing, confer legitimacy and authority and ultimately, allow them to fulfill their mandate. Likewise, industry's interests include the potential for increased influence in the global arena and at the national level, direct financial benefits, increased legitimacy and enhanced image promotion and corporate citizenship (Buse and Walt 2000a). Other studies examine PPPs from a standpoint of what 'partnership product' (Kaul 2006) they provide and offer normative interpretations suitable for policy-makers designing a brand new PPP. Ultimately though, for studies like these, the guiding question that underpins their examination of global health PPPs is whether they are actually 'beneficial to health' (Buse and Walt 2000b).

Judith Richter (2004) critiques the portrayal of PPPs as a 'win-win' scenario where all partners cooperate for mutually beneficial gain without much reflection on the ideological nature of the framework that underlies this policy paradigm. Richter points out that one feature not commonly discussed in the literature is what distinguishes PPPs from other interactions. For her, it is the 'shared process of decision making' – the very same feature that makes PPPs problematic. She argues instead, that there are safer

alternatives to fulfilling the “core mandate in the international health arena: the protection, respect, facilitation and fulfillment of people’s fundamental right to the highest attainable standard of health” (Richter 2004, 43).

Faranak Miraftab (2004, 89) takes this logic even further in suggesting that in the context of the third world’s “wide socioeconomic gaps and decentralizing states, where central governments often have neither the will nor the ability to intervene effectively, PPPs are free to operate as the ‘Trojan Horses’ of development.” He argues that there are conceptual inconsistencies that underlie PPPs which often lead them to deliver results opposite of what is intended and in effect, “enables their effective operation as a form of privatization, advancing the interests of the private sector and the market under the banner of sharing power with the poor and the state” (Miraftab 2004, 89). Incidentally, David Harvey (2005, 177) invokes the same metaphor in his discussion of the role that NGOs play in the spread of neoliberalism, and suggests that NGOs “stepped into the vacuum of social provision left by the withdrawal of the state from such activities” and in some instances have helped accelerate further state withdrawal.

In my analysis of GAVI, I propose a move beyond this dichotomy that views PPPs as either benign agents of progress or clandestine proxies for neoliberalism. I argue instead that paradoxically, PPPs like GAVI embody both the principle of market expansion and social protection (Polanyi [1944] 1957) *simultaneously*. GAVI’s organizational structure and institutional aims are of a hybrid nature. Its philanthropic goal is to save lives and to prevent diseases by introducing new and underused vaccines – an explicit goal GAVI achieves. But PPPs also attempt to “integrate state decision-making into the dynamics of capital accumulation and the networks of class” (Harvey

2005, 76). It operates from within the institutional global order of neoliberalism, making use of its structures and resources, and accepting market-led ideology. Because GAVI offers resources to some states in form of vaccines, financing, or health-system strengthening, it is able to exert influence on their domestic health policy, finances, and even pharmaceutical industry prospects. However, I argue that because these PPPs are also private entities who navigate the global financial markets and are beholden to their donors, stakeholders, and the pharmaceutical industry partners, they do indeed balance their philanthropic objectives with market-driven accountability. Collaborating with the pharmaceutical industry to further its philanthropic objectives, GAVI mediates the industry's and the market's pull by effecting state legislations and determining public policies. My empirical investigation captures this balancing act by documenting the vectors of influence and power that the global health PPPs both exert and are subjected to in the institutional entanglement with states (donors as well as aid recipients), multilateral agencies, and the pharmaceutical industry. I argue that in their totality, these vectors of power constitute mechanisms of influence that are functionally different from traditional market and industry pressures or 'soft' unenforceable rules of traditional multilateral organizations. And finally, rather than uniformly undermining the authority of the state, PPPs such as GAVI, forge new paths of applying pressure and power as the multitude of state and non-state actors work sometimes together, sometimes at cross-purposes in these partnerships.

A highly influential Commission on Global Governance (CGG) characterizes the new significance of PPPs as "networks of institutions and processes... that enable global actors to pool information, knowledge and capacities to develop joint policies and

practices on issues of common concern” (CGG 1995, 15, quoted in Soederberg 2006, 19). While useful in that it offers a network metaphor, this definition lacks a critical rigor required for explicating the relations of power within these ‘networks of institutions and processes.’ In fact, the very term ‘partnership’ conjures up an image of equitable pooling of resources and a democratic process of decision making, quite in line with the CGG definition above. But surely, the power dynamic between GAVI and Zambia, for instance, is very different from that between GAVI and the WB, both in the direction of the power vector and in the type of power exerted. Borrowing loosely from the conceptual toolbox of the GCC/GPN tradition, I prefer viewing GAVI as a network of “relational processes and structures in which, and through which, power is exercised” (Dicken et al. 2001, 92). Additionally I build on the insight of conceptualizing network links as *pipes* enabling both information and resource flows. Jason Owen-Smith and Walter Powell (2004, 5) point out the strategic benefits of positions of actors in networks “at the confluence of information and resource flows.” I suggest that such confluence invest the actors not only with benefits, but with power to coerce and influence other actors in less ‘advantageous’ positions. Power thus, can be conceptualized as both the structural and the relational capacity within the network of GAVI partnership, of any actors to consistently influence other actors in their own interest.

In my discussion of GAVI processes, I use the concept of *multi-nodal politics* as a lens to understand coalition building, as well as other forms of ‘politicking,’ introduced by Philip Cerny (2005) and colleagues in their examination of globalization processes. The strategy and tactics they discuss describe the organizational flexibility that is required to navigate the intertwined globalizing domains:

Groups and political entrepreneurs must be able to operate – and effectively to coordinate the actions of themselves and others – at all the levels of multi-level governance, navigating effectively back and forth among them. They must be able to organize locally, regionally, nationally, and globally. They must be in a position to negotiate cooperative arrangements both domestically and transnationally. And they must be able to operate horizontally, vertically, diagonally, and so on, across and around those playing fields (Cerny 2005, 7).

I argue that GAVI as a PPP, is a very effective actor navigating in the arenas of global health, finances, international policy-making, industry and trade, and exhibits the features of multi-nodal politicking by “experimenting with systematic networking, the diffusion and delegation of authority” (Cerny 2005, 7). GAVI devises new strategies to coerce or coopt collaborators and stakeholders, reconfigures ‘transnational spaces and actors’ (Sassen 2004), and redefines the mechanisms through which states are (un)able to exercise authority over their populations and policies.

GAVI

Global Alliance for Vaccines and Immunization (GAVI) emerged as a formidable player on the scene of global health governance in 2000. Its main donor, the Bill and Melinda Gates Foundation, now commands an annual budget that exceeds that of the World Health Organization. It is aligned in partnership with the WHO, UNICEF, and various civil society organizations. Its donors include private foundations, states and the World Bank (WB). GAVI invests its funds with the WB and the International Finance Facility for Immunization (IFFIm), a British-based new supra-national borrower which was launched in 2006, with 6 sovereign sponsors – the UK, France, Italy, Spain, Sweden, and Norway -- pledging over \$ 4 billion in funds to help raise money to fund

immunization programs in the world's 70 poorest countries.⁸ GAVI procures vaccines through UNICEF from the pharmaceutical manufacturers located in both the developed and the developing countries which are WHO prequalified, and distributes them to the immunization initiatives and governments of the poorest countries that meet GAVI eligibility criteria. GAVI's executive boards boast prominent statesmen and pharmaceutical leaders. In all regards, GAVI is the quintessential hybrid institution of global health governance, as it transcends familiar and traditional organizational forms and belongs simultaneously to vastly different functional domains.

GAVI was inaugurated in January of 2000 in Davos, Switzerland, at the World Economic Forum. GAVI was launched as an alliance of partners that included governments, multilateral organizations, private philanthropists, and the pharmaceutical industry. The alliance brought together most prominent actors in the immunization and global health community, such as the WHO, UNICEF, the World Bank, the Bill and Melinda Gates Foundation, donor governments, international NGOs, and the pharmaceutical industry. GAVI's Board is comprised of five permanent seats for the Bill and Melinda Gates Foundation, the Vaccine Fund, UNICEF, WHO, and the World Bank. Of the eleven rotating seats, two were allocated for the developing and three for developed countries, and one each for NGOs, foundations, technical health institutes, academic institutions, and developed and developing country pharmaceutical industry.

⁸ The WB is IFFIm's treasure manager, and the US financial giant Goldman Sachs lead-managed its first \$1 billion bond. Touted by the WB as a 'virtually zero-risk investment that also saves lives,' the bond attracted celebrity buyers like the Pope, Bono, and – as the case was more than 200 years ago with the Royal Jennerian Society -- the Archbishop of Canterbury. For more on IFFIm: <http://www.iff-immunisation.org/index.html>; World Bank broadcast <http://web.worldbank.org/WBSITE/EXTERNAL/NEWS/0,,contentMDK:21118784~pagePK:64257043~piPK:437376~theSitePK:4607,00.html>

From the outset, GAVI relied on a form of collaboration between partners in global PPPs that is described as “voluntary and collaborative relationships between various parties, both state and non-state, in which all participants agree to work together to achieve the common purpose or undertake a specific task and to share risks and responsibilities, resources and benefits” (U.N.Doc A/60/214, 2005). GAVI decision-making structure affords power to states as well as non-state actors, such as philanthropic foundations, pharmaceutical industry and financial institutions. Accordingly, the “goals of the GAVI alliance are by definition consistent with the goals of respective partner institutions. Partners are jointly responsible for ensuring agreed outcomes through the implementation of necessary activities, resourcing, and accountability” (GAVI 2002(25), 3).

The initial grant consisted of \$ 750 million to be used over 5 years and was donated by the Bill and Melinda Gates Foundation for the establishment of the Global Fund for Children’s Vaccines (the Fund) (GAVI 1999(2), 13). The Fund was established by GAVI to assist the poorest countries in the world to achieve the goal of improving immunization coverage and services and to introduce new and underused vaccines. The first sub-account⁹ was utilized to procure Hepatitis B vaccine (Hep B) globally, *Haemophilus influenzae type B (Hib)* in Latin America, Middle East, and other countries when warranted, and Yellow Fever vaccine for routine use (not for outbreak control) in Africa and Latin America (GAVI 1999(2), 16-17). The Fund finances vaccine purchases through UNICEF. UNICEF in turn, issues invitations to WHO pre-qualified manufacturers to “provide proposals for 3-year agreements ... for immunizing specific

⁹ There were two sub-accounts designated, one for new and underused vaccines, and one for immunization services.

numbers of children with ‘under-used’ products (HepB, Hib, yellow fever). Proposals can incorporate the stated intent of Industry to contribute actively to GAVI objectives for the accelerated use of these vaccines in developing countries, especially the poorest” (GAVI 2000(6d), 2).

GAVI’s establishment revitalized the global immunization community. Among other players, UNICEF has long played a crucial role in many immunization initiatives, including eradication of polio, elimination of tetanus, and control of measles. Accepting partnership with the Global Alliance, UNICEF has pledged to revitalize its organizational and technical capacity and announced that “capacity at headquarters, regional and country office level is being strengthened to effectively contribute to the achievement of ambitious and yet reachable global immunization goals” (GAVI 2000(6i), 4). Thus UNICEF was not only fully committed to participating in the alliance as a main partner (being represented on the Board, working groups, task forces, and regional and national committees), but its regional and national offices and resources were made available to GAVI. On behalf of GAVI, UNICEF held and managed the Fund Working Capital Account of the Global Fund at UNICEF New York Headquarters and hosted the GAVI Secretariat at the Geneva Regional Office. Furthermore, GAVI’s vaccine procurement strategy was designed by UNICEF, which has been a principle purchaser for immunization programs in the developing countries. As such, UNICEF pledged to establish and maintain a working relationship with the vaccine industry to ensure a reliable supply of existing vaccines and to speed up the introduction of under-used and new vaccines. To that end, UNICEF “commits itself to longer-term purchasing arrangements, wherever appropriate, that can provide incentives to Industry, including

wherever possible guaranteed minimum volumes of vaccines to be purchased, to ensure the sustained supply of vaccines over longer periods” (GAVI 2000(6d), 1). UNICEF procures vaccines on behalf of GAVI using the funds from the Fund Working Capital Account and carries out additional tasks such as technical services, contracting, customer services, shipping arrangements, and processing of payments (GAVI 2000(6i), 7). In turn, the World Bank serves as a treasury manager for the IFFIm and a financial and fiduciary administrator responsible for managing disbursements for the Advanced Market Commitments (AMCs).

GAVI’s share of total Development Assistance for Health (DAH) grew from 1% in 2002 to 3% in 2010 to 4% in 2011 (IHME 2011, 19). GAVI annual expenditures now total approximately US\$ 1.2 billion (GAVI 2009(75b), 1).¹⁰ At its June 2010 GAVI Alliance Board Meeting, the CEO reported that in the past 10 years, “GAVI has accelerated new introduction in over 70 of the poorest countries, immunized 257 million children, improved vaccination safety, and prevented 5.4 million future deaths” (GAVI 2010(77a), 1).

Since its inception, GAVI’s achievements are formidable, and yet my goal here is not to document its accomplishments nor point out its failings. It is rather difficult to be critical of an immunization initiative whose expressed goal is saving children’s lives in the poorest countries. GAVI’s organizational goals are laudable. Without a doubt, GAVI’s and its partners’ ranks are populated by scores of dedicated individuals who devote their careers and indeed, lives, to advancing global health. But GAVI is a powerful organization commanding impressive financial resources and influencing global

¹⁰ For comparison, the WHO annual budget in 2009 was close to 5 billion dollars and it was reportedly slashed by 1 billion in 2011 for the next two years (Nebhay and Lewis 2011).

policies and action in a very complex manner, which is not always in accordance with its intended objective or proclaimed goals. It is part and parcel of the capitalist global order and its workings reflect much larger systemic processes, reproducing the order and subverting it simultaneously. My objective in these chapters is to capture some of these dynamics and document GAVI's hybrid nature as a modern PPP which is embedded in the neoliberal market expansion at the same time as it embodies the elements of a countermovement for the protection of society.

Strategic Alignments: the Pharmaceutical Industry

GAVI's operations span both the private and the public sector, and by its own admission, "striking the correct balance in governance practices presents an ongoing challenge to GAVI" (GAVI 2006(54), 1). This multi-nodal 'politicking' (Cerny et al. 2005) is exhibited starkly in GAVI's transnational and multi-level cooperative arrangements with the UN agencies and the pharmaceutical and financial industries.

The Institute for Health Metrics and Evaluation (IHME) observes that less traditional organizations, such as GAVI and GFATM inadvertently cause "increased competition between channels of assistance for public and private funds" (IHME 2011, 19). As a hybrid entity straddling the public and private domains, GAVI was of course conceived and founded in careful alignments with a range of actors, from donors and governments, to multilateral and international organizations, to financial and pharmaceutical industries. In regards to other vaccine initiatives and established international agencies, in early conception stages of GAVI, there was careful planning to

avoid inadvertent hostilities. For instance, William Muraskin (2005, 15), who documents GAVI's founding, quotes this concern voiced by key individuals in 1998:

how to avoid the possibility of hostility from WHO/CVI who might consider that we are trying to preempt their responsibility and who would most certainly like to have all the [Gates] money flowing to them... We need to find a way to present ourselves that avoids all presumption of a challenge to WHO.¹¹

Shortly upon its own inauguration, GAVI spearheaded the establishment of a Global Advocacy Coordinating group¹² whose role was to “coordinate messages about the value and importance of immunization, and to ensure that efforts to approach key leaders, international agencies, and global audiences are coordinated, coherent and consistent” (GAVI 2003(32), 2).

Similarly, courting the financial industry required careful strategizing, and early on the Task Force on Financing was established in order to increase the “understanding of why there is inadequate funding for vaccines and immunization in the poorest countries and identifying strategies which will improve the capacity of governments, donors and development banks to finance needs” (GAVI 1999(1), 15). GAVI recognized that the developing countries' need for external financing of their immunization efforts depends on both their relative and absolute capacities to finance their needs, both in regards to routine immunization as well as the introduction of new vaccines. Among other measures, decreasing the financial gap would require “increasing the awareness and use of credits and loans available for immunization priorities through health projects with the World Bank or the regional development banks” (GAVI 1999(1), 21).

¹¹ In fact, by 2011 IHME reports that “public donors as a whole increasingly preferred to direct their funds through the PPPs GFATM and GAVI instead of through UN agencies” (IHME 2011, 21).

¹² with WHO, UNICEF, the Secretariat, the Vaccine Fund, CVP/PATH, and the Gates Foundation as partners.

But by far the most challenging undertaking in this regard was for GAVI to establish a working relationship with the pharmaceutical industry that would engage it beyond a passive partnership and precipitate genuine participation. One of the principles upon which GAVI's operations were predicated was to increase reliability of vaccine supply or 'vaccine security.' To that end, GAVI needed to engage the pharmaceutical industry into a veritable partnership, where goals and objectives are truly shared between the partners. In this vein the Task Force on Financing, for example, identified vaccine pricing as one of the salient issues on which industry's cooperation was essential. Closing the immunization financing gap would necessitate "exploring strategies to ensure that vaccines are affordable, given the differences in wealth between countries" (GAVI 1999(1), 21). Furthermore, pricing considerations extended to Research and Development as well, as GAVI identified the pressing need for new vaccines to be developed and scaled up at affordable prices. In the early phases, the Financing Task Force explored the options for influencing the pharmaceutical industry in four core areas: 1. stimulating research and development of products targeted for use in the developing world; 2. ensuring affordability of vaccines through market segmentation, differential pricing, and new mechanisms; 3. identifying constraints on vaccine procurement and identification of new procurement options; 4. influencing production costs (GAVI 1999(1), 22). These methods of influence are a classic collection of 'push' and 'pull' mechanisms, the proverbial economic carrot and stick.

In having to achieve the most advantageous negotiating position, GAVI had to balance the interests of the governments and health authorities of developing countries on the one hand, and of the pharmaceutical industry on the other. The tension arises from the

fact that the two sides have diverging interests. Miraftab (2004, 92) points out that the way a PPP is conceived and originates “reveals much about the power relations that will emerge amongst participants.” During the first GAVI partners meeting in 2000, the president of SmithKline Biologicals¹³ outlined the conditions for the pharmaceutical industry’s participation in the alliance, citing as prerequisites a guarantee for ‘reasonable prices,’ support for a sustainable market, respect for international property rights, a tiered-pricing system, safeguards against re-export from low-priced to high-priced markets, and a prohibition on compulsory licensing¹⁴ (Hardon and Blume 2004). To highlight how GAVI sought to accommodate these requests, it is instructive to examine the very logic of selecting the two core vaccines that GAVI selected as their ‘silver bullet.’

When in 1974 the WHO started the EPI program, vaccines for the target six diseases – diphtheria, tetanus, whooping cough, polio, measles and tuberculosis – were proven to be safe and effective and the pharmaceutical industry had already earned back the money that was invested in their development (Hardon and Blume 2004, 346). The WHO estimates that in 2002, there were 10.5 million deaths among children under five from diseases for which licensed vaccines are available (Milstien et al. 2006). In 2000, when GAVI was commencing its operations, measles, an extremely contagious viral disease, was mainly contained in the North by widespread immunization campaigns, resulting in 70% reduction in annual fatalities caused by the disease. Still, in 2000 measles remained the leading cause of vaccine preventable deaths in children, resulting in

¹³ SmithKline Biological produces the combination DTP-hepatitis B vaccine.

¹⁴ Compulsory licenses allow governments to override a patent and authorize production of generic copies of medicines.

about 750, 000 deaths (WHO, UNICEF, World Bank 2009, 123). And yet GAVI was not set up to fund provision of EPI vaccines for the six core diseases – diphtheria, tetanus, pertussis (DTP), polio, tuberculosis (BCG), and measles except for the new combination vaccines that combined DTP with Hepatitis B or Hib. Instead, GAVI pledged to accelerate the uptake of new and underused vaccines for Haemophilus influenzae type b and hepatitis B.

Granted, both Haemophilus influenzae type b and hepatitis B are deadly diseases. Haemophilus influenzae type b, or Hib, causes meningitis, pneumonia, and other infections in infants and young children, causing (in 2000) over 8 million infections annually, of which 363,000 were fatal (WHO, UNICEF, World Bank 2009, 108). The hepatitis B virus causes an infection that spreads by exposure to blood or other bodily fluids of an infected person, and is between fifty and one hundred times more infectious than HIV. More than 350 million people in the world today live with chronic hepatitis B and in 2002, an estimated 600 000 deaths occurred from chronic HBV infection (WHO, UNICEF, World Bank 2009, 112). Yet reportedly, including Hep B vaccination in a universal vaccination program (rather than selective vaccination geared towards risk groups) is neither a sound epidemiological strategy nor a particularly cost effective intervention. Citing a cost-effectiveness comparison study of Hep B and measles vaccination programs in India for instance, Madhavi (2003) reports that while cost-efficacy of a universal Hep B vaccination ranged from about Rs 1,700 to almost Rs 6,000 per life saved (for different age groups), measles vaccination of infants cost only Rs 292, concluding that Hep B vaccination is not economical and should not be included into the priority immunization program.

In general, pharmaceutical research and production are geared toward commercially attractive markets. Vaccine pricing is, in turn, determined by the product lifecycle maturity and production economics. Because traditional EPI vaccines are mature products (off-patent), it is possible to offer them at drastically different prices to various markets (tiered pricing). The current tender-based system of vaccine procurement makes use of these factors to achieve low prices for mature vaccines but provides no incentives for the pharmaceutical industry to invest in research and development for developing country products or supply (GAVI 1999(2), 34).

A brief review of the Hep B vaccine history reveals that a new development that led to the pharmaceutical industry's renewed interest in vaccines stems from advances in using recombinant DNA technology. This allowed manufacturers to produce purified antigens of high quality and in quantities "unachievable by conventional extraction methods from 'natural' sources" (Hardon and Blume 2004, 354). The best example of a recombinant vaccine was the Hep B vaccine, even though a plasma-derived vaccine already existed. When Merck and SmithKline Beecham put the recombinant Hep B vaccine on the market in mid-1980s, it was priced at \$30-40 per dose, but by 1993 the price dropped to about \$1.25-2 per dose due to competition from the plasma-derived vaccine (Milstien and Kaddar 2006, 362). By the time two manufacturers from the Republic of Korea entered the global market in 1999, the price dropped even further. And yet both Hib and Hep B vaccines faced obstacles to being expeditiously introduced into the developing world. In fact, it took decades from the "licensing of the vaccine in the industrial world until it was available at an affordable price to the poor in the developing world" (Muraskin 2005, 7). Outside of Latin America, neither Hib nor Hep B vaccines

were widely used in the developing world. GAVI sought to capitalize on two aspects of that epidemiological fact by making industry involvement into accelerated uptake of these vaccines in the global South more attractive.

GAVI's initial window of funding covered procurement of new and underused vaccines¹⁵ for three diseases: Hepatitis B, *Haemophilus influenzae* type B, and Yellow Fever (for routine use only, not outbreak control) (GAVI 1999(2), 14-16). Hep B and Hib were respectively second and third after measles on the WHO list of diseases responsible for most deaths preventable by vaccines, together claiming just short of one million lives per year (WHO Global Immunization Data, 2002). Although the WHO latest Model List of Essential Medicines for Children notes that there is a need for vaccines used in children to be polyvalent,¹⁶ the list contains only monovalent vaccines for the 21 common childhood diseases. GAVI's mission was formulated as accelerated introduction of *new* and *underused* vaccines, thus offering to the industry a phenomenal widening of the market, essentially manufacturing demand for vaccines that were not a top priority for most developing countries' health ministries. Second, by putting its' support and funds behind new combination vaccines,¹⁷ such as pentavalent vaccine that offers protection against five diseases -- diphtheria-tetanus-pertussis (DTP), Hepatitis B, and *Haemophilus influenzae* type b -- GAVI opened up the opportunity for the

¹⁵ The other two windows (or sub-accounts) proposed to fund access and infrastructure and research and development at a later date.

¹⁶ This term refers to a vaccine that immunizes against more than one antigen.

¹⁷ Combination vaccines include new formulations such as the quadrivalent and pentavalent DTP+Hib and DTP-HepB+Hib formulations. The obvious advantage of combination vaccines is the reduction in the number of shots necessary to vaccinate a child against multiple diseases at the same time. Yet by virtue of being new, research heavy and patent-protected such vaccines are much more expensive.

pharmaceutical industry to expand its markets for expensive, patent-protected new vaccines.

Another ‘carrot’ for the industry was the proposed shift from tender-based to contractual procurement of vaccines, which would mean that GAVI would enter into contractual, enforceable purchase agreements with vaccine producers, thus ‘manufacturing’ stable demand for vaccines in an otherwise unpredictable market. And by creating a stable, sizable, and predictable demand for new vaccines, GAVI argued that it would be in a position to negotiate lower prices for vaccines with the pharmaceutical industry. As a GAVI Board Discussion Paper summarizes:

Governments and health authorities may receive an economic benefit from a procurement policy, through lower prices for vaccines than would be the case if they purchased them independently. In return for this benefit, GAVI may be able to have a positive influence on the development of in-country immunisation programmes (GAVI 1999(2), 34).

The balance is precarious, but GAVI presented it as a win-win scenario: if GAVI offers a market guarantee incentive to vaccine producers, it can negotiate lower prices, and if governments and health authorities can spend less on vaccines, then GAVI can have an impact on their immunization practices. However, GAVI states, “the source of influence over countries - low prices – reduces influence over suppliers” (GAVI 1999(2), 35-6). In other words, in order to have leverage over countries, GAVI had to guarantee – or at least promise, as the case may be – lower prices on vaccines it provides. But in order to have influence over the pharmaceutical industry, GAVI must ensure that the vaccine prices are sufficiently high.

As GAVI was committed to distributing mainly new and underused vaccines, questions of production capacity come to the fore as well. Overcoming the lag between

the time when a new vaccine is introduced in the developed world and when it becomes commercially available and affordable in the poorer countries was one of GAVI's tasks. In order for the pharmaceutical industry to support the effort to make new vaccines available at the "earliest possible technical and regulatory opportunity," producers necessarily have to make capital investments to support production and "supply to the developing world markets" (GAVI 2000(6g), 2). Such investments are usually not made unless there is a reasonable expectation of a good return, which puts, in turn, the pressure on GAVI to "have in place commercially credible funding, pricing and supply policies" (GAVI 2000(6g), 2). GAVI's leverage with the pharmaceutical industry was its ability to eliminate uncertainty about the future market for a particular vaccine, as it 'guaranteed' its purchase in substantial volume. Occasionally, a vaccine producer would experience manufacturing difficulties and would be unable to fulfill its obligation to provide certain volumes of vaccines. In 2002 for example, Glaxo-Smith-Kline was unable to meet its vaccine supply commitments for the combination vaccines, and Yemen, Burundi, and Zambia were not able to receive the vaccines for which they were already approved until at least 2004(GAVI 2002(25)). This situation underscores how precarious is the balance that exists, and that disruption in production can ripple through the entire system.

And yet, it appears that sometimes instead of achieving lower prices on new and under-used vaccines, GAVI's intimate involvement with the industry and immunization in general resulted in the opposite effect. By 2003 for instance, there were reports indicating that combination vaccine prices were rising instead of lowering as GAVI has promised. According to UNICEF's Supply Division, there were a number of reasons for that. One of those reasons that concerned GAVI was the fact that "manufacturers are

increasing their investments in capacity, and the amortization of this needs to be done over a shorter time than normal, given the accelerated introduction of new vaccines under GAVI” (GAVI 2003(32), 5). Similarly for the Yellow Fever vaccine, GAVI announced in 2005 that perceptible reduction in the cost “is not likely in the near term due to several factors, including the programmatic preference for smaller dose vials” (GAVI 2005(48), 3)¹⁸. Responding to the increase in prices of combination vaccines, the Board stated that GAVI “must consider new ways to maximize the leverage of the Alliance to ensure rapid market entry by new suppliers of affordable combination vaccines. Other GAVI partners – Vaccine Fund, WHO, GAVI Secretariat and others, as necessary – in addition to UNICEF Supply Division may need to engage in negotiations with industry” (GAVI 2003 (34), 4).

In fact, by the end of 2004, GAVI went as far as to concede that it did not have a firm grasp of the financial implications of introducing new vaccines, when it stated that “the gravity of the financial situation that would face countries which introduced the more expensive combination vaccines was not anticipated at the outset of GAVI” (GAVI 2004(42), 3). Lamenting the fact that vaccine prices did not drop in response to greater demand, GAVI nevertheless stated that even when newer vaccines do not cost pennies per dose, “even at higher prices vaccines are one of the most cost-effective health interventions” (GAVI 2004(42), 3). In 2006, while devising financing strategies for phase 2, the Board reflected on GAVI’s past hope that the up-front funding of new vaccines would “stimulate manufacturer investments that would reduce the cost of production, accelerate competition and drive prices downwards” (GAVI 2006(51c), 8). Contrary to

¹⁸ Smaller, or single-dose vaccine vials are usually more expensive per dose than multi-dose vials, are considered safer and offer logistical advantages in administering.

expectations, the initial 5 year funding phase “was insufficient for vaccines to become affordable and for government budgets to adequately expand to finance them” (GAVI 2006(51c), 8). In 2009, the GAVI Alliance Executive Committee conceded that “the cost of vaccines that GAVI supports today is greater than when GAVI was formed” (GAVI 2009(75c), 4).

Additionally, GAVI continued to face significant challenges in securing long term supply of some combination vaccines, particularly the Hib-containing pentavalent vaccine. In 2004, GAVI reported that only 13 million doses of Hib-pentavalent vaccine were procured annually, which does not constitute a market attractive enough for vaccine manufacturers, and consequently there is little market competition and no price reduction for this vaccine (GAVI 2004(38)). At that point, GAVI was justifiably concerned that “the Hib situation will reflect perception of success or failure of GAVI” (GAVI 2004(38), 6), and felt that there was a pressing need to increase both the strategic supply and procurement approaches as well as usher in a more stable, predictable demand for the Hib vaccine. By mid-2005, GAVI conceded that: “experience has shown that policies aimed at quickly reducing prices may not encourage entry of additional manufacturers and long-term sustainable supply” (GAVI 2005(46), 5). These factors highlight the fact that even with GAVI’s involvement, the vaccine market remained a ‘supplier determined market’ rather than a public health sector determined one (McKinney and Jarrett 2002).

Another aspect of vaccine cost and production pertains specifically to product maturity. GAVI’s supposed ability to take a long-term view of vaccine procurement had the potential to ensure an adequate and predictable vaccine supply at affordable prices. As the Board stated in 2004, before GAVI “a product would need to reach full

maturity¹⁹ before it would be available in poorer countries. With GAVI, we are trying to change the norm so that we don't have to wait for full product maturity" (GAVI 2004(35), 2). Closing the gap is how GAVI saw its opportunity for having a unique effect and bringing new vaccines to the poorer countries before they matured and became more affordable. But as a particular new vaccine enters the last phases of development, the vaccine producer must make certain production capacity decisions, which to a large extent are dictated by projected demand. Early on, the Board stated that GAVI has:

substantial potential negotiating power with suppliers to gain early access to newly introduced vaccines, if its procurement mechanism is so designed. Through an early commitment to purchase – before the plant has been constructed – GAVI could substantially reduce the risk of the capital expenditure for the company (GAVI 1999(2), 39).

But just as GAVI was hoping to exert some influence over the pharmaceutical industry in this model of 'planned access,' it had to grapple with some significant pressures and restrictions imposed on it by the vaccine producers. For example, the First Board noted that:

GAVI would almost certainly be restricted as to which markets it was permitted to supply vaccine to, or procure on behalf of. In particular, GAVI should expect to be restricted to markets where there is little or no prospect of a commercial market emerging (GAVI 1999(2), 39).

This last condition actually illuminates a puzzling point in the list of the recipient country eligibility criteria, namely population size, which effectively excluded China, India and Indonesia from eligible countries.²⁰ It seems quite plausible that this condition was a concession to the pharmaceutical industry's tacit demand that GAVI not fund immunization initiatives in countries where there is a commercial pharmaceutical industry able to furnish competition and potentially undermine future demand.

¹⁹ Full maturity for a product means that it is off-patent.

²⁰ This conditionality was later amended.

Incidentally, as early as 1993, Indian pharmaceutical companies (Shantha Biotech and later Bharat Biotech) already had an indigenous recombinant Hep B vaccine on the market, at the prices at least half of the vaccines sold by SmithKlineBeecham or Pfizer (Madhavi 2003).

Another type of enticement that GAVI has entertained offering to the industry is patent extension for maturing products. As the Third Board meeting summarized:

Patent extensions in the largest industrial country markets might stimulate greater interest from large pharmaceutical companies in the field, in turn providing a stimulus to candidate and development efforts, especially in the biotech sector. In addition a patent extension has the advantage that, while it is worth several hundred million dollars to any major pharmaceutical company, its costs are hidden. The cost to the industrial country healthcare systems could nonetheless be justified by the future healthcare savings which would be generated by successful development of a vaccine (GAVI 2000(6g), 3).

A rather astonishing thing about this is that patent extensions, of course, protect higher prices for pharmaceuticals for longer periods of time, and in this case a concession to the industry would literally ensure that prices for new vaccines manufactured in the global North remain high for longer. This would have a ripple effect in the industry and potentially disastrous consequences for organizations and national authorities who are neither eligible for GAVI funding nor are able to absorb higher vaccine costs.

Of course, had GAVI been interested in furthering the traditional EPI immunization programs or even relying on monovalent vaccines for the target diseases, it would not be beholden to the pharmaceutical industry to the same extent. For instance, by 2008, recombinant Hep B vaccine obtained through bulk procurement could cost between \$0.20 and \$0.30 per dose, and there were at least 10 manufacturers producing it (UNICEF 2008). According to the WHO, in the 1980s, total annual expenditure on immunization for low-income countries averaged US\$ 3.50–5.00 per live birth. By 2000,

the figure had risen to about US\$ 6.00 per live birth. Addition by GAVI of underused vaccines like Hepatitis B, and Hib into immunization programs brought total expenditures up again, and the WHO projected that by 2010 the cost per live birth for immunization with the traditional vaccines plus the hepatitis B and Hib vaccines was going to reach US\$ 18.00 per live birth, and expected future scaling up to meet the projected goals is likely to exceed US\$ 30.00 per live birth (WHO, UNICEF, World Bank 2009, 75-76). One study reports that the total cost of mass vaccination by hep B vaccine in India for the year 2000-2001, was equivalent to the total budget of Rs 58,530 million for health and family welfare (Madhavi 2003).

It is clear that industry interests – in this case of health governance through a PPP, it is the pharmaceutical producers and providers of health insurance – figure prominently in the mechanisms of global health governance. As Harvey (2005, 76-77) points out, “businesses and corporations not only collaborate intimately with state actors but even acquire a strong role in writing legislation, determining public policies, and setting regulatory frameworks (which are mainly advantages to themselves).” In the case of GAVI and the pharmaceutical industry, the role of business interests is paramount, down to determining its very organizational mission. Brin and Lexchin (2011, 291) point out that of the currently sitting GAVI board members,

the interests of almost three-fourths are more aligned with the profit-making sector than the people’s health: two represent pharmaceutical companies themselves; all five of the donor countries’ foreign policy agendas are potentially heavily influenced by corporate lobbying; two are involved in public-private partnerships...with pharmaceuticals (WHO and UNICEF); two express profit-making as compatible with addressing global inequality (Gates foundation and World Bank); and four are “private citizens” who are connected to finance, banking, and insurance industries.

So while GAVI and the pharmaceutical industry as partners in a PPP are true to their mandate of achieving a “shared health-creating goal on the basis of mutually agreed division of labour” (Buse and Walt 2000a, 550), the achievement is encumbered with complications. It is indeed true, that GAVI accelerated the introduction and uptake of new and underused vaccines in the world’s poorest countries, but in a heavy-handed top-down manner that disregarded the epidemiological realities in the field and promoted the market driven model that further benefits business elites in the global North. As a rare and poignant critique of GAVI’s mission points out, additional funding for immunization makes sense; however, for “many countries, there is at least as much health gain from improving use (especially increasing coverage) of current vaccines as from added new ones” (Western Pacific Regional Office of WHO Position Paper, quoted in Muraskin 2005, 222).

Cerny and colleagues (2005, 18) point out that one of the core dimensions of neoliberalism is the change in the role of the private sector, with an increasing switch of “‘contracting out’ services, the development of public–private partnerships (PPPs), and the use of private sources of finance for public purposes.” I suggest that in this instance of GAVI and the pharmaceutical industry, the argument can be taken even further to view it as a situation where a mix of private and public funds essentially subsidize a private industry in the guise of reaching the ‘shared health-creating goal.’

Advanced Market Commitment

Another instance of ‘politicking’ between GAVI, the pharmaceutical industry and the donor countries was the launch of a pilot Advanced Market Commitment (AMC) for

the pneumococcal disease vaccine. GAVI points out that while very few organizations in GAVI's niche "are able to provide financial projections that extend beyond two or three years in the future," GAVI's own projections (currently spanning through 2015) "allow decision making on medium to long term investments with a fair degree of certainty, and help identify future financial gaps" (GAVI 2008(65), 1). In 2005, a financial mechanism called AMC was first brought to the table, aiming to create a stable market for vaccines that prevent diseases prevalent in the developing countries by fixing the price at which the vaccines were to be sold and subsidizing the amount upfront. By participating, donors would commit money to guarantee the price of vaccines once they have been developed, thus creating the future market (WHO, UNICEF, World Bank 2009, 90). AMCs are legally binding for the participating manufacturers and fix the vaccine price until the funds provided by the donors are exhausted. As the GAVI and WB pilot proposal on AMC suggests,

an AMC for vaccines is a financial commitment to subsidize the future purchase of a vaccine not yet available, *if* an appropriate vaccine is developed and *if* it is demanded by developing countries. Early, guaranteed commitments encourage potential vaccine suppliers to invest in R&D and production capacity to serve developing countries, secure in the knowledge that there will be a viable market if they supply products that eligible countries want to buy (World Bank and GAVI 2006, 1).

By 2008, GAVI was ready to launch a pilot AMC project for pneumococcal vaccines with governments of Canada, Italy, Norway, the Russian Federation, and the United Kingdom, as well as the Bill and Melinda Gates Foundation committing US\$ 1.5 billion. According to GAVI, the AMC donors were signaling strong "intent to purchase" pneumococcal vaccines and "the AMC mechanism should not only give industry the incentive to develop the product quickly, it should include measures to ensure that

manufacturers comply with the terms and expectations of the deal, amongst other things helping ensure sufficient long-term supply capacity to meet the demand from developing countries” (GAVI 2008(65), 6). In this scenario, the manufacturers are guaranteed a subsidized (and high) price upfront if they “develop a product demanded by countries and agree to abide by affordable prices after the AMC is depleted” (World Bank and GAVI 2006, 2).

A well-designed AMC, it was suggested, could precipitate significant discovery in vaccines for neglected diseases and low-income markets. Offering to match the revenue that a pharmaceutical company would typically accumulate if it were developing a product for a ‘profitable’ market, is thought to be a great incentive for such a company to invest into developing products for diseases endemic in ‘non-profitable’ low-income countries (Light 2009). If GAVI’s pilot AMC for pneumococcal vaccine were a success, it would demonstrate its powerful ability to influence the far-ranging decisions of the pharmaceutical industry and to shape the vaccine market. GAVI, however, had fast acknowledged that although the “concept behind the AMC is simple, it has been challenging to establish an incentive framework that will effectively encourage industry whilst representing value for money, affordability and predictability for developing countries” (GAVI 2008(65), 6).

The concept and practice of AMC can be quite contentious. GAVI has been criticized by civil society organizations such as Oxfam and Médecins Sans Frontières for lack of transparency (Usher 2009). GAVI contends, however, that “transparency and accountability are key considerations for the alliance, but these principles must be balanced by the need to maintain confidentiality in negotiations with industry” (GAVI

2007(61), 2). The WHO Commission on Intellectual Property Rights for example, strongly advocates increased use of off-patent and inexpensive drugs (WHO-CIPIH, 2006) rather than channeling substantial resources to subsidize the pharmaceutical industry in the developed countries in possible future buyouts of a new vaccine. Critics also point out that the AMC is tailor-designed for the four pharmaceutical giants who are still prominent in vaccine manufacturing, and “deliberately favour[s] large pharmaceutical firms over small and new biotechs and not-for-profit, university-based, and developing-country-based research. Yet, they present no empirical evidence that such firms are the most efficient at vaccine research” (quoted in Light 2009, 10). Indeed, GAVI contends that the AMC model has been designed in a way that precludes creating ‘a supply monopoly’ and aims to allow “ample opportunity for developing country vaccine suppliers to enter the market” (GAVI 2008(65), 6). And yet in 2010 the GAVI Alliance Board announced that “manufacturers in developing economies noted concern that by the time they are ready to enter the pneumococcal vaccine market around 2014-2015, prices are projected to have dropped. Therefore steps must be taken so emerging economy manufacturers feel they can participate” (GAVI 2010(77a), 6).

It remains to be seen just how successful GAVI AMC for pneumococcal vaccines will be in both shaping the market *and* proving to be a feasible model; GAVI acknowledges that as this is a pilot program, “mistakes may be made, and lessons will be learned” (GAVI 2008(65), 6). But GAVI’s intent to seek out innovative mechanisms of working with the pharmaceutical industry is clear, even if the solutions heretofore proposed are still questionable in their efficacy. GAVI is at the forefront of a paradigm shift in global public health, being instrumental in sharpening their focus on the low-

income countries' demand for vaccines and experimenting with various institutional and market arrangements to secure funding for that demand. In a paradoxical fashion, as a hybrid institution that is born of modern capitalism, it is trying at the same time, to mitigate its disastrous consequences. In this pilot AMC, GAVI is working to extend the benefits of technology available in the global North to impoverished people in the global South, but the financial machinations involve channeling an exorbitant amount of public funds into already deep pockets of the pharmaceutical industry. Offering up the pneumococcal disease vaccine AMC as yet another 'silver bullet,' GAVI adopts what some would regard as an overly technological approach. Brin and Lexchin (2011, 291) for instance, argue that GAVI's mission of saving children's lives and increasing access to immunization in poor countries "demands far more than new technology—delivery of existing effective vaccines, shoring up health systems, supporting universal health insurance coverage, investing in primary health care being the key related priorities—yet the colossal spending on PCVs [pneumococcal vaccines] that has put GAVI in a funding crisis addresses none of these."

Proponents and supporters of the AMC cite its potential to stimulate research on neglected diseases, and suggest that such 'pull' programs are underutilized by current policy. It is instructive as well, to contrast the AMC vaccines with public goods. Labonte and colleagues (2004, 47) offer a broad definition of public goods as "economic amenities that are undersupplied by the market and therefore require public provision and/or financing." On the surface, that definition certainly applies to vaccines that are undersupplied by the market, but in the case of pneumococcal vaccine AMC, within the PPP, it is the pharmaceutical industry that sets the terms of just what kind of a vaccine is

procured through the AMC and what profit the industry is set to recover. The desire to address market failures and pursue global public goods like vaccines however, often obscures the fact that “the public sector absorbs the lion share of the risks and costs, while the private sector absorbs a disproportionate share of the profits” (Ollila 2005, 4).

Moreover, the argument that AMCs for vaccines are the most efficient mechanisms for accelerating vaccine development for neglected diseases is not supported by the experience of some low and middle income countries. In their brief critique of GAVI’s AMC, Brin and Lexchin (2011) for instance, cite the case of Meningitis B vaccine developed in Cuba through its network of linked public research institutions, including the Finlay Institute for Serum and Vaccines, which emphasizes knowledge-sharing. Similarly, Brazil’s vaccine production dates back to the early 20th century, and since the 1980s the Ministry of Health has emphasized strengthening vaccine production through local capability, and Brazil currently is self-sufficient in the production of eight vaccines including those for polio, Hepatitis B and Haemophilus influenza type B. Finally, India currently is self-sufficient in all but oral polio vaccines and exports a large proportion of what it produces, and at far lower cost than the large multinationals headquartered in the developed countries.

It is clear that PPPs can be very beneficial to the private sector looking to expand their markets. In addition to direct financial returns such as market penetration, substantial subsidies and tax breaks, there are other benefits as well. Buse and Walt (2000b) cite also increased corporate influence in global policy making, brand and image promotion, and enhanced corporate legitimacy through association with the UN and philanthropic foundations (Buse and Walt 2000b, 706).

Among other powerful historical forces, the rise of the transnational corporation, especially the massive ‘global corporation’ (Dicken 2003), has played its role in changing the balance of power between the state and capital accumulation in the second half of the 20th century. One of the key tenets of dependency theory was that the TNCs “had the power, the resources, and the global reach to thwart the territorially based objectives of national governments in both developed and developing countries” (Gereffi 2005, 165). Through innovative new mechanisms, the same power relations play out in the era of global neoliberalism. But as Silver and Arrighi (2003, 350) argue, “the problem for the casualties of “globalization” is not that “markets are almost always wrong, and they have to be made right. The real problem is that some countries have the power to make the world market work to their advantage, while others do not have that power and have to bear the costs.”

Although the current economic crisis has made it more challenging for some donors to continue funding health initiatives in the global South, development assistance overall continues to grow (IHME 2011). Despite fears that the current global economic downturn may lead to donor countries reducing their developmental assistance for health, research indicates that previous economic recessions did not appear to lead to decline in official health aid (Stuckler et al. 2011). The quandary however, is that these funds are being increasingly channeled through innovative financial mechanisms like GAVI’s pneumococcal vaccine AMC, thereby redistributing the resources on a global scale in a manner that continues to privilege and benefit the global elite while missing the mark on delivering much needed resources for the world’s poor.

As analysis above shows, GAVI's power dynamic with the pharmaceutical industry is a complicated one. To put it bluntly, one would expect that he who pays the piper calls the tune. But despite the fact that enormous funds are channeled from donors through GAVI to the pharmaceutical producers to subsidize the pharmaceutical industry, GAVI seems in no position to dictate which vaccines will be researched, developed, produced, and introduced in the developing world through its own 'innovative' mechanisms. If PPP network links are pipes through which resources, information, and funds flow, they don't always flow in the same direction. Susan Strange (1988, 24) writes that "structural power ... confers the power to decide how things shall be done, the power to shape frameworks within which states relate to each other, relate to people, or relate to corporate enterprises," and the following chapter will show that GAVI wields that type of power forcefully enough. But with the pharmaceutical industry at least, it is GAVI's relational position in the network that matters more – a simple relational power "of A to get B to do something they would otherwise not do" (Abrahamsson 2003, 17).

Chapter III

GAVI AND HEALTH GOVERNANCE MECHANISMS

Wielding Power: Influencing the Recipient Countries

The most basic feature of the power balance between GAVI and the recipient countries are its eligibility criteria. Country eligibility was set by outlining two factors: annual GNP per capita equal or less than 1,000 USD, and population less than 150 million (GAVI 1999(2), 17). As discussed in Chapter II, the population size criterion effectively excluded India, China, and Indonesia from being otherwise eligible for funding, as countries that possess considerable production capabilities for vaccines. The GAVI Board argued that buying “externally produced vaccines through the Fund is not an effective and sustainable solution for these countries” (GAVI 1999(2), 17). In the November 2000 round of applications for funding, Cuba’s proposal was also rejected despite the country meeting GAVI’s eligibility criteria. The Review Committee noted that since Cuba is self-reliant in the area of vaccination and ranks high on the health system performance, its application for funding was denied.

For countries that meet eligibility criteria but have what is considered an ‘inadequate delivery system’ (DTP3 coverage below 50%)²¹, GAVI pledged to consider additional support to strengthen immunization services. In 1999, a total of 68 countries met GAVI’s GNP/capita and population size eligibility criteria, and 13 of them had below 50% DTP3 coverage (namely, Somalia, Liberia, Afghanistan, Democratic

²¹ DTP3, or Diphtheria-Tetanus-Pertussis vaccination rates are often used as a proxy for how robust a country’s immunization services are, 80% coverage indicating a strong enough health care delivery system.

Republic of Congo, Niger, Chad, Central African Republic, Nigeria, Uganda, Togo, Angola, Haiti, Cameroon). By 2006, with 16 rounds of submissions and reviews underway, 73 out of 75 eligible countries have been approved for some type of assistance. Solomon Islands and Timor Leste are the two countries that have never applied for support despite being eligible (GAVI 2006(51a)).

Funding applications procedures were outlined in the first GAVI board meeting, and include a multistep process. Based upon GAVI's guidelines, governments of eligible countries must go through a formal application process.²² These proposals are screened for completeness before being reviewed by the Working Group, which then presents proposals and recommendations to the GAVI Board. Upon approval, funds may be released for authorized vaccine purchase through UNICEF (GAVI 1999(2)).

The review of proposals resulted in four possible outcomes: an unconditional approval, an approval with clarifications and/or amendments, conditional approval, and resubmission (implying a fresh review process). The first round of GAVI Proposal Review in July of 2000 received 24 country proposals applying for support from new and underused vaccines account and were deemed incomplete, none received unconditional approval, and only 17 were deemed to have sufficient documentation for review, of which 11 countries were approved with clarification, 2 received conditional approvals, and 4 were asked to resubmit (GAVI 2000(7)). Once approved, the 12 countries²³ received roughly \$ US 30.5 million, of which about 90% was disbursed towards the

²² Although at this point the issue is never discussed at length, the first Board meeting briefly mentions that funding proposals will *only* be accepted from governments, thus implying that no other authority is recognized in a national context.

²³ These were Cambodia, Cote d'Ivoire, Ghana, Guyana, Kenya, Kyrgyz Republic, Lao PDR, Madagascar, Malawi, Mali, Mozambique, Rwanda, and Tanzania.

purchase of new and underused vaccines, and only about 10% came from immunization services sub-account (GAVI 2000(8), 4).

GAVI responded with concern that information found lacking in the proposals consisted of fundamental program components like data collection and reporting and surveillance. To address this problem GAVI suggested that a “concerted effort is needed from all of the GAVI partners to identify new resources – human, financial and technical – to support countries in the process of developing proposals, as well as supporting countries whose proposals have been approved and will need to strengthen their immunization services and/or introduce new vaccines” (GAVI 2000(7), 2). As a classic fledgling bureaucracy commencing the application process, GAVI created additional work for its partners by asserting the need to ‘train’ the applicants in how to comply with GAVI’s requirements in a more efficient manner. In line with the other donor agencies, GAVI’s procedures add serious transaction costs for the countries receiving developmental aid. Rwanda, for instance, “reports annually to donors on 689 indicators; this is after negotiations to reduce reporting requirements” (GAVI 2009(76b), 4). William Muraskin (2005, 231) reports a similar concern about such procedures’ potential to undermine health in developing countries voiced by Jorn Heldrup of the Danish

International Development Agency:

In Tanzania, for example, there are ten – only ten people – in the whole country who can deal with the various international initiatives that are thrown at the country. They must deal with them all... [and] GAVI is only one of them. They are pulled one way, then another. What should be important is the country’s own priorities and they’re looking at all the possibilities [available to them] and [then they’re] choosing priorities with the limited resources that they have. But that is not possible when these initiatives come down [from on high].

At the Third GAVI Board meeting in 2000, representative of Zimbabwe's Ministry of Health had a very rare opportunity to voice some concerns with the GAVI's process. The overarching feeling from the recipient countries was that steps from GAVI's inception to implementation were so swift, that they did not allow much time for meaningful input from the field. Citing communication problems, this perspective suggests that some "confusion has arisen in the understanding of what GAVI is and how it operates" (GAVI 2000(6j), 1) and asserts that information flow is insufficient and information conveyed by the GAVI partners is inconsistent. Other considerations included the charge that GAVI does not take into consideration the on-going regional EPI initiatives, particularly in Africa, or have mechanisms in place that address "excess mortality caused by some regional priority diseases such as measles" (GAVI 2000(6j), 2). Yet another valid concern from the outset raised pointed out that both sustainability of programs and 'ownership' were a challenge to maintain after donors withdrew support.

By the second round of reviews of country proposals requesting support from GAVI in November of 2000, the Review Committee noted an improvement in the quality of country proposals, but still lamented that applications were riddled with "arithmetical errors," "internal inconsistencies," and requests for vaccine presentations that do not currently exist (GAVI 2000(10a), 5). The Review Committee recommended that GAVI partners "improve the systems for dissemination of basic information to countries and to the consultants who are sent to work with countries. Specifically, information about available vaccines, eligibility requirements for these vaccines, and immunization schedules needs to be better disseminated" (GAVI 2000(10a), 5).

Still, in 2006 the Independent Review Committee team that reviews country proposals noted that:

proposals requiring additional information or resubmission to the IRC frequently fail to provide sufficient clarification of important issues. This could be the result of unclear proposal guidelines, or insufficient technical assistance from partners when the proposals are prepared. As countries are required to submit proposals as part (of) comprehensive multi-year plans (cMYPs), this may be further complicated (GAVI 2006(51a), 3).

In particular, the Independent Review Committee suspected that unless some logistical and technical support is provided as GAVI moved to more complex multi-year proposals, many countries will be unable to satisfactorily complete and implement additional requirements for financial analysis. As part of a solution, the IRC suggested that a country interagency coordinating committee together with regional working groups should become more fully involved in country preparation of proposals and reviews. Additionally, GAVI noted that additional support from UNICEF and WHO “would be critical in this regard” (GAVI 2006(51a), 3). Another mechanism of pressure applied by the GAVI partners on the national authorities is rejecting funding applications for new and underused vaccines. For example, the second round of applications in November 2000, yielded two such rejections – Burkina Faso and Sierra Leone – on the grounds that these countries’ immunization services were not on par (DTP3 coverage of less than 50%). While conditionally approved for assistance from the immunization services sub-account, both countries were denied funding for vaccines. The recommendations invited the countries to resubmit when their DTP3 coverage reaches 50%, effectively inviting the national authorities to show serious commitment to the immunization program before extending financial support for new or underused vaccines (GAVI 2000(10a)).

Eligibility criteria, compliance with GAVI's specifications and denials of applications in particular underscore that GAVI's disciplining actions are directed at states and governments in need of instruction. An argument can be made that the rhetorical (and real) concern with reaching the un-immunized children in the global South could override their respective governments' 'incompetence' and inability to fully comply with GAVI's application instructions. Similarly, one would think that in countries where immunization services are so inadequate that their coverage rates do not meet the basic 'herd immunity'²⁴ criteria, additional resources are especially needed. But GAVI's method is to deal with the recipient countries' states and ministries even if the intended beneficiaries of its aid are people.

By 2005 GAVI had reached a decision to replace the two-year GAVI/Vaccine Fund work plan with a five-year strategic plan. Whereas initial eligibility criteria were determined by factors such as population size and immunization coverage rates, GAVI made a shift to enforce performance-based criteria. The strategic five year plan would be outcome-oriented and would describe the specific steps needed to be taken in order to achieve the targets. It would also feature "benchmarks and indicators, to enable greater accountability and transparency of the alliance" (GAVI2005 (47), 2). In December of 2005 the GAVI Board also endorsed the expectation that in phase 2 countries would co-finance vaccine purchases instead of being provided vaccines free of charge. GAVI's position on co-financing considers it a viable mechanism that would encourage financial independence, even if it were not achieved by the time GAVI's support ends in 2015 (GAVI 2006(51c)).

²⁴ A term used to describe a degree of protection afforded to a population when a significant portion of that population is vaccinated, therefore extending that protection to the unimmunized.

At the very first meeting of GAVI's proto-board in 1999, provisional milestones were identified as the means to assure timely progress towards the organization's stated goals. These milestones included reaching the 80% routine immunization coverage in all developing countries by 2005 and introducing the new Hep B and Hib vaccines in countries with adequate delivery systems (GAVI 1999(1)). By 2003, the 80/80 milestone was revised to synchronize it with the Millennium Development Goals and was upgraded to an even more ambitious goal: "by 2010 or sooner all countries will have routine immunization coverage at 90 per cent nationally with at least 80 per cent coverage in every district" (GAVI 2003(28), 3).

These interim milestones were conceived as "minimum global targets to monitor the effectiveness of the Global Alliance," but were explicitly formulated as guides to national authorities for "setting priorities in improving access to immunization services and expanding the scope of these services" (GAVI 1999(1), 11). This decidedly globalist top-down approach places the burden of compliance on the ministries of health and other national authorities, exemplifying a powerful mechanism of coercion. These milestones are intended to reflect GAVI's performance, but measure achievement in the field. When later in the implementation phase of the GAVI undertaking some Board members suggested that it might be valuable to ask country level partners for feedback and views on GAVI processes and strategy, others expressed reservations about developing such consultations. The official position of the Board remained that there is a "risk in asking countries to suggest priorities and activities for GAVI as it could both raise expectations and result in too many diverse responses" (GAVI 2003(28), 3-4).

Another vector of pressure through funding was applied at the recipient countries' pharmaceutical industries. An interesting recommendation was issued by the Review Committee as the result of the second round of reviews of country proposals requesting support from GAVI in November of 2000. Noticing that some countries that produce their own EPI vaccines do not meet the WHO standards for safety, quality or efficacy, the Committee stated:

The Review Committee urges GAVI to enforce the WHO/UNICEF policy on safety of vaccines so that by 2003, all vaccine-producing countries that receive support from GAVI/the Global Fund, must also produce EPI vaccines that meet WHO standards and certification of vaccine production (GAVI 2000(10a), 4).

This recommendation sought to impose an additional conditionality on funding, in essence pressuring the national authorities to streamline their respective pharmaceutical industries in accordance with the WHO guidelines. GAVI was enticing the governments of developing countries to wield power over their own pharmaceutical industries to produce vaccines that in turn complied with safety standards already in place within the international health community in the global North.

Later in the implementation phase, GAVI also requested that representatives from select countries report on progress in “implementing their financial sustainability plans, and how they are working to address financing gaps, including reports on how much of their government budget goes to health, and how much of the health budget goes toward immunization” (GAVI 2003(32), 4). In fact, GAVI argued that increasing financial resources that developing country government budgets allocate for health is as important as increasing development aid (GAVI 2004(38)). As discussed in Chapter I, David Fidler (2003) identifies three vertical regimes of international governance – the soft law, the environmental, and the human right regimes. While GAVI's recommendations do not fall

in the latter categories of either enforceable international law nor human rights issues, neither do they represent the non-binding guidelines of ‘soft law’ typically formulated by international health agencies for adoption by the states. Because these recommendations are ‘attached’ to funding packages, they rather resemble conditionalities attached to SAPs that required countries to comply with the WB’s or IMF’s guidelines in order to receive loans.

At the third Board meeting in 2000, another curious endorsement resulted from GAVI’s acknowledgement of the central role that national governments must play in immunization initiatives. The Board introduced the concept of “engaging the Ministry of Finance in the development of long-term plans for financial sustainability of immunization programs, recognizing that the World Bank has a primary responsibility to secure appropriate links with Ministers of Finance” (GAVI 2000(6), 2). Charging the World Bank with the responsibility to encourage financial commitment put additional pressure on national authorities as GAVI strove to secure countries’ commitment to vaccination programs. In a dramatic reversal, the very financial actors that had been instrumental in the recreation of what Polanyi would call a global market society, were now charged with overseeing the measures aimed at protecting social welfare, an astonishing twist for an institution that defines health as a private responsibility and health care as a private good. It is remarkable that GAVI embodies and embeds both principles simultaneously, drawing the recipient states into a dubious financial arrangement, while ‘disciplining’ them to allocate more resources for protection of their own citizens.

To further monitor compliance, GAVI set out to put an evaluation system in place, executed for each country through the “national coordinating mechanism.” These monitoring activities were ostensibly necessary as indicators of a country’s “commitment to immunization (financial and otherwise)” and “ensuring government responsibility” (GAVI 1999(2), 20). The Annual Progress Reports, designed to uphold accountability were meant to place the responsibility of reporting and implementation on governments. And these Annual Progress country reports were required by GAVI to be signed by Ministers of Health, thusly enhancing “the commitment of the government to improving its system” (GAVI 2002(17), 2). As GAVI entered the implementation phase, it became evident that ranking countries in terms of their performance is ambiguous. As the Board stated, the “definition of good vs. poor performance needs to be examined. Is a country which set modest goals and surpassed them a good performer? Is a country which set too ambitious goals and did not achieve them a poor performer?” (GAVI 2002(24), 2).

This realization precipitated the need to track performance of countries over several years to determine which countries were ‘above the line’ and which countries were ‘below the line’ in terms of their performance. The GAVI Board decreed, however, that in situations where there is obvious and serious lack of progress and/or failure to fulfill the country’s reporting obligations, GAVI “may have to consider discontinuation of support for vaccine supply. This situation would be exceptional and would occur only after extensive consultation with the ICCs to remedy the situation” (GAVI 2002(24), 3). By the end of 2004, GAVI arrived at a tentative understanding that in each case, there needs to be a balance between ‘performance-based’ and ‘needs-based’ funding in order to

“avoid rewarding the high performers and neglecting the weaker countries, or rewarding low performance by providing support based on need” (GAVI 2004(42), 7).

While tweaking its operations, GAVI had to custom tailor its approach to some countries, particularly China and India. Although initially excluded by population size eligibility criterion, China, India and Indonesia were later considered for re-assessment, most likely to take advantage of the size of unvaccinated cohorts in these countries in the pooled procurement mechanism, which is sensitive to economies of scale. The fifth GAVI Board meeting in June of 2001 amended the funding procedure for proposals and reached the following decisions:

- confirmed that India will need to demonstrate a strong commitment by the government to strengthen immunization services and introduce new and under-used vaccines before its proposal could be funded;
- urged that in China, efforts to strengthen capacity of national regulatory authorities will need active monitoring with clear plans and milestones, in conjunction with the country’s multi-year plan; lack of progress could result in a discontinuation of funding;
- agreed that if Indonesia’s proposal includes a request to the Fund for a pre-filled monodose Hep B vaccine to increase efficacy of the birth dose, with Indonesia providing the second and third doses (*sic*) (GAVI 2001(12), 3).

For all three, clearly, national authorities’ ‘ownership’ of immunization and commitment to sustaining the services were identified as necessary prerequisites before any component of the country proposals would be considered for funding.

In 2005, while reviewing India’s ‘best practices’ GAVI remarked on an innovative system of using Accredited Social Health Activists (ASHA) to reach children in remote locations. The Board noted that India’s presentation underscored the importance of increased communication between country governments, and announced that GAVI should “encourage governments to share their experiences and solutions to

common problems with others” (GAVI 2005(48), 7), thus taking it upon itself recommend a course of action to governments.

When in 2001 GAVI reconsidered its position on the eligibility of countries with population larger than 150 million, it accepted China’s proposal for funding. While agreeing to approve China’s proposal, the Board stipulated that no money would be released until a Memorandum of Understanding between GAVI and the government of China was signed by both parties. The Memorandum was meant to clarify certain points, like the government’s use of user fees and the milestones for meeting the regulatory standards. The Board however, noted that development of a Memorandum of Understanding would not become standard practice, but rather “it will only be explored under special circumstances, such as in large countries where the Vaccine Fund will be investing a large sum, and in those where the ICC thinks it is needed” (GAVI 2001(14), 5). By 2002, both India and Indonesia’s funding proposals were approved as well. In India, the two-year phased introduction of Hep B vaccines in selected slum areas was designed as a pilot project, with the idea that “the experiences gained would be the basis of a long-term policy for nationwide integration of Hep B into the Universal Immunization Program” (GAVI 2002(16), 1). Similarly with Indonesia, GAVI requested that it submit a detailed plan for the proposed nation-wide inclusion of Hep B vaccine into routine immunization services. By attaching such a condition to the funding package, GAVI was able to unilaterally influence nation-wide policy in both cases. Just as a point of comparison however, in the six countries that were GAVI’s sovereign sponsors, only two (France and Italy) include the Hep B vaccine into their universal immunization schedule, while the remaining four (UK, Spain, Sweden, and Norway) only recommend it

for high risk groups, such as persons with clinical, behavioral or occupational indicators or children born to Hepatitis B positive mothers²⁵. Epidemiologically speaking, selective vaccination for Hep B of target risk groups seems to be a preferred policy in these and other Northern countries, despite the WHO recommendation that Hep B vaccine be included in the universal vaccination schedule. GAVI supports introduction of underused vaccines into universal immunization programs in developing countries, which increases the captive market size exponentially, *irrespective* of their disease burden, health services infrastructure or costs.

India presented a particular challenge to GAVI in another respect, not least due to the size of its unimmunized cohorts. It was clear that if GAVI was significantly to reduce the number of unimmunized children around the globe, it will “need to develop effective strategies to engage large countries like India” that have the majority of unimmunized children. Of the 24 million children annually who are not immunized, approximately one-third are in India (2009(76c), 9). GAVI considered taking a more tailored approach with India, like targeting the poorest areas or taking a state-by-state approach, while arguing that success will depend largely on the cooperation of governments as well as civil society organizations.

However, while revisiting the issue of sub-national eligibility for project funding, in 2009 GAVI’s Programme and Policy Committee clarified GAVI’s position on eligibility policies. On the question of whether GAVI should fund the poorest countries or the poorest people, the committee reinforced their recommendation that GAVI not “allow subnational support” and that it remains the responsibility of governments to

²⁵ Information on national immunization schedules is available on WHO’s site http://apps.who.int/immunization_monitoring/globalsummary/schedules

allocate adequate resources to health and work towards equity within their own countries (GAVI 2009(74e), 1). GAVI therefore, cannot consider funding on the sub-national level, as that would not be consistent with ‘fiscal federalism (GAVI 2009(74e), 2). While dealing with a constellation of other non-state actors, GAVI nevertheless only recognizes the states and their respective institutions as legitimate counterparts to instruct, discipline, and fund.

For instance, when the GAVI-funded program aiming to introduce the pentavalent vaccine (DTP-HepB-Hib) in India in 2009 was not implemented on time, the Indian government indicated that it would initiate a scaled-down program in five states. The GAVI Alliance board determined that excess funds would be rescinded and pointed out that the program would need to be evaluated before extending it to other states. It also stated that while India is a very ‘important’ country as it has “the largest population of unimmunized children in GAVI’s portfolio,” the responsibility for vaccine introduction ultimately “lies with the Indian Government” (GAVI 2010(77a), 7).

When GAVI saw fit to reconsider its funding eligibility criteria, another opportunity to have serious impact on recipient country health expenditures and policies presented itself. For introducing new vaccines in the future, GAVI will use the 70% DTP3 coverage filter (using WHO and UNICEF estimates)²⁶, ensuring that only countries with sufficient basic vaccination programs in place will meet GAVI’s funding eligibility criteria (GAVI 2009(74e), 2). For example, Bangladesh and Zimbabwe submitted new proposals for Immunization Services Support (ISS) program funding, but their DTP3 coverage fell below the 70% target and no funds were issued for these two countries

²⁶ As compared to the initial threshold of DTP3 coverage of 50 percent.

(GAVI 2009(75a)), thus presumably spurring them on to expand and improve their basic vaccination coverage in order to secure future funding, or possibly to take more liberal and ‘creative’ stance on reporting coverage to show compliance – a tactic that has been reportedly on the rise (Lim et al 2008).

As for the new eligibility threshold, the Programme and Policy Committee made a recommendation that a new cutoff be introduced in 2011, raising it from the original level of \$1000 to range between \$1500 and \$2000 GNI (using WB GNI per capita data).

(GAVI 2009(74e), 2). The Programme and Policy Committee report noted that “although the GNI of many countries has risen, in fact much of the rise is due to US dollar exchange rate fluctuations and not the countries’ economic growth” (GAVI 2009(76b), 6). Later, the Executive committee clarified that \$1500 was the figure arrived at if the original GNI criterion was adjusted for inflation. And \$2000 was chosen because “the cost of vaccines that GAVI supports today is greater than when GAVI was formed” (GAVI 2009(75c), 4). Both options however, would result in a “reduction in the number of GAVI eligible countries and the size of the birth cohort” (GAVI 2009(76c), 8).²⁷

Those members of the board that advocated for setting the GNI threshold at \$1500, argued that “1. many donors have a poverty focus and so would be more likely support GAVI if it chose the lower threshold; 2. in the current constrained economic climate it makes sense that GAVI retain fewer eligible countries; 3. adjusted for inflation, \$1500 today is roughly equivalent to \$1000 in 2000, the year the eligibility policy and the \$1000 threshold was first applied” (GAVI 2009(76c), 8). Proponents of the other option who advocated raising the cutoff point (which numbered less than one-third of the number of

²⁷ Birth cohort refers to the collective ‘cohort’ of children in countries eligible for GAVI funding that would be the target population to receive GAVI vaccines.

board members present, and thus the losing proposition), pointed out that the \$2000 threshold would be “more equitable, ensure that GAVI maintain a broad influence on market shaping of vaccines, and enhance GAVI’s impact on the MGDs and on children’s right to health” (GAVI 2009(76c), 8). The simple math of it is of course, that the lower the GNI per capital threshold is – the more countries are eligible for GAVI funding, the larger the size of the unvaccinated cohort, and – naturally – the captive market for new vaccines.

The matter of eligibility is more complex than a wishful projection of demand. This change of eligibility criteria also brought forth the issue of becoming ineligible for future GAVI funding due to the rising GNI. In a semantically bold move, GAVI announced that countries ‘graduate’ GAVI’s program “after countries’ income has rendered them ineligible for GAVI support” (GAVI 2009(74e), 2). Countries’ ‘graduation’ thus, is not based on immunization-related indicators and success of GAVI funded initiatives, but simply on rising national income. In fact, GAVI graduation criteria are also tied to increasing the national levels of co-financing of the GAVI funded initiatives once GAVI monetary support runs out when countries ‘graduate.’ At this point, the Board noted that as “GAVI implements phase 2 of co-financing policies, it will be crucial to engage country governments at the ministry of finance and parliamentary levels” (GAVI 2006(53), 2).

While preparing to implement phase 2 financing policies in 2006, the Board formulated propositions to change the existing policies, the main principle being that “countries would no longer be provided vaccines free of charge. Instead, countries would be expected to co-finance” (GAVI 2006 (51c), 1). Shifting from the good old donor-

recipient script to, the newly formulated approach would enable GAVI to gently prod countries to ‘financial independence’ by the target date of 2015.

The Board proposed that countries should be grouped into broad categories with similar co-financial requirements. GAVI intended to ‘work with’ with the existing designations used by the World Bank and the UN, using established criteria such as GNI per capita, Least Developed Country designation, etc., to come up with four functional categories of country groups: *least poor*, *intermediate*, *poorest*, *fragile/post conflict* (GAVI 2006 (51c), 4). The *least poor* countries – those rising above the \$1000 GNI per capita GAVI eligibility threshold – would be required to progressively increase their co-financing and in the future years would no longer be eligible for GAVI support. These countries (they numbered 13 in 2006) are considered to have a higher ability to pay and are therefore on the path to “GAVI graduation” ((GAVI 2006 (51c), 4).

In determining which countries fall into the *poorest* category, GAVI relies on the Least Developed Country (LDC) grouping established by the UN. As of 2006, 41 (out of 72 GAVI-eligible countries) fall into that category and are recognized as countries that would have significant difficulties providing co-financing in the future. Simply put, these countries “do not have the ability to pay for the market price of vaccines” (GAVI 2006 (51c), 5) and it is proposed that they contribute a modest fixed amount in years 2006-2010, which would increase incrementally over the following years. The *intermediate* group of countries (18 in 2006) has a limited ability to pay, while still being comparatively poor, and GAVI proposed that their co-financing contribution be a larger fixed amount (2006-2010) that would increase gradually after 2010. Finally, 13 countries met GAVI’s *fragile/post conflict* criteria (a group slightly expanded by the addition of

Somalia, Haiti, and Zimbabwe despite not being recognized as post-conflict by the World Bank upon consultation with UNICEF). These countries were to be exempted from co-financing, “as long as they continue to face exceptional circumstances” (GAVI 2006 (51c), 6). At a later point, the WHO representative expressed concern that some ministers’ comments had not been taken into account, when delineating the 4 categories. Apparently, some country representatives were determined to see the ‘poorest’ category to be subdivided in two (GAVI 2006(53), 5).

Of course the issue of co-financing of initiatives formerly funded by GAVI will prove a challenge at least in part because of the still high prices for most new and underused vaccines. When in 2009 the Programme and Policy committee was discussing the issues of co-financing, it also noted that “GAVI should consider their ‘exit strategy’ and the need for further vaccine price reduction to facilitate country ownership. GAVI should also put pressure on countries with potential ability to pay for vaccines, such as India” (GAVI 2009(74c), 1). While discussing co-financing, the committee expressed its recommendation that when referencing countries’ commitment to co-financing, the term ‘voluntary’ should be changed to ‘highly committed’ (GAVI 2009(74c), 6).

The Finance Committee stated in 2009 that, as a potential strategy to reduce the future funding gap, “trimming programmes would not be sufficient – it would require GAVI not initiating the major programmes that have the highest potential to save lives” (GAVI 2009, 73(b), 2). As a strategy to consider, the committee suggested that the secretariat should “examine country eligibility criteria and particularly co-financing levels. Recipient countries may be willing to accept a higher co-financing responsibility in order to avoid any sense that programme budgets may not be available in the future”

(GAVI 2009, 73(b), 2). As a matter of fact, by mid-2009, with the exception of Pakistan, “all countries currently required to co-finance their vaccines have paid in full, with many exceeding the minimum requirement” (GAVI 2009(76b), 1).

By its own admission, by requiring countries to co-finance, “GAVI is attempting something never before undertaken in international development” (GAVI 2006 (51c), 2). This gentle coercion is meant to place GAVI countries on the path to self-reliance in vaccination practices. But is indeed remarkable that a Public-Private Partnership, such as GAVI, is actually able to apply pressure and exert influence over sovereign states in determining aspects of their public health policy. Moreover, the GAVI’s Board hints at the potential risk that is inherent in such a commitment, namely the “unintended consequences of the proposed policies such as skewing the health sector funding away from non-GAVI vaccine or from other health priority areas” (GAVI 2006 (51c), 2). As a possible strategy to mitigate such developments, GAVI, for example, suggests that it “could accept an increase in health budget/expenditure for all EPI vaccines or even for the broader health sector as a co-financing contribution” (GAVI 2006 (51c), 7). By proposing a co-financing requirement then, GAVI has created a leverage mechanism that has an effect on countries’ internal and non-vaccine-related health policies and practices as well.

In the context of almost 3 decades of neoliberal reforms, co-financing is, in fact, a remarkable policy reversal. By the end of 1980s, cross-conditionality directed at the global South and emanating from the WB and the IMF has become routine and involved opening domestic markets to imports, divesting state resources in favor of the private sector through privatization and contracting out of services, and reducing state

expenditures (Labonte et al. 2004, 16-17). Both the IMF and the WB adopted a neoliberal perspective of attaching conditions to their loans to “impose [SAPs] that prescribed severe anti-inflationary measures, deregulation, privatization, and the like, on borrowing countries” (Cerny 2005, 10). Thus, funds were made available only if the recipient country adopted SAPs which included, among other policies, privatization of state-owned health care, reduced government spending on health, and introduction of cost recovery user fees (Labonte and Torgerson 2005). As discussed in Chapter I, SAPs helped make the global South more dependent on foreign aid and investment while contributing to the deterioration of many indicators of children’s welfare, including immunization rates. Moreover, in discussing a curious side effect of aid, IHME reports that there is a strong relationship between developmental aid for health and public domestic health spending. Previous studies show that sector specific foreign assistance to governments causes governments to withdraw or reduce their own spending (Swaroop et al. 2000; Baldacci et al. 2008). Country variations notwithstanding, according to IHME on average, “for every \$1 of DAH channeled through government (DAH-G) that flowed to a country, governments on average took \$0.43 to \$1.14 of their own money away from the health sector” (IHME 2011, 48). This is referred to as ‘subadditionality’ and occurs when developmental assistance to government substitutes for domestic health spending either partially or fully. An obverse phenomenon is ‘additionality,’ when aid fully supplements government health spending

It is worth pointing out again that SAPs were “directed at debtor states (i.e. their citizens) and not the banks holding their debt” – an economic policy that Philip McMichael (2000a, 681-682) calls nothing short of a “form of financial capitalism. But

while the co-financing mechanisms that GAVI is using are a reversal of SAPs in that they tacitly demand greater state involvement into matters of public health, they are – to continue with the metaphor – hardly the harbinger of the debtor states’ (i.e. their citizens) emancipation. They are rather still “profoundly political” (McMichael 2000a, 682) and organize both state structures and state policies in accordance with the same neoliberal logic of private efficiency and global capital accumulation. GAVI’s co-financing requirements expect a greater financial independence of the states, even as it funds their immunization initiatives. Again, suspended between the two organizing principles, GAVI functions as a hybrid institution, paradoxically capitalizing on one, while promoting the other. Of course, while enticing states to increase health spending seems like a good guarantee of ‘ownership’ of the immunization programs, the question remains of whether these states will be able to sustain the more expansive and expensive programs that don’t meet their public health needs once they ‘graduate.’

Mission Drift: Health Systems Strengthening

The latest meeting of WHO’s Strategic Advisory Group of Experts on immunization in 2013 notes that

many developing countries have weak primary health care systems which have difficulty in delivering quality vaccination and other health services. They are unable to sustain high coverage with essential vaccines or to effectively integrate new vaccines into their national vaccination and maternal and child health programmes. The majority of unvaccinated children globally are concentrated in 10 low-income countries with weak health systems which are priority countries for international support (WHO 2013, 202).

GAVI’s organizational vision was summarized at the 1999 proto-board meeting, and broadly stated, it amounts to fulfilling “the right of every child to be protected against

vaccine-preventable diseases of public health concern” (GAVI 1999(1), 2). GAVI’s strategic objectives, also formulated at the proto-board meeting, encompass a broad range of goals, namely to “improve access to sustainable immunization services, expand the use of all existing cost-effective vaccines, accelerate the development and introduction of new vaccines, and make immunization coverage an integral part of the design and assessment of health systems and international development efforts” (GAVI 1999(1), 2). In terms of broad agenda, this translated into the following points, articulated by the WHO Director General at the first GAVI Board Meeting:

So, **first** we must focus our highest attention to those diseases that cause excessive morbidity and mortality. **Second**, we must do it in such a way that we get most health for the money we invest. And **third**, old wisdom has it that prevention is better than cure. We must therefore choose a small range of interventions that protect against diseases with a high disease burden, which are highly cost-effective and give us the highest returns in terms of good health (GAVI 1999(2), 10).

There was however, a rift between this grand humanist vision and the very pragmatic organizational objectives that GAVI initially set out to accomplish. From the outset, while recognizing how important a vital and strong health system is to immunization services, GAVI embarked on funding and delivering only new and underused vaccines, and did not plan to finance either routine immunization services or overall health delivery services in the recipient countries. GAVI has always maintained that its own “vaccine investment strategy should not focus on current routine EPI vaccines which are already delivered through routine immunization services as these are the responsibility of countries” (GAVI 2008(64), 1). And yet, GAVI could hardly ignore the fact that many of its recipient countries were facing on-going challenges with other (non-GAVI funded) vaccine preventable diseases as well as routine EPI immunization

services. GAVI's first concession to these epidemiological realities came in 2003, when the Board first declared that the "measles situation presents a moral issue: if GAVI is concerned about reducing vaccine preventable deaths it must consider how it might catalytically support efforts to reduce deaths from the biggest vaccine-preventable killer of children" (GAVI 2003(33), 2).

By 2004, the GAVI Board reviewed the 'Measles Investment Case' prepared by the Africa Measles Partnership and approved the use of \$ US 50 million in Vaccine Fund Resources for a measles mortality reduction effort (GAVI 2004(37), 1-2). There was, apparently a wide consensus among the Board members "that the arguments presented in the measles investment case provide a strong and compelling case for the use of Vaccine Fund resources to reduce measles mortality in Africa" (GAVI 2004(37), 1). But the Board also felt strongly that both the Partners and immunization community at large receive a clear message that this funding initiative was a one-time deal. Three important stipulations were made, clarifying GAVI's position on measles mortality reduction: 1. the funds were to be time-limited and cover one-time initiatives (like new antigen introduction, or one time system strengthening); 2. the funds were provided to facilitate immunization changes that will be sustainable in the routine immunization system by non-Vaccine Fund resources in the future; 3. funds should be directed to country-owned processes, subject to GAVI accountability and review (GAVI 2004(37)). GAVI was adamant that this financial assistance is perceived as a one-time event, channeling money to strengthen measles mortality reduction services that are 'owned' by governments and can be sustained once GAVI's funds are exhausted.

The following years have seen a range of one-time deals and interventions. Abandoning the logic of only investing in vaccine development for diseases with relatively low global impact, GAVI announced, for example, that while “the global impact of meningitis vaccine is limited when compared to other vaccines GAVI might support, meningitis epidemics can paralyze communities and slow economic growth. Since 2002, GAVI has prioritized the development of meningitis conjugate vaccine. It is a “low-hanging fruit” that could yield significant results” (GAVI 2008(65), 4). In another instance, in November of 2008, the GAVI Board approved a one-time pneumococcal 7-valent vaccine donation to Gambia and Rwanda. Although the Board resolved that accepting this donation “does not imply any advantages for the manufacturer in future procurement,” there clearly remains a concern that such donations might imply “favoritism to manufacturers for charitable contributions” (GAVI 208(68),3). In order to avoid altering the nature of industry’s partnership with GAVI, a dissenting opinion suggested that the manufacturer should “identify a solution that would permit direct donation to the countries receiving the vaccine” (GAVI 208(68), 3). These instances exemplify GAVI’s learning curve and ability and willingness to make exceptions, to change as an organization and adjust its vision and strategic objectives. One of the most telling such instances is the gradual evolution of GAVI’s policy on strengthening health systems and services.

By mid-2005, GAVI had made a decision to open another stream of funding earmarked for Health Systems Strengthening (HSS) to complement its existing Immunization Services Support (ISS), recognizing that it would have a potential to reduce the burden placed on the health systems of the recipient countries. GAVI

maintained that both funding streams must remain focused on immunization and that support must be time-limited, and that support should be focused on items such as district-level support and human resources (GAVI 2005(46)). All countries passing GAVI's eligibility criteria for ISS would be eligible for HSS as well (GAVI 2005(48)). GAVI acknowledged that using resources to finance health systems is a significant risk, but it outweighs the risk of *not* providing these funds, as it could jeopardize GAVI's immunization initiatives. Since the first countries to receive this new HSS funding could prove to be important benchmarks of success, GAVI argued that countries should be selected to fit a wide range of profiles – “from high performing countries with active sector wide approaches to countries which are facing the greatest challenges in increasing access to health services” (GAVI 2005(48), 2). In developing the indicators by which to measure HSS success, GAVI would need to strive to maintain a good balance between focus on immunization and general HSS, and thus should zero in on the indicators that focus on process. Such indicators will “pertain directly to immunization – whilst recognizing the end point of child mortality” (GAVI 2006(49), 1). The Health Systems Strengthening window opened in December 2005 to all eligible countries, and within a year, 40 of the 72 countries had applied for HSS (GAVI 2007(62)).

GAVI conceded at this point that any country's health system is the foundation for all health services delivery, including immunization, and that “improvements in the broader health system if well designed, will have a positive impact on immunization service delivery. In fact, this is the overall premise of the HSS window” (GAVI 2007(60), 2). The Independent Review Committee announced that it would look closely “at the links between GAVI HSS support and other health systems efforts in each country

proposal. The committee only recommends the proposal for approval when it feels that the objectives are integrated into a harmonized health systems framework” (GAVI 2007(60), 2). GAVI also acknowledged that while there is a considerable risk involved in funding HSS, there is even a greater risk of not being able to achieve GAVI’s core mission in countries where health systems are not supported sufficiently.

Meanwhile, there seemed to have been increasing pressures on GAVI regarding HSS emanating from the multilaterals and the global health community. In 2009, during a Ministerial International Health Partnership held in Geneva in February, a communiqué was issued requesting that GAVI and the Global Fund to Fight AIDS, TB and Malaria (GFATM) collaborate in order to “decrease transaction costs on countries and improve efficiencies in programming” (GAVI 2009(74c), 3). Similarly, a discussion ensued of opportunities for better collaborations that exist between the WB, GAVI and GAFTM, including so called ‘joint-programming,’ which consists of common “appraisal processes and harmonized monitoring” (GAVI 2009(74c), 3). At that point, WHO has agreed to facilitate the process, and GAVI expressed the hope of engaging UNICEF as well. As a result of the WHO-facilitated discussions between GAVI, GFATM and the WB to harmonize funding for health systems, “GAVI decided to invest its resources in health systems in recognition that it is not vaccines but immunization that saves lives; routine immunization can only be delivered in functioning health systems” (GAVI 2009(76b), 4).

In 2009, the Programme and Policy committee members

sought clarity on the recent announcement at the UN General Assembly on a new donors’ commitment for an expanded IFFIm for health systems. At this point, specifics are not available about funding flows or the exact nature of the announced commitment. It is apparent however that the commitments would be contingent upon a joint HSS platform; if the joint platform is not achieved, the funding might not materialize (GAVI 2009(74e), 3).

Simply put, GAVI started to feel the pressure being applied by the global community to expand its involvement into strengthening the health sector. The committee also noted that "future support for health systems needs to place a stronger emphasis on the role of civil society. Concerns were voiced that the joint platform might be too public sector focused, and that funding would be primarily directed at the public sector" (GAVI 2009(74e), 4).

In June 2010, the GAVI Alliance Board meeting made a few important decisions pertaining to the future of HSS funding. In particular, it endorsed the recommendation that the "share of funding for cash based programmes in a given proposal round will be 15-25%" which is the maximum proportion of funds that GAVI could commit to the HSS project (GAVI 2010(77a), 12). The other decision concerned the remaining funds of \$US 179 million not yet used from the original HSS window, which the board decided to retain for future HSS expenditures rather than redirecting the money towards vaccine purchases. The interesting development concerning these decisions was a strong objection issued by the Bill and Melinda Gates Foundation, and its negative vote on the HSS measure.

The Bill and Melinda Gates Foundation announced that while they fully appreciate the "importance of robust immunization and health systems for the delivery of vaccines," GAVI is currently facing a fiscal crisis that "could prevent most low-income countries from introducing rotavirus and pneumococcal vaccines" (GAVI 2010(77a), 29). The Foundation further suggested that if "GAVI support is not present, there is no alternative source of funding to ensure that these countries can introduce vaccines" (GAVI 2010(77a), 29). And finally, the Foundation argued that it is possible to predict

the health impact of investments in vaccines. “For every \$10 million that is used to purchase the new vaccines against pneumonia and diarrhea, we can save approximately 5000 child lives. The Board has not been presented with this type of evidence on potential HSS investments to inform these decisions on the allocation of scarce resources” (GAVI 2010(77a), 29). Overall, the Foundation was concerned that GAVI will not be able to honor its commitments to countries and continue introduction of new and underutilized vaccines, and believed that a strategic organizational goal with demonstrable cost-efficiency should take priority over GAVI’s investment in HSS. And yet the GAVI Board decision to expand its mission into HSS is a fascinating development. Only future GAVI actions will tell if this organizational mission drift was an aberration or the result of a feedback loop that will permanently reorient GAVI’s mission.

In the decade since its inception, GAVI has become firmly interwoven into the transnational network of global actors invested with authority and resources to tackle critical global health issues. A globalist worldview that is the cornerstone of institutions such as GAVI, sees global challenges (be they security, health or environment) as requiring action that neither states nor multilateral institutions are capable of. But they do not set out to change the social and economic global order. What they offer instead, is an eclectic blend of ideologies borrowed from public, private and non-profit sectors, and a mix of policies and initiatives that aim to mitigate the consequences of the rigged rules of the contemporary global order, without actually challenging them. What results is their intimate involvement and increasing influence on both the normative and actionable aspects of global governance that reinforces the status quo.

No doubt, GAVI has had a tremendous impact on introducing underused vaccines in the developing world, thereby saving lives and reducing the customary time lag of introducing newer vaccines in the Global South. At the same time, GAVI has affected the current and future trajectories of numerous national immunization campaigns, sometimes locking states into arrangements with the pharmaceutical industry that are likely to far exceed GAVI's tenure. It has already managed to exert power over health and financial policy of many a sovereign state, coercing governments to commit to improving the sustainability of national financing of immunization and affecting national health budgets. It played a leading role in shaping vaccine markets and singlehandedly gave a boost to the pharmaceutical industry, channeling public and private funds to subsidize production of handpicked vaccines to be publicly administered to millions of children. At the same time, it has undergone a significant adjustment in mission and scope of its operations as a result of the global pressures. My analysis of GAVI's trajectory as a global health PPP brings into relief new forms of governance mechanisms, becoming prominent in the context of global capitalism, and the seldom-addressed relationships of power in which global governance is embedded.

CHAPTER IV

GEOPOLITICAL CHANGES IN VACCINE TRADE

Trade Related Aspects of Intellectual Property Rights

If, as József Böröcz (2001, 1162) argues, ‘all cases are linked,’ then to understand shifts in global governance processes in various national settings, I need to examine the geopolitical context in which global governance of health is embedded and the systemic features of that arrangement. One of the most profound ways in which all actors of global health governance of vaccine preventable diseases are connected is trade in vaccines, and the following two chapters offer an empirical analysis of that system. To better situate this analysis I begin by an overview of the Trade Related Aspects of Intellectual Property Rights (TRIPS) Agreement.

The 1995 inauguration of the WTO included signing of a smaller and a controversial ‘side deal’ – the TRIPS Agreement. Among the stated objectives of TRIPS was enforcement of intellectual property rights, which “should contribute to the promotion of technological innovation and to the transfer and dissemination of technology” while tightening international patent law (WTO 1995, 323). TRIPS agreement essentially required the WTO member governments to pass national legislation that would guarantee patent terms of 20 years for pharmaceuticals and would disallow issuing compulsory licenses,²⁸ which trumped patents. This meant that countries with no or insufficient manufacturing capacity could not import generic versions of

²⁸ Compulsory licenses allow governments to override patents and authorize production of generic copies of medicines.

patented medicines (Oxfam 2006). To comply with TRIPS, countries considered as ‘developing’ or ‘least developed’ were to introduce appropriate national patent laws by 2005 (WTO 1995; Chaudhuri et al. 2003).²⁹

Implementation of TRIPS was lauded by the WTO as the virtual guarantee that research and development (R&D) in the global South and for neglected diseases would become more vigorous. Proponents of TRIPS argued that harmonization of patent laws globally would prevent pharmaceutical piracy, help the industry recover substantial costs of R&D, while simultaneously encouraging R&D on diseases endemic in the global South and stimulate both foreign direct investment and technology transfer to the developing countries (Chaudhuri et al. 2003).

According to the critics, however, one of the biggest repercussions of TRIPS was its projected effect on the availability of affordable medicines. Strong intellectual property protection is one of the main mechanisms of maintaining high prices for medicines, which in turn, is one of the crucial impediments to access to essential medicines (t’Hoen 2002). Arguably, strong patent protection for medicines increases the number of new drugs that remain out of reach for the poor, and negatively affects local manufacturing capacity while removing a source of generic quality drugs (Médicins sans Frontières 2001).

There was a safeguard provision in TRIPS that, in principle at least, allowed for member states to take special measures to protect public health. But in practice, the interpretation of this provision proved contentious and precipitated much controversy. Two instances in particular put the contentious nature of TRIPS in stark relief and

²⁹ The date was renegotiated at Doha and an extension to 2016 was granted to the least developed countries.

prepared the ground for the future Doha Declaration. In 1997, South Africa passed the Medicines Act to ensure access to affordable medicines. In 1998, forty multinational pharmaceutical companies *and* the South African Pharmaceutical Manufacturers' Association brought a suit against the South African government, arguing that the Medicines Act violated TRIPS. Although the US and the EU governments initially backed the suit, the standoff created such a public controversy that by 2000 the pharmaceutical companies could no longer rely on the support of their respective governments and in 2001 the case was dropped unconditionally (Oxfam 2006; t'Hoen 2002).

Another highly visible case involved Brazil's very successful AIDS care program, which has offered since the mid-1990s comprehensive AIDS care, including universal access to locally produced antiretroviral drugs. Furthermore, Brazil has also successfully used a threat of compulsory licensing for antiretroviral drugs to negotiate lower prices and has offered a cooperation agreement for technology transfer for production of generic antiretrovirals to other countries. In 2001 the US brought a dispute against Brazil before WTO, claiming that Brazil's practices violated TRIPS. The resulting pressure from international civic-sector and NGOs was fierce enough to prompt the US to withdraw the complaint (t'Hoen 2002).³⁰

Finally, in 2001, facing a potential anthrax threat, both the US and Canada threatened to override patent protection held by the German pharmaceutical Bayer in

³⁰ Over the years, a number of international and national NGOs as well UN agencies were involved in campaigns aimed at improving access to and affordability of essential medicines, including organizations such as Oxfam, MSF, Consumer Project on Technology, Health Action International, the South African Treatment Action Campaign, Act Up Paris, and the Health Gap Coalition.

order to secure sufficient supply of the anti-anthrax drug Cipro at low cost (Farlow 2003). This, of course, revealed the hypocrisy of the more powerful countries' position, given the fact that a similar interpretation of TRIPS to insure public health was denied countries in the global South. The WTO Doha Round expresses these controversies. For example, in the summer of 2001, the 'African Group' of WTO member countries produced an official statement urging the TRIPS Council to confront the issues of access to medicines and for the first time opened up a formal discussion of intellectual property issues as they relate to public health (t'Hoen 2002).

Spearheaded by the global South country officials and NGOs, the 2001 Doha Declaration on TRIPS and Public Health offered an interpretation of TRIPS that would allow the WTO member countries to put public health concerns before intellectual property rights. In part, the Doha Declaration on TRIPS and Public Health states: "[e]ach Member has the right to grant compulsory licenses and the freedom to determine the grounds on which such licenses are granted... [and] the right to determine what constitutes a national emergency" (WTO 2001, para 5b-c). The declaration did not, however, resolve the issue of compulsory licenses for countries with no or insufficient manufacturing capacity. It was not until August of 2003 that the WTO's General Council ruled that compulsory licenses for imports from another country could be issued if there was a need to address public health problems (namely HIV/AIDS, TB, malaria and other epidemics) (UNCTAD/WTO 2006). Together, the TRIPS Agreement and the Doha Declaration embody the tug of war between the states confronting public health problems and business interests of the pharmaceutical industry. As far as legal codifications of this rift go, TRIPS tilted the scale in favor of protecting the intellectual property rights of

private capital, and the Doha Declaration seemed to have balanced it out by ensuring that countries should not be prevented from protecting public health interests within their borders.

Network Structure: Persisting Hierarchy

In this chapter, I examine the structure of the world vaccine trade network and changes that occurred in that structure. Addressing an often invoked critique leveled at studies that examine agglomerate trade including everything “from garments to semiconductors” (Mahutga 2006, 1864), I limit my analysis to an examination of the structure of trade in a single category of commodities – vaccines – and changes in that structure over time. I then compare it to patterns of trade in pharmaceuticals overall.

Smith and White (1992, 858) identify five empirical components of international economic systems: 1. the constituent economies of states... that produce, distribute, consume, and exchange exports and imports; 2. links or directed pairwise flows between these economies/polities, and country level and international policies that regulate these flows; 3. the political-economic networks formed by these links or pairwise flows; 4. the positions occupied by constituent economies/polities in these networks, and 5. the structure of these networks as patterns of flows between positions. Network analysis is uniquely suited for exploring the last four of these components, and in my analysis, I examine the directed pairwise flows of vaccine exports and the networks formed by those links as well as the positions of states as exporters of vaccines and the patterns of exports between these positions.

Vaccines are an exemplary commodity from the perspective of an examination of systemic trends in industrial capacity changes. Vaccines are pharmaceutical products that require extensive know-how, complex infrastructure and advanced industrial capacity for production. By conceptually distinguishing between exporters and non-exporters in my analysis, I am able to capture the structure of global vaccine production on country level as well as document any change in individual countries' industrial capacity overtime, thus empirically testing the industrial convergence hypothesis. Furthermore, the vaccine market – unlike other pharmaceuticals – is mediated by bulk procurement, most often by the state (Batson 2005). It is also the state that most often oversees administration of vaccines and often regulates or prescribes immunization standards. And, finally, unlike many other medicines, vaccines are preventative in that they are administered not in response to contracting a disease but rather in an attempt to prevent it and in order to insure herd immunity of a population and thus curb epidemics and the spread of infectious preventable diseases.

One unique aspect of applying network analysis to various types of international flows is that it considers the “interaction system of countries” (Bornschieer and Trezzini 1997) in its entirety, allowing not only for an empirical assessment of the various countries' positions and mobility, but of the underlying structure. Country level trade data allow me to examine the systemic features of global networks of trade at particular points in time as well as changes over time. Changes in global economy are rooted in how it is organized and governed (Gereffi 2005), and observing these changes in vaccine trade allows me to draw conclusions on the nature of industrial convergence in vaccine production. By conceptually distinguishing between countries with industrial capacity

(exporters of vaccines to other countries) and those that lack industrial capacity for vaccine production (non-exporters), I am able to specify the trends of industrial convergence.

I begin by presenting three networks of vaccine trade between countries in 1996, 2004 and 2010. Raw data on trade between countries is extracted from the UN Statistical Division Commodity Trade Statistics Database (COMTRADE), which is compiled annually, and manipulated in SPSS and Pajek. Vaccines are a subcategory of pharmaceutical products and are defined as ‘vaccines for human medicine,’ Standard International Trade Classifications code 300220. The Standard International Trade Classifications code for pharmaceuticals is 30. In the three networks, each vertex represents a country and each arc an instance of trade in vaccines between two country-partners for years 1996, 2004 and 2010. I focus on the link between two trading partners, and to minimize missing data I cross-reference records for both exporters and importers. Even in an instance when a country does not report its’ trade statistics to the UN in a particular year, its links to other countries can be established by cross-referencing with reported imports – a tie exists if either of the trading partners reports it.³¹ The three networks document trade in vaccines among 188, 209, and 204 countries for the years 1996, 2004 and 2010 respectively.

The first characteristic of trade in vaccines that I consider here is extent of trade, operationalized as the number of trading partners for each country, specifying exports

³¹ For example, even if Cuba does not report its trade in vaccines in 1996, by cross-referencing with other reporting countries, I can establish that it exported vaccines to Argentina, Brazil, El Salvador, Columbia, Chile, and Mexico and imported from Canada, Croatia, Denmark, France, Russia, Switzerland and the UK. This technique minimizes missing cases at the country-level, but might underestimate the volume of trade with other non-reporters.

and imports of vaccines separately. Although the extent of imports in vaccines is a crucial attribute to consider when investigating countries' immunizations rates for example, I first focus on exports because, as discussed above, exports are indicative of a country's industrial capacity³². In order for innovations or even production in the pharmaceutical industry to take place, a country must have a robust chemical industry and an advanced manufacturing sector to supply ingredients and machinery. In addition, a pedigree of experimental and clinical research programs for drug development as well as an educational base to train researchers and technicians is a must (Gereffi 1983). Additionally, vaccine exports as a measure capture a country's relative weight in the global network of vaccine trade, underscoring the precarious nature of a network that is highly centralized, where relatively few massive exporters provide vaccines to the rest of non-exporting countries.

Exports of vaccines serve as a reliable indicator of industrial capacity for manufacturing pharmaceuticals, and from 1996 to 2004 to 2010 the proportion of countries exporting vaccines to at least one trading partner hovers at roughly the same level. It rises slightly from 44 per cent in 1996 to 49 per cent in 2004 only to fall back to 43 per cent in 2010. Thus, over half of the countries have absolutely no manufacturing capacity for vaccine production, and need to rely on imports. An even smaller proportion of countries manufacture vaccines that are traded extensively with multiple partners. Only 20 % of all countries export to more than 5 trading partners in 1996 for instance, and that proportion rises only slightly to 23 % in 2010.

³² Being a non-exporter of vaccines, of course, does not necessarily mean that a country is not industrialized. But the obverse is certainly true, and if a country exports vaccines, it possesses an industrial base and production capabilities sophisticated enough to support a pharmaceutical industry.

Table 4.1 Changes in number of importing partners for top vaccine exporters 1996-2004-2010.

Country	Importing partners			% change from 1996 to 2010
	1996	2004	2010	
France	166	179	175	5.4
Belgium	159	163	170	6.9
Italy	116	124	135	16.3
UK	107	87	79	-26.1
Switzerland	101	93	66	-34.6
Canada	94	71	68	-27.6
Germany	92	95	86	-6.5
USA	89	99	107	20.2
India	77	136	137	77.9
Netherlands	66	93	87	31.8
Denmark	64	101	59	-7.8
Hungary	64	12	18	-71.8
Japan	48	72	63	31.2
Croatia	44	15	14	-68.1
S.Korea	37	102	113	205.4
Bulgaria	33	41	60	81.8
Austria	32	32	31	-3.1
Sweden	29	41	42	44.8
Australia	23	48	49	113
S.Africa ^b	16	50	61	281.2
Ireland	15	15	11	-26.6
Russia	14	14	27	92.8
China	13	11	36	176.9
Singapore	13	13	24	84.6
Spain	12	41	46	283.3
Brazil	4	39	21	425
Indonesia	1	9	56	522.2 ^a
Pakistan	0	5	33	560 ^a
Panama	5	6	24	380
Poland	1	9	13	44.4 ^a
Senegal	6	17	13	116.6
Thailand	3	3	24	700
Turkey	2	7	13	85.7 ^a

Source: UN Statistical Division Commodity Trade Statistics Database

^a Percent change is calculated between 2004 and 2010, since the number of importers is negligible or zero in 1996

^b South African Customs Union before 2000

In various types of networks, measures of in- and outdegree can denote for example, popularity, but in networks of trade they are used to categorically distinguish importers and exporters (Wasserman and Faust 1994, 127). In each of the three networks, nodes with the highest outdegree – or the directional arc that represent each instance of trade – are the heavy exporters. The top exporters are listed in **Table 4.1** as well as the percent change from 1996 to 2010 in the number of their importing partners. For example, with outdegree increasing from 166 to 175 from 1996 to 2010, France remains the biggest exporter, although that represents only a 5.4% change. Meanwhile Hungary, for example, ‘loses’ 46 trading partners in the intervening years, bringing the number of exports from 64 in 1996 to 18 in 2010, which represents a 71.8 % drop.

Just considering the instances of trade between countries, it is evident that the vaccine trade network exhibits a marked hierarchical structure, with a small number of vaccine manufacturing countries occupying dominant positions and trading with large number of partners. The network structure remains highly centralized over the years, even as there is some re-shuffling of players.

There are two dominant patterns of this reshuffling. First of all, there are a number of vaccine exporters that are quite prominent in 1996 but whose ranking is considerably lower by 2010. The United Kingdom, Switzerland, Canada, Hungary and Croatia are the five European/North American countries whose ranking is significantly reduced in the years between 1996 and 2010. In the same time period, India, South Korea, South Africa, China, Brazil, and Indonesia join the ranks of prominent vaccine exporters, some from a very marginal position of non-exporters just 15 years ago. To shed light on the systemic reasons behind such precipitous drops and spectacular

ascendances, I examine the same countries' performance as exporters in a broader category of 'pharmaceuticals.' **Table 4.2** compares the changes that these countries experienced as exporters of pharmaceuticals as well as vaccines.

Table 4.2 Percent changes in number of pharmaceutical exports and vaccine exports between 1996 and 2010.

<i>Country</i>	<i>Vaccine exports % change from 1996 to 2010</i>	<i>Pharmaceuticals exports % change from 1996 to 2010</i>
UK	-26.1	6
Switzerland	-34.6	12.8
Canada	-27.6	12.8
Hungary	-71.8	-2.2
Croatia	-68.1	-20.2
India	77.9	19.5
S.Korea	205.4	58
S.Africa ^b	281.2	42.8
China	176.9	24
Brazil	425	77.1
Indonesia	522.2 ^a	142.2

Source: UN Statistical Division Commodity Trade Statistics Database

^a Percent change is calculated between 2004 and 2010, since the number of importers is negligible or zero in 1996

^b South African Customs Union before 2000

The first apparent trend is the discrepancy in changes for the vaccine and pharmaceuticals trade patterns for the United Kingdom, Switzerland and Canada. While all three countries have incurred significant losses in their standing as top vaccine exporters (26.1, 34.6, and 27.6 percent respectively), the trend is not mirrored by the changes that took place in the patterns of trade for pharmaceuticals between 1996 and 2010. In fact, the direction of change is positive, and all three improve their standing as major pharmaceutical exporters: a modest 6% increase for the UK and a robust 12.8%

hike for both Switzerland and Canada. Essentially, while these countries withdrew from the vaccine market, their pharmaceutical industries continued expansion and growth.

A plausible explanation for this divergence is the difference in the pricing mechanisms between vaccines and other drugs. While these drops might not represent a big share of a country's pharmaceutical exports, it signals these countries' withdrawal from the vaccine market. In the late 1990s UNICEF, which has served as a major vaccine purchaser on behalf of many developing countries, has expressed explicit concern with vaccine security and insuring a stable supply of affordable vaccines. Some major vaccine manufacturers were ceasing production of the core EPI vaccines routinely purchased by UNICEF on behalf of developing countries (Batson 2005). As Lane and colleagues point out, the "supply of vaccines produced by multiple manufacturers is far less vulnerable than the supply of vaccines produced by a single manufacturer (Lane et al. 2006). Additionally, divergence between vaccine lines³³, and reduction in excess vaccine production capacity led to a supply crisis beginning in the late 1990s (WHO, UNICEF, World Bank 2009, XXII).

The worldwide vaccine market amounts to about \$9 billion in sales, compared to the total for the global pharmaceutical market, which adds up to \$550 billion (Milstien et al. 2006) In his examination of the pricing differences for vaccines and other pharmaceuticals Michael Kremer, for instance, puts forth an epidemiologically embedded economic model that demonstrates that the revenue flow for drug treatments is greater than it is for vaccines and it is therefore more economically profitable for pharmaceutical

³³ For epidemiological reasons, there is a certain divergence between different vaccine products used in industrialized and developing countries, a trend that seems to intensify with more pronounced specialization (Batson, 2005). This divergence can result from differing formulations and presentations: measles vs. MMR, multidose vs. single-dose presentations, oral vs. inactivated polio, etc. (Milstien et al., 2006).

firms to invest into research and development of drugs rather than vaccines (Kremer and Snyder 2003). In fact, Kremer, who is currently an economics professor at Harvard, designed GAVI's Advanced Market Commitment for purchasing the pneumococcal vaccines pilot. As discussed in chapter II, the pilot AMC is designed specifically to guarantee a high purchasing price and stable market to a potential manufacturer, who is otherwise reluctant to remain in a vaccine market that has become less profitable and faces a steeper competition. One of the main AMC mechanisms is for the donors to “match the revenues that companies earn from developing medicines for affluent markets so they have the same incentive to research a neglected disease” (Light 2009, i). It is revealing that of the five sovereign donors that supported GAVI's pilot AMC, two – Canada and UK – have together contributed 46% of the total funding package. Both Canada and the UK put upwards of \$US 400 million towards the pneumococcal AMC.

In his path breaking analysis of shifts in patterns of capital accumulation and state formation, Giovanni Arrighi (1994) suggests that in the course of systemic cycles of accumulation, making profit from trade and production becomes increasingly more challenging towards the end of the cycle. It is at that point, Arrighi argues, that the financial and political elites are most likely to rely on increasingly complex financial manipulations to make profits. In the same vein, I argue that as production of traditional off-patent vaccines becomes less profitable overtime and in the face of increasing competition from new vaccine exporters, wielders of state power in countries where major vaccine manufacturers are headquartered might seek out innovative mechanisms of subsidizing their pharmaceutical industries, such as AMCs.

The next group of formerly strong vaccine exporters in Table 4.2 is represented by Hungary and Croatia, both countries having lost their position of top exporters from 1996 to 2004 (71.8 and 68.1 percent drop respectively). Unlike the countries that maintained their strong positions as pharmaceutical exporters, both Hungary and Croatia have relinquished their strong positions (2.2 and 20.2 percent drops respectively). Although the percent differential for Hungary seems like only a small fluctuation by 2010, a closer look at the trend over time reveals that the number of export partners in pharmaceuticals for Hungary first actually plunged from 131 in 1996 to 107 in 2004 (18.3% drop since 1996) and only then slowly rose again to 128 in 2010 (2.2% drop since 1996). Thus while Croatia seemed to have lost a position as a strong exporter in both vaccines and pharmaceuticals over the years, Hungary has scaled down vaccine exports significantly, but after initial losses in the pharmaceutical sales, has been able to regain its position as a strong pharmaceutical exporter.

Lastly, a group of 6 vaccine exporters emerges by 2010, with growing prominence in the pharmaceutical industry overall and impressive strides in the vaccine production and exports. All six – Brazil, China, India, Indonesia, South Africa, and South Korea – rise to occupy prominent positions with a large number of trading partners they export vaccines to in the years between 1996 and 2004. These emerging export-oriented economies all boast expanding pharmaceutical production and markets, and seem to be a growing and robust segment of vaccine producers, stepping up to fulfill the continuous high global demand for vaccines.

These changes are, of course, important, especially when considering the specific geopolitical and economic factors explaining these shifts as well as consequences

stemming from them. For example, adding historical context to the UK's retreat from being a leading manufacturer of vaccines, while it continues to pour significant national resources into innovative funding ventures designed to subsidize the pharmaceutical industry, has the potential to highlight the synergy that exists between the state and some private actors. Similarly, focusing on the flourishing of the Indian pharmaceutical markets, while treatment of vaccine preventable diseases in India languishes, can reveal the considerable tensions between these same types of actors engaged in global governance of public health. And yet from a point of view that considers the structure of the global network of trade in vaccines and pharmaceuticals, it matters little that particular countries lose or gain prominence overtime. Mirroring the highly differentiated structure of trade overall, vaccine production and trade networks continuously exhibit the same division of labor where country positions are "hierarchically ordered, not just differentiated." (Evans 1979, 15–16). And even when the previously peripheral countries enter the fray, seemingly replacing the core players, evidence of vaccine price reduction supports the assertion made by Arrighi and colleagues about industrial convergence, which argued that the "very success of Third World countries in internalizing within their domains the industrial activities with which First World wealth had been associated activated a competition that sharply reduced the returns that previously had accrued to such activities" (Arrighi et al. 2003, 23).

Regional patterns

An important structural feature of any network is its density. As de Nooy and colleagues point out, more ties between network actors yield a tighter structure, and

presumably – more cohesion (de Nooy et al. 2005). To assess network cohesion and changes in cohesion overtime, I calculate the vaccine trade density (as a proportion of actual links between the trading partners to total possible links). Because trade data is asymmetrical (a tie might link two nodes, but that tie might not be reciprocal), I use the density formula for a directed data matrix $D = \frac{L}{N(N-1)}$, where D is the network density measure, L is the observed number of exports in the network, and N is the network size. **Table 4.3** documents the changes in network density from 1996 to 2010 for trade in both vaccines and pharmaceuticals.

Table 4.3 Vaccine trade and pharmaceutical trade network density changes.

	1996	2004	2010
<i>Vaccine Network Density</i>	.045	.048	.054
<i>Pharmaceuticals Network Density</i>	.176	.194	.211

Source: UN Statistical Division Commodity Trade Statistics Database

For world trade in vaccines, density for all three networks hovers just around 5 percent, rising only slightly. Pharmaceutical trade networks, by contrast, exhibit a higher degree of density overall and a stronger rise in the proportion of ties actualized from just around 17 % in 1996 to 21 % in 2010. As a point of reference, one study reports the network density of .30 for all commodities in 1996 between countries (a total observed number of ties divided by total possible number of ties between trading countries in *all* commodity categories), exhibiting a tighter, more cohesive network (Kim and Shin 2002, 454). In other words, as reported in the above study, data for 1996 trade indicates that

across the various commodity categories, trading partners included in the sample actualized 30 per cent of all possible ties. These findings are consistent with the idea that markets for a single commodity (vaccines) would tend to be sparser than for a group of commodities (pharmaceuticals), not to mention the aggregate markets for all commodities. And yet I am hard-pressed to come up with a commodity comparable to vaccines. Every annual global cohort of babies must be vaccinated (even if immunization rates are far from complete coverage); very few countries are self-sufficient in producing vaccines or can purchase all the vaccines that they require from just one exporter. It is actually surprising that the vaccine trade density is so low compared to the pharmaceuticals and that it changes so little overtime.

So while both the pharmaceutical and the vaccine trade exhibit increasing density, reflecting an increasing economic integration, the rates of these industries' growth are dramatically different, with trade in vaccines not keeping up the pace of growth of the pharmaceutical industry overall. And even as network density of trade in pharmaceuticals grows, reflecting changes in cohesion, density for the trade of vaccines remains virtually stagnant. Considering that rising density reflects rising connectivity between trading partners, which in many ways is the very definition of economic globalization (Mahutga 2006), and comparing the two trends of increased density of trade in pharmaceuticals and non-changing density of the vaccine trade, we can conclude that in the years between 1996 and 2010, the vaccine trade network has not become more tightly bound, nor are the trading partners more interconnected. While in other types of networks having 'hubs' might increase the efficiency of flows, as, for example, in airline routes, such is not the case with vaccines. For a commodity like vaccines, such a loosely bound network might

mean increased dependence of trading partners on a limited number of suppliers, which, of course, renders such a network highly unstable, where a disruption in services at one site ripples through the network with magnified force. A sudden change in either demand or supply can threaten immunization campaigns and public health. Examples of such disruptions abound, as in the 2002 withdrawal of 700, 000 doses of Merck's MMR vaccine (due to delays in release procedure), rendering the national US vaccine stockpile insufficient to meet immunization needs (Lane et al., 2006), or the 2004 case with Chiron's bacterial contamination of a plant in Liverpool, which rendered its' stockpile of Fluvirin unusable, and sent quite a number of trading partners scrambling to meet the demand.³⁴

It seems that, as Chase-Dunn and colleagues argue (2000), when global networks increase in density at the same rate, there is no increase in globalization per se. As the vaccine network overall does not exhibit a speedier development of multilateral trade ties between countries, can we conclude that the vaccine industry is not globalizing with a speed comparable to pharmaceuticals in general or to other industries? And if so, are there also regional patterns of trade between blocs of countries that are unique to trade in vaccines? To investigate these questions further, I next assess vaccine trade network density within and between geographical regions. I examine inter- and intra-regional trade by grouping the trading countries for the years of 1996, 2004, and 2010 in 5 'regions': North America/Europe, Asia, Latin America, Oceania, Africa.³⁵ **Tables 4.4,**

³⁴ See for example FDA's Acting Commissioner Lester M. Crawford's testimony on November 17th, 2004 <http://www.fda.gov/ola/2004/vaccines1117.html>

4.5 and 4.6 report average outdegree for vertices for each intra and inter-regional grouping of countries for the years 1996, 2004 and 2010 respectively. Average degree (or outdegree in this case, since I am looking at exports in a directed network) is a measure of structural cohesion that does not depend on network size and therefore can be compared between networks of different sizes (de Nooy 2005), although bigger networks will necessarily be sparser than smaller ones. But since I am comparing outdegrees for a number of differently sized sub-networks (for each year, each unique pairing of regions comprises a network of a different size), standardizing the outdegree measure makes possible comparisons across the categories (vaccines vs. pharmaceuticals), over the years, and between regions.

Each row represents average exports from a region, each cell lists exports in vaccines first and exports in pharmaceuticals in parenthesis second, and each column corresponds to the region that these exports are going to. For example, in 1996, the Europe/N.America region boasts the highest average outdegrees: 4.34 within the region for vaccines and 16.84 for pharmaceuticals, while its average outdegree to Africa is 3.36 for vaccine exports and 11.10 for pharmaceuticals overall.

³⁵ I use UN Statistics Division Standard Country Classification into geographical regions as a guide to assign countries in my sample to one of the 5 ‘regions.’

<http://unstats.un.org.proxy.libraries.rutgers.edu/unsd/methods/m49/m49regin.htm>

While some placements of countries in particular regions may be disputed and the classification into only five categories is necessarily crude, it aids in capturing a broad pattern of intra/inter-regional trade in vaccines.

Table 4.4 Inter/Intra-regional vaccine and pharmaceutical exports, average outdegree 1996.

<i>Exporting Region</i>	<i>Importing Region</i>				
	<i>Europe/ N.America</i>	<i>Asia</i>	<i>Oceania</i>	<i>Latin America</i>	<i>Africa</i>
<i>Europe/ N.America</i>	4.34(16.84)	3.48(16.16)	0.27(1.89)	2.55(9.91)	3.36(11.10)
<i>Asia</i>	0.54(6.35)	1.98(9.19)	0.21(1.60)	0.58(6.35)	0.60(5.04)
<i>Oceania</i>	0.45(3.45)	0.82(4.73)	0.45(3.45)	- (2.27)	- (1.64)
<i>Latin America</i>	0.03(3.05)	- (2.49)	- (0.22)	0.76(9.76)	- (0.81)
<i>Africa</i>	- (0.77)	0.04(0.77)	- (0.02)	- (-)	0.13(2.13)

Source: UN Statistical Division Commodity Trade Statistics Database

Average outdegree for regional vaccine exports is reported first in each cell; average outdegree for regional pharmaceutical exports reported in parenthesis in each cell.

As is evident from Tables 4.4, 4.5, and 4.6, the overall pattern shows a main diagonal effect. Intra-regional average outdegree is higher than inter-regional average outdegree for both vaccines and pharmaceuticals. In other words, on average, exporting countries tend to trade with the higher number of trading partners *within* their regions than with any other region in the world, be it vaccines or pharmaceuticals. Not surprising, Consistently too, the average outdegree is considerably higher for pharmaceuticals as compared to vaccine exports in each of the five regional blocs. So for example, in 1996 Europe/N.America's average pharmaceutical outdegree is almost 4 times higher than its

vaccine average outdegree (16.84 vs. 4.34), and that proportion holds in 2010 as well (23.57 vs. 6.77).

Table 4.5 Inter/Intra-regional vaccine and pharmaceutical exports, average outdegree 2004.

<i>Exporting Region</i>	<i>Importing Region</i>				
	<i>Europe/ N.America</i>	<i>Asia</i>	<i>Oceania</i>	<i>Latin America</i>	<i>Africa</i>
<i>Europe/ N.America</i>	6.15(20.63)	4.72(20.48)	0.48(2.39)	2.85(10.63)	3.13(13.70)
<i>Asia</i>	0.96(10.26)	3.06(14.88)	0.46(2.20)	1.70(10.26)	1.78(9.3)
<i>Oceania</i>	0.56(3.39)	0.94(4.44)	0.78(3.83)	0.11(2.28)	0.28(1.33)
<i>Latin America</i>	0.44(5.38)	0.36(4.28)	0.03(0.46)	2.85(13.44)	0.46(2.15)
<i>Africa</i>	0.25(2.43)	0.36(1.98)	0.02(0.11)	0.04(0.52)	1.05(6.21)

Source: UN Statistical Division Commodity Trade Statistics Database

Average outdegree for regional vaccine exports is reported first in each cell; average outdegree for regional pharmaceutical exports reported in parenthesis in each cell.

With some fluctuations, this pattern holds across the regional blocs and overtime, but what can account for such persistent differences? It could be that consistently different patterns of trade between pharmaceuticals and vaccines can be attributed to the fundamental differences that exist between them. Vaccines, as any other pharmaceutical product, are at the intersection of science/technology and markets; and like any other commodity, they cross state borders.

Table 4.6 Inter/Intra-regional vaccine and pharmaceutical exports, average outdegree 2010.

<i>Exporting Region</i>	<i>Importing Region</i>				
	<i>Europe/ N.America</i>	<i>Asia</i>	<i>Oceania</i>	<i>Latin America</i>	<i>Africa</i>
<i>Europe/ N.America</i>	6.77(23.57)	5.70(21.77)	0.38(2.64)	3.17(10.81)	3.60(14.45)
<i>Asia</i>	1.40(10.71)	3.81(15.23)	0.39(2.56)	2.04(6.23)	2.90(10.67)
<i>Oceania</i>	0.50(3.44)	1.19(4.50)	1.31(3.13)	- (2.94)	0.38(2.38)
<i>Latin America</i>	0.23(5.28)	0.10(4.82)	- (0.44)	2.10(12.56)	0.15(2.33)
<i>Africa</i>	0.24(2.26)	0.20(2.52)	0.04(0.22)	0.06(0.80)	1.24(6.50)

Source: UN Statistical Division Commodity Trade Statistics Database

Average outdegree for regional vaccine exports is reported first in each cell; average outdegree for regional pharmaceutical exports reported in parenthesis in each cell.

But unlike most of the commodities, vaccine trade relies heavily on public procurement from private suppliers, both by individual governments and agencies such as UNICEF or PAHO, and increasingly the Public-Private Partnerships such as GAVI. Additionally, when compared with many other pharmaceuticals, vaccines are not a highly profitable business (Kremer and Snyder 2003). Finally, issues such as diverging lines of production geared towards variously prevalent diseases, tiered pricing aimed at either affluent or struggling markets, and increased liability costs and regulatory oversight, compound the distinction that vaccines embody as a unique class of pharmaceuticals.

For all five regions, the most evident trend for both vaccines and pharmaceuticals is that the average number of countries with whom the exporters are linked by exports within the region exceed average number sent to countries outside the region. Overall, the average exports links to trading partners are growing for both vaccines and pharmaceuticals in general, although there is some flattening out of the trend and even decrease in growth for pharmaceutical average outdegree from Asia to other regions, for internal pharmaceutical trade in Oceania and Latin America, and a slight drop in average internal outdegrees in vaccines within Latin America. Overall, average pharmaceutical outdegrees are always higher than those for vaccines, except for when internal regional vaccine trade in Oceania becomes higher than its international pharmaceutical trade in 2010, and when internal vaccine and international pharmaceutical averages converge briefly in Latin America in 2004.

It seems that each region regional bloc exhibits what can be called an inward trade orientation as a distinct pattern of transactions that can at least in part be traced back to a number of global competitive and political pressures. In response to these pressures, states and groups of states engage in macroeconomic policies to mitigate demand or market entry. In turn, multilateral organizations such as the WHO or the Pan American Health Organization (PAHO) can affect regional trade as well. PAHO, by virtue of being a regionally anchored entity that is engaged in large scale procurement and distribution of vaccines favors regional South and North American manufacturers The WHO enforces and maintains stringent criteria for the 'prequalified' list of vaccine manufacturers, which effectively exclude a large proportion of the developing countries' vaccine industry from

entering some markets³⁶. Some regional tendencies possibly reflect certain epidemiological realities of disease prevalence and etiology, which result in diverging paths of vaccine research, development, and ultimately production and trade, as diseases prevalent in some parts of the world do not present an epidemiological or market incentive for other countries' involvement. Regional patterns of trade suggest a tendency towards regionalization and geographic segmentation of the market, and hint at a growing trend towards divergence of product lines, further segmenting the market. These trends render the network rather precarious, with a high potential for disruptions of trade flows for a commodity that is essential to maintaining adequate health services worldwide. If, as the data suggest, geographic segmentation is a growing trend, it is conceivable that in the future more vaccines will not be able to 'cross' some borders, as they are increasingly tailored to specific populations.

Finally, measures such as preferential regional trade agreements, preferential tariffs and non-tariff barriers, and multilateral trade-related agreements such as TRIPS undoubtedly have an effect on regional patterns of trade in vaccines and stem from state policies. Reportedly, when Jonas Salk, who invented the first polio vaccine, was asked by a reporter if he intended to patent it, his reply was – there is no patent, it would be like patenting the sun. And yet vaccine trade data belies a far grimmer picture. Vaccines products and processes are protected by patents, ferociously guarded by the pharmaceutical industry, and 'protected' from technology transfer or reproduction by the

³⁶ As of 2013, the list of WHO prequalified vaccines includes 21 countries as exporters, and more than half of them are in Europe and North America. Some of the countries, like India and Republic of Korea, are newcomers, having just made the list. WHO prequalified vaccine list is available from http://www.who.int/immunization_standards/vaccine_quality/PQ_vaccine_list_en/en/

current trade regime measures such as TRIPS. Even the activist states, like Brazil, Cuba or Russia, who in the past have shared vaccines freely or at least transferred process technologies for production to other countries, now have submitted to regulations by the WTO and the WHO (Music 2010; Biehl 2006). Despite the promise of TRIPS to encourage innovation, research and technological development, half the world's countries still do not make vaccines and rely on supplies from a limited number of exporting countries. Mike Davis (2005), in his hair-raising account of the avian influenza threat, and Laurie Garrett (1995) with her chilling account of the emergence of new viruses, demonstrate convincingly that pandemic diseases are amplified by environmental, geopolitical and economic contexts. But while millions of the certain, predictable deaths from more familiar diseases like measles or diphtheria lack the headlines appeal or the scare factor of the 'new threats,' they also differ greatly in that they are in fact *preventable*. As Alison Katz (2007, 392) emphatically puts it, "the technology is there and has been there for decades."

That vaccine trade exhibits some of the same features as other pharmaceuticals or even other commodities is not so much surprising as disappointing, if a normative term like that can be permitted. A hierarchical system of trade that persists overtime, low density and cohesion, centralization, regionalization – all can be explained by a closer examination of the geopolitics of trade in vaccines as any other commodity. And yet. If Jonas Salk's vision held sway, what would the vaccine trade network look like today?

CHAPTER V

INDUSTRIAL CONVERGENCE AND HEALTH INEQUALITY

Centrality and Mobility

Changes in global economy are rooted in how it is organized and governed (Gereffi 2005), and observing these changes in vaccine trade allows me to draw conclusions on the nature of industrial convergence in vaccine production. As discussed in Chapter IV, by conceptually distinguishing between countries with industrial capacity (exporters of vaccines to other countries) and those that lack industrial capacity for vaccine production (non-exporters), I am able to specify the trends of industrial convergence.

Vaccine trade networks exhibit a stable structure but some countries experienced considerable mobility. Next I consider measures of centrality in order to assess this feature of the network. First, I calculate actor degree centrality for each country, again, considering only their exports. Wasserman and Faust (1994) offer a number of centrality indices which quantify the prominence of individual actors embedded in the network. A trade network ties actors together via directional ties, as each link between trading partners originates with the exporting country and is received by the importer, and each individual country can have vastly different measures of centrality for exports and imports. I focus only on exports and thus assess each country's measure of centrality as an exporter of vaccines. For each country, I calculate outdegree centrality (of ties going out, or exports) using the following formula. $C'_D(n_i) = \frac{d(n_i)}{g-1}$ where C' is actor outdegree centrality index standardized to be independent of group size. This is

calculated for each year separately by dividing each country's outdegree (a tie going out, or an export) by network size (total number of all trading partners in that year) minus 1. Because the discrepancy in network sizes for the three networks is small, and because the centrality index are standardized, I am able to compare centrality measures overtime. This index ranges between 0 and 1 and is a measure comparable across networks of different sizes (or years 1996, 2004, and 2010 in this case). **Table 5.1** reports these changes in centrality for each country from 1996 to 2004 to 2010. For example, France, having retained the largest number of partners, still shows a slight decrease in its centrality from .89 to .86, as the measure captures its relative position to other countries' shifts as well.³⁷

To capture these overtime changes graphically, I plot these actor centrality indices for countries that exported vaccines to more than one partner in both 1996 and 2010 in **Figure 5.1**. The X axis represents actor degree centrality measure for 1996 and the Y axis for 2010. Data points appearing in the right hand upper quadrant represent countries with higher measures of centrality for both years and the ones in the lower left, obviously, with lower scores. Movement up or down on the centrality index measurement is graphically depicted by deviation from the central line dissecting the graph (the 'no change' line).

³⁷ For France, in 1996 $C'_D(n_i) = \frac{166}{188-1} = .89$; in 2004, $C'_D(n_i) = \frac{179}{209-1} = .86$; and in 2010

$$C'_D(n_i) = \frac{175}{204-1} = .86$$

Table 5.1 Changes in degree centrality for top vaccine exporters 1996-2004-2010.

<i>Country</i>	<i>Degree Centrality</i>		
	<i>1996</i>	<i>2004</i>	<i>2010</i>
France	.89	.86	.86
Belgium	.85	.78	.84
Italy	.62	.60	.67
UK	.57	.42	.39
Switzerland	.54	.45	.33
Canada	.50	.34	.33
Germany	.49	.46	.42
USA	.48	.48	.53
India	.41	.73	.67
Netherlands	.35	.50	.43
Denmark	.34	.54	.29
Hungary	.34	.06	.09
Japan	.26	.35	.31
Croatia	.24	.07	.07
S.Korea	.20	.49	.56
Bulgaria	.18	.20	.30
Austria	.17	.15	.15
Sweden	.16	.20	.21
Australia	.12	.23	.24
S.Africa ^b	.09	.24	.30
Ireland	.08	.07	.05
Russia	.07	.07	.13
China	.07	.05	.18
Singapore	.07	.06	.12
Spain	.06	.20	.23
Brazil	.02	.19	.10
Indonesia	.01	.04	.28
Pakistan	-	.02	.16
Panama	.03	.03	.12
Poland	.01	.04	.06
Senegal	.03	.08	.06
Thailand	.02	.01	.12
Turkey	.01	.03	.06

Source: UN Statistical Division Commodity Trade Statistics Database

^a Percent change is calculated between 2004 and 2010, since the number of importers is negligible or zero in 1996

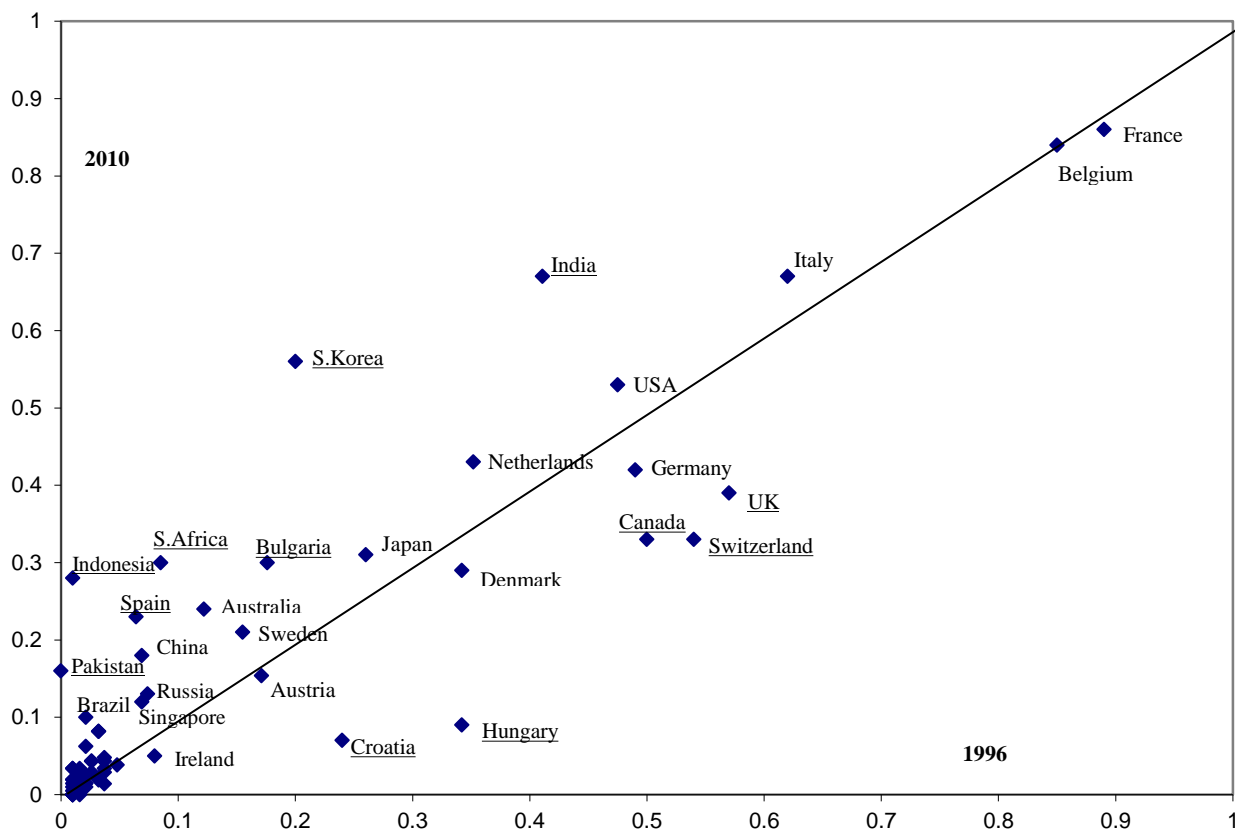
^b South African Customs Union before 2000

Data points above the ‘no change’ line represent countries whose centrality measure increased, while lower half of the graph below the line contains the ones whose centrality measure declined from 1996 to 2010. The further the country’s data point appears from the line – the more its centrality index has changed over the years. Again, France, with the highest centrality index measure appears in the upper right quadrant, but just below the diagonal, as its centrality index decreased slightly from 1996 to 2010 from .89 to .86. Meanwhile Indonesia, for instance, can be found on the farther left side of the graph next to the Y axis and low on the Y value, but a significant distance away from the diagonal, as its centrality index has changed from .01 to .28.

For the whole system of vaccine trade, there is a high degree of continuity from 1996 to 2010, as the hierarchical structure of vaccine exporters remains pronounced. The correlation of .880 between country centrality as exporter indices in 1996 and 2010 suggests that overall the structure of vaccine trade network remained highly stable. As discussed in Chapter IV, within this highly stable system, however, some countries experienced upward as well as downward mobility, as is evident from the scatter-plot. Significant deviation from the expected measure in 2010 yields a list of vaccine exporters that exhibited significant mobility: India, South Korea, South Africa, Indonesia, Bulgaria, Spain and Pakistan gain in centrality, while Croatia, Hungary, UK, Canada and Switzerland experience downward mobility.³⁸ Both the persistence of a hierarchical structure of global vaccine trade and substantial mobility exhibited by some countries opens up an opportunity to examine the relationship between industrial development and inequality.

³⁸ The list of outliers is produced by considering individual observations with absolute values of residuals greater than 1 standard deviation.

Figure 5.1. Changes in centrality as vaccine exporters for countries exporting to more than one partner, 1996-2010 (names of significantly mobile exporters are underlined).



Source: UN Statistical Division Commodity Trade Statistics Database

Peter Dicken (2003, 9) observed that the increasing volume of international flows – trade in particular – has also been accompanied by a gradual emergence of a “new global division of labor,” which he defines as a “transformation of the old geographical pattern of specialization, in which the industrialized countries produced manufactured goods and the non-industrialized countries supplied raw materials and agricultural products.” In the past half century, the rigid core-periphery structure of the global

economy was transformed into a geographically fragmented and structurally complex system. Thus systemic features of trade patterns can reveal substantial inequalities between countries in industrial capacity, as well as theoretically specified hierarchical structures in the world system (Snyder and Kick 1979). Scholars have used analysis of trade flows to confirm the persistence of structural inequality and the unequal division of labor in the global economy, as well as to assess structural change and mobility (Smith and White 1992; Mahutga 2006).

This analysis reveals that global trade in vaccines exhibits a stable hierarchical structure. This structure persisted from 1996 to 2010, with a small cluster of countries occupying dominant positions as exporters of vaccines. The fact that the majority of countries do not export vaccines at all – proportion of non-exporters changing from 56% in 1996 to 51% in 2004 and to 57% in 2010 -- hints at very limited capacity for production and, consequently, high dependence on imports. Evidence suggests that TRIPS (and Doha) failed to create conditions for R&D that encourage innovation and build up technological capacity in vaccine production for the vast majority of countries. It could be argued (and it often is, by proponents of neoliberal trade reforms) that Doha offers a provision for compulsory licensing which would allow a country with limited manufacturing capacity to import medicines while bypassing patent protection in case of a health emergency. Astonishingly, this provision under Doha is woefully underused.

According to the WTO's own progress reports on TRIPS, although national patent law exists in most countries, compulsory licenses are seldom granted (UNCTAD/WTO 2006). In fact, it is the industrialized countries of the global North, namely the US and Canada (and to a lesser extent the UK, France, and Germany), that have used compulsory

licenses in the past, but “few developing countries or transition economies have experience with compulsory licensing” (UNCTAD/WTO 2006, 2). On the other hand, the *threat* of using compulsory licensing has been used effectively by some governments (Brazil, for example) as a negotiating tool for price cuts (t’Hoen 2002). A recent study found that since 1995, only 24 verified compulsory licenses were filed in 17 countries, most involved HIV/AIDS drugs and occurred in upper-middle-income countries and none in the least developed countries (Beall and Kuhn 2012). Oxfam (2006) confirms as well, that no qualified non-manufacturing WTO member has made use of the compulsory license provision, most likely due to the complexities of the process, lack of technical capacity, and fear of reprisal. Doha Declaration does not seem to have a long-term impact on access to pharmaceuticals for communicable diseases other than HIV/AIDS, and neither does trade prove a productive force to address health gaps (Beall and Kuhn 2012).

Even with the Doha Declaration, the TRIPS agreement remains one of the most contentious deals struck at the Uruguay Round, as it attempted to harmonize and tighten the global patent regime which would be upheld by all WTO members. It was the result of relentless lobbying of the Reagan administration by powerful US software, pharmaceutical, and chemical companies, which all sought to increase protection for their intellectual property related goods and services in the global markets. Devised by the Intellectual Property Committee of US-, EU-, and Japan-based industry association (which was founded by Pfizer and IBM), TRIPS was designed to protect the interests of select industries and companies. In fact, former CEO of Pfizer and trade advisor for the Reagan administration Edmund Pratt, who was TRIPS’ chief architect, admitted that “our combined strength enabled us to establish a global private sector/government network

which laid the ground for what became TRIPS” (quoted in Buckman 2005, 94). It appears that as far as production and trade of vaccines go, the status quo was indeed preserved, and the alliance between hegemonic powers was able to put forth and enforce an agreement which is not conducive to systemic changes which would ensure a more stable access to vitally needed medicines. The claim that intellectual property protection and the resulting monopoly profits encourage innovation remains debatable, and although historically strong intellectual property protection followed industrial development, it is doubtful that the reverse will also occur (Médicins sans Frontières 2001; Oxfam 2006).

Exclusive focus on trade obscures more complex mechanisms that define the networks of global vaccine production and consumption. As Smith and White (1992, 887) point out, understanding “how national mobility in the world-system takes place” requires linking the global analysis like network analysis of trade flows within the world-system to “research focusing on internal regional, national, and historical political economies.” In the context of persistent trends of dismantling of the welfare state, market liberalization and privatization of healthcare worldwide, the vaccine industry is being re-shaped. As discussed above, many pharmaceutical manufacturers are withdrawing from the vaccine market in the face of relatively low profit margins and mounting regulatory pressures. The states face competitive market pressures while the non-state actors – such as the international procurement and financial organizations – increasingly act on behalf of private capital, often as guarantors of demand for vaccines. Meanwhile, public health achievements do not always accompany economic growth and development. In order to gain a better understanding of the complex facets of transnational governance, it is necessary to consider the roles that all of these actors play

as they collide, collude, compete and struggle to maintain power and control in the arena of global public health.

As discussed in chapter I, there is a broad agreement among scholars of economic globalization that the rising industrialization of the last decades of the 20th century have given rise to some degree of industrial convergence between countries of the former First and Third World (Arrighi et al. 2003) However, the question of whether this industrial convergence results in reduced inequality between and within countries remains hotly debated (Firebaugh 2004).

To address the crucial question of whether both development and globalization ‘projects’ (McMichael, 2000) have failed as policy, scholars turn to various measures of inequality. Among studies that focus on world trends in inequality, Korzeniewicz and Moran (1997) for instance, argue that far from converging, inequality as measured by income, has grown between countries from 1965 to 1990. Arrighi and colleagues (2003) further establish that four decades of industrial convergence failed to reduce the North-South divide in average levels of income. Yet income as a measure of inequality – whether between North and South or within particular countries – has some obvious limitations. In order to examine the problematic relationship between industrial convergence and health inequality I next focus on India as an instructive case study.

India

In the years between 1996 and 2010, India gained 60 trading partners to supply vaccines, which represents a 77.9% change. Its centrality measure increased from .41 to .67 and it ‘joined’ the highest-ranking cluster of vaccine exporters. In the network that

showed a high degree of structural stability, India was one of the few countries exhibiting significant mobility. Indeed, India can boast impressive gains for its pharmaceutical industry and is a quintessential poster child for industrial convergence, Given those considerations, it should be examined in the proper global-historical context.

Historically, infectious diseases that originated in India have altered epidemiological patterns worldwide (Huang 2013). In the second half of the 19th century, British rulers concerned for their personnel affected by tropical diseases, established a number of vaccine institutes in India, although the policies of the colonial government “ensured that Indian scientists were not a significant part of this intellectual legacy” (Madhavi 2005, 2417). The vaccines that came out of these institutions were the world’s first plague vaccine, developed by Vladimir Haffkine in 1897 at the Plague Laboratory in Mumbai and an indigenous cholera vaccine, developed at the same time in Kolkata, followed by production of tetanus, diphtheria, and pertussis toxoids (Madhavi 2005).

After Independence, these same institutes were no longer engaged in cutting edge research, and were instead primarily concerned with routine vaccine production. It was India’s public sector that spearheaded research and development in vaccines and produced the final products. In the past 15 to 20 years however, a small but growing number of private pharmaceutical companies has been able to capitalize on the existing infrastructure and process capacities (Srinivas 2004; Madhavi 2005). The shift occurred gradually but intensified after India adopted an economic liberalization program in 1991 through a set of legislations that removed previous restrictions on corporate activity.

India’s comparative advantage in generic pharmaceuticals, as in some other industries, lies in its low cost manufacturing base and a pool of comparatively cheap but

well-educated labor force. Facing the changing vaccine market outlook in the global North, major international procurement agencies (such as the WHO and UNICEF and later GAVI) sought to supplement the dwindling number of traditional vaccine suppliers by creating special incentives for Indian (among other developing countries) vaccine manufacturers, which ensure, once a manufacturer passes a series of pre-qualifications, multi-year purchasing arrangements, in effect manufacturing a more predictable demand for vaccines (UNICEF 2004). At the beginning of this century, India was exporting over 60 per cent of its vaccine products, a large portion through international procuring agencies, to other countries in the global South (Srinivas 2004). Current estimates put the proportion of vaccines produced by India's manufacturers that are exported worldwide at 70 percent (Myint 2011).

India's emergence as world leader in vaccine production took place in defiance of TRIPS. As Greg Buckman reports, before the TRIPS, developing country manufacturers were able to market generic medicines at a fraction of a price that they sold at in higher income countries. India's generic pharmaceutical manufacturers for example, were able to sell AIDS antiretrovirals (ARVs) for less than \$1,500 in low income countries while patent protected equivalents sold for between \$10,000 and \$15,000 (Buckman 2005). India was staunchly opposed to the introduction of TRIPS at the 1994 Uruguay Round and (with Brazil) was the co-architect of the Doha Declaration on TRIPS. (Chaudhuri et al. 2003). India did not recognize pharmaceutical product patents (many products available were under patent in the US) until 2004, when the amendment to its patent legislation in accordance with TRIPS finally took effect. Moreover, India did not sign

any TRIPS-plus agreements, although it was pressured to do so.³⁹ In other words, India sought to circumvent aligning its patent laws with the neoliberal trade regulations that would disadvantage its domestic pharmaceutical industry. In fact, in August of 2007 the Madras High Court ruled against the Swiss pharmaceutical giant Novartis in a long standing suit challenging a provision in Indian patent law which stipulates that modifications of known medicines cannot be patented unless they make the drug significantly more effective. (Mathrani 2007). Had it not, this would have set a precedent for practice known as ‘evergreening’ or incremental changes to known medicines, which allows them to remain under patent, thus keeping the price high.

Through concerted efforts by the Indian pharmaceutical industry and the state acting on its behalf, India emerged as a formidable contender as a manufacturer and global supplier of vaccines. India was one of the main parties to oppose TRIPS during the Uruguay Round and with Brazil organized resistance to it which eventually took shape in the form of the Doha Declaration. For thirty-five years, India did not honor international pharmaceutical patents, “not wanting to hinder domestic firms” (Huang 2013, 9) until in 2004 it finally signed the agreement and amended its patent law to confirm with TRIPS.

Today India is the largest provider of cheap vaccines for the developing countries’ and some developed countries’ markets (Srinivas 2004; Huang 2013, 10). Although India has always advocated on behalf of its industry for production of generic drugs as an alternative to expensive brand medicines, the Indian pharmaceutical industry is part and parcel of the same global order. In a study funded by the Bill and Melinda Gates

³⁹ WTO’s TRIPS agreement codifies *minimal* standards of intellectual property protection, while TRIPS-plus refers to bilateral pressures (trade agreements, R&D deals, FDI or developmental aid) that more powerful countries impose on the less powerful ones in order to ensure more stringent protection for the property rights’ holders.

Foundation, Justin Chakma and colleagues (2011, 6) report that up until 2009, almost 60% revenue for Shantha pharmaceutical, which was the largest producer of indigenous Hep B vaccine in India, came from exports, because India has not added Hep B vaccine to its national immunization schedule. As soon as India finally adopted the WHO recommendation to include the Hep B vaccine into its vaccination schedule in 2009, Sanofi-Aventis acquired a controlling stake in Shantha. In other words, as soon as India's health policy secured the enormous market for Hep B vaccine, the Western pharmaceutical giant moved in and gobbled up the local firm which sold for \$US 784 million. Chakma and colleagues (2011, 6), while extolling the innovative acumen and the business foresight that guided the indigenous firm to be the first such biotech in an emerging market to bait a major pharmaceutical MNC, nevertheless concede that while Shantha achieved this by "having provided affordable vaccines both domestically and internationally... questions remain regarding the degree to which it can continue to do so under foreign ownership." Other drugs widely manufactured in India show a similar pattern. Yanzhong Huang (2013, 10-11) reports that India currently supplies 80% of all donor-funded HIV therapies in the developing world, yet nearly half of the country's 2.39 million HIV-infected people do not have access to ARV treatments.

Historically, India favored a communal and integrated approach to health care, and India's successful implementation of Primary Health Care policies in the 1970s demonstrated "the capacity to improve public health with limited resources" (Huang 2013) with much success. Gradually however, India's public policy on health has undergone an ideological shift, by slowly abandoning the principles that underlie comprehensive PHC and by adopting a verticalized and technical solutions- approach to

disease control interventions (Qadeer and Visvanathan 2004). In addition, since embracing a more market based approach to provision of health services in the 1990s, diminishing government support and general liberal economic reforms, India is undergoing a deterioration of its public health system. Some policies that affected India's health sector include the introduction in 1992-1997 of user fees, including in government hospitals and facilities (Thakur and Ghosh 2009) and privatizing medical care and private investment in public hospitals (Qadeer and Visvanathan 2004), catastrophic decline in government spending in the health sector induced by SAPs (Mooij and Dev 2002), and absence of any form of social insurance for the poor and the heavy burden of endemic diseases (WHO 2005a).

Results are staggering. Reportedly, India's disease surveillance system is collapsing (Madhavi 2005), 70 percent of India's private health spending is out-of-pocket (Huang 2013, 5), the poorest 10% of the population have to rely on borrowing money or selling their assets to receive basic care (WHO 2005a). In terms of health indicators as well, economic liberalization has been accompanied by deepening inequality and lack of improvement in services and welfare. Public health services, including immunization coverage, have been deteriorating. In fact, as one indicator, measles immunization rates have dropped from 81 percent in 1996 to 67 percent in 2004 and then only rose slightly to 70 percent in 2008.⁴⁰ Fifteen years after universal childhood immunization was introduced in India, health surveys estimate that only 42% of children are fully

⁴⁰ I use Human Development Reports data for proportion of 1 year olds fully immunized against measles. According to the WHO, measles coverage is one of the "selected critical indicators to monitor the progress toward the achievement of the Millennium Development Goal" of reducing child mortality (WHO 2005: 190) and is generally regarded as an indicator of immunization coverage.

vaccinated. Reportedly, lowest coverage is found in the Indian states where child death rates are the highest, sometimes as low as 20% in some areas in Bihar and Uttar Pradesh (HDR 2005).

This reversal in immunization rates is especially striking in the context of a worldwide reduction of deaths from measles by 39 per cent between 1999 and 2003 (WHO 2005). In fact, the 2005 UN Human Development Report explicitly faults the Indian government for falling behind on many public health goals, as immunization rates plummet, while infant mortality rates keep rising. While identifying India (alongside China) as one of the most highly visible ‘success stories, the report acknowledges that India is “failing to convert wealth creation and rising incomes into more rapid decline in child mortality” (UNDP 2005, 4). In fact, evidence suggests that overall economic and industrial growth in India has not translated into corresponding decline in inequality or improvements in child health. According to the report, India is off track for the Millennium Development Goals targets in health indicators, among others, while “1 in every 11 Indian children dies in the first five years of life for lack of low-technology, low-cost interventions” (UNDP 2005, 6). Five years later, the Human Development Report still echoed this theme, stating that one of the most surprising results of human development research in recent years “is the lack of a significant correlation between economic growth and improvements in health and education,” this relationship being particularly weak in the countries with low and medium levels of Human Development Index (UNDP 2010, 4).

Not only has economic development not converted into improvements in health for India’s population, but also India had to rely on international donors, such as the

Global Fund, the Gates Foundation and the WB to “launch and sustain vital public health programs” (Huang 2013, 15). One study also finds that in India, foreign aid merely softens the central government’s budget constraints. Their findings suggest that “the central government converts most foreign funds, including those earmarked for state governments, into fungible monies; and spends on activities that would have been undertaken anyway” (Swaroop et al. 2000, 325). The authors state that when aid is fungible – as they find is the case in India, it “does not matter what donors finance ... and how well their projects perform” (Swaroop et al. 2000, 326). The only path to making aid more effective in overall developmental terms is to “link aid with an overall public expenditure program that provides adequate resources to crucial sectors” (Swaroop et al. 2000, 326).

As David Harvey succinctly puts it, “corporations can do very well while their home countries suffer” (Harvey 2005, 139). Indeed, for industrialization to benefit a country economically, its manufacturing must be linked to other sectors of economy and society to reap benefits (Firebaugh 2004). Arguments that tout the benefits of neoliberal economic expansion for all sectors of society often equate globalization with trade liberalization and “invoke as evidence comparative studies carried out under the auspices of the WB which often conclude that during the 1980s and 1990s, the economies of ‘globalizers’ grew faster than ‘non-globalizers,’ thereby expanding the resources available for health service provision (Labonte and Schrecker 2007b). India is one such case where economic growth and industrial convergence did not convert into beneficial gains in other sectors of society, such as population health. Considering that India develops, produces and exports a good share of the world’s vaccines, points to the

strength of export orientation for the Indian government, -- a familiar story of economic growth failing to convert into positive development outcomes. Gary Gereffi's (1983) study of the Mexican steroid industry illustrated poignantly that the shift from an import substitution industrialization strategy to a wholesale adoption of export-led growth strategies has been associated with failing real wages and rising income inequality (Bair and Gereffi 2001; Gereffi 1983). This discrepancy between the apparent success of the Indian pharmaceutical industry as a manufacturer and global supplier of vaccines and the failings of the public health system underscores the rift between the logic of the market and the provision of public goods such as vaccines. Economic development does not automatically translate into improvements in human development without explicit state policies that aim to distribute the benefits of economic growth more broadly.

CHAPTER VI CONCLUSION

After GAVI amended its eligibility criteria, India had applied for funding from the New Vaccines subaccount and, from 2002 to 2009, received support from GAVI in the amount of \$ US 26, 486, 033 for the purchase of the Hep B monovalent vaccine to phase its introduction into India's Universal Immunization Program. At the same time, from 2002 on, UNICEF on behalf of GAVI has procured monovalent Hep B vaccine from at least three Indian pharmaceutical producers alongside other ones – Serum Institute of India, Panacea Biotec, and Shantha Biotechnics – at competitive prices, ranging over the years from US \$0.47 to US \$ 0.21 per dose, a price nevertheless greater than the cost of all EPI vaccines in India put together. In the intervening years, India finally amended its patent laws to comply with the WTO's TRIPS agreement, committed to an increase in the co-financing requirement from GAVI for the Hep B vaccine, pledged to increase its percent of its GDP that funds healthcare, and followed the WHO's recommendation to include Hepatitis B into its Universal Vaccination Program, thereby increasing the captive market for the vaccine by about 23 to 25 million annually – the size of India's birth cohort. This episode aptly exemplifies the current processes that comprise global governance of vaccine-preventable diseases. It involves the panoply of actors situated in the global geo-political context governed by sometimes discordant and sometimes harmonious ideologies and interests, each pursuing their agenda, each being subject to external pressures, each acquiescing and pushing back.

In this dissertation I have aimed to capture this entanglement of actors and interests and to specify the processes through which they contend with each other and the larger institutional and socio-historical realities of which they are all a part. I argue that

the decades following the global spread of neoliberal capitalism saw an explosion in the numbers of new institutional forms that came to be called in the language of global politics -- Public-Private Partnerships (Buse and Walt 2000a; Kaul 2006). The emergence and proliferation of PPPs in public health, as well as other spheres in the context of global neoliberalism, signals a reconfiguration of the governance space, as they straddle the divide between the state, the market, and welfare provision. Harvey (2005, 76) describes PPPs' function as an attempt to "integrate state decision-making into the dynamics of capital accumulation and the networks of class" and my analysis of GAVI's immunization initiatives captures the processes through which the tacit logic and the mechanisms of profit seeking by the industry permeate the structure of public health initiatives and affect state policies. These newly configured 'transnational spaces and actors' (Sassen 2004) redefine the mechanisms through which states are (un)able to exercise authority over their populations and policies, as they link up the state decision making process with the agendas of the financial institutions, the pharmaceutical industry, and the global health institutions in coercive practices that transcend the 'soft law' pressures of international actors.

I adopt and extend Karl Polanyi's ([1944] 1957) argument that the double movement between two organizing principles in society -- the self-regulating market and the social protection -- functions through waves of institutional innovation. Through my analysis of a PPP's structure and governance strategies, I demonstrate that these new institutional forms can simultaneously embody both of the 'principles.' To be fair, there is nothing really *laissez-faire* about GAVI's strategies that aim to manufacture demand for vaccines that it funds. First of all, both epidemiology and national health priorities of

the recipient countries take a back seat to GAVI's top-down strategy of introducing 'new and underused' vaccines, as GAVI uses discipline and coercion to entice the governments it funds to adopt and co-finance immunization programs with expensive, and often patent-protected vaccines it provides. Second, through innovative funding schemes, like its AMC for the pneumococcal vaccine, GAVI commands enormous funds garnered from private, sovereign and multilateral donors to subsidize the pharmaceutical industry while simultaneously securing stable demand in the countries it funds. And yet, while capitalizing on the market ideology and mechanisms that engender Polanyi's first organizing principle, GAVI, without a question, also embraces the logic of providing social protection. GAVI funds and provides vaccines that save lives, and that is not just a tag line for the headlines. As George Soros once put it, it is much harder to do good than to run an enterprise for profit. That GAVI has a measure of positive impact in the countries that it works with is a given, and the phenomenon of GAVI's mission drift that I discuss is promising as well. Exhibiting organizational flexibility and amending its mission to support Health System Services in the poorest countries, GAVI certainly moves closer to having an impact on comprehensive health care that is the hallmark of the society's ability to "protect itself against the perils inherent in the self-regulating market system (Polanyi's ([1944] 1957), 76). And finally, by requiring co-financing for its programs as well as an increase in recipient governments' spending on healthcare, GAVI in effect, seeks to reverse the effects of SAPs and other policies that under the auspices of neoliberalism undermined the states' ability to provide adequate social protection for its citizens. It remains to be seen, of course, what will happen to GAVI's initiatives when its support ends, as it surely will, and the governments of 'graduated'

countries are left with expensive initiatives to uphold, perhaps at the expense of interventions their populations require more.

To be sure, there are plenty of organizations and movements that embrace and embody the principle of social protection, but they typically are *antisystemic* in that they explicitly reject the market-led processes in determining the shape of welfare provision. There is still, after all, socialized medicine and frugal invention, knowledge-sharing, activist states and community-based health initiatives. To offer just a handful of examples, the Indian state of Kerala, for instance, boasts an impressive reduction in inequalities and improvements in the health status of its population (Navarro and Shi 2001). We can find ingenious uses of meager resources and technology, as, for example, in the story of a Bangladeshi health officer Amjad Hossain, who singlehandedly increased immunization rates by more than 15 percent in his two districts in a year, by registering, tracking and following up with pregnant mothers and then their newborns over mobile phones.⁴¹

In their reflections on Polanyi's relevance today, Beverly Silver and Giovanni Arrighi (2003, 328) pose this question:

if we are today in the midst of the “discovery of [world] society” where are we to locate the effective agents of the countermovement for the self-protection of world society? What “groups, sections and classes” are available today to perform the “vital function” of protecting the common people of the world?

My research indicates that in addition to antisystemic countermovements, such agents – albeit I would hesitate to call them ‘effective’ – might be found in the hybrid PPPs such as GAVI. My empirical investigation captures the juggling act PPPs perform in their institutional entanglement with the states (donors as well as aid recipients), multilateral

⁴¹ For more details on the story see <http://m.scidev.net/global/health/news/mobile-phones-help-bangladesh-raise-neonatal-immunisation.html>

agencies, and the industry. In their totality, the vectors of influence and power that the global health PPPs both exert and are subjected to constitute mechanisms of influence that are functionally different from traditional market and industry pressures or ‘soft’ unenforceable rules of traditional multilateral organizations, and embody, simultaneously, both the market-led logic and the ideals of social protection. And finally, rather than uniformly undermining the authority of the state, PPPs such as GAVI forge new paths of applying pressure and power as the multitude of state and non-state actors work sometimes together, and sometimes at cross-purposes, in these partnerships.

To further investigate this new topography of the governance of disease prevention by vaccines, I examined the networks of vaccine trade between countries in the period from 1996 to 2010. Documenting the overall structure of the networks of vaccine trade allowed me to address the systemic features of the network of countries and served as a starting point for a deeper examination of geopolitical patterns that emerge. Contrary to neoliberal arguments that expect equalizing market forces, my empirical analysis shows that vaccine trade networks retain a pronounced core-periphery structure, with the majority of countries lacking industrial capacity for vaccine production. However, because there is some reshuffling of the countries that occupy the dominant positions as main vaccine producers and exporters, I suggest that in the years between 1996 and 2010, some developed economies with traditionally strong vaccine producing capacity scaled down while others – a number of industrializing, export-oriented developing countries – scaled up their vaccine production. Of course, the export-oriented industrialization strategy was promoted by both the WB and the IMF as they sought to

encourage export of manufactured goods from the Third World countries to the rest of the world (So 1990).

Congruent with Giovanni Arrighi and colleagues' (2003, 23) 'industrial convergence' hypothesis, my research shows that as some developing countries emerge as vaccine producers, the very competition that bolsters their ascent, also reduces "returns that previously had accrued to such activities." At the same time, some of the formerly dominant vaccine-exporting countries continue to pour significant resources into innovative funding ventures, such as GAVI's AMCT, which create artificial and stable demand for new recombinant, patent-protected, and thus expensive, vaccines, thus essentially subsidizing their domestic pharmaceutical industries by funneling funds through PPPs like GAVI.

Moreover, I find that the industrial convergence hypothesis holds to the extent that industrial growth and capacity do not reduce inequality for populations most affected by endemic diseases. Focusing on India as a case study, I argue that robust health indicators such as immunization rates do not accompany the spectacular success of India's pharmaceutical industry. In that, I follow Vicente Navarro's (2007, 15) insight that where inequality persists – as it does in global public health – the primary conflict is not "between North and South, but between an alliance of dominant classes of North and South against the dominated classes of North and South." When there is such a disjuncture between how well a country is performing on industrial development indicators and on measures that reflect its populations' wellbeing, we must take a closer look at its particular social-historical and geo-political realities.

As József Böröcz (2005, 886) reminds us, global structures of inequality must be examined with particular attention to the roles that most powerful global organizations play in their creation and maintenance: “the states forming the core of the world economy, the transnational corporations substantially rooted in those states, and the supra- or meta-state organizations of public authority, formal and informal networks of collusion, coordination, governance, agenda- and policy-setting mechanisms and other tools of ‘remote-control’ that have recently mushroomed around the world.” In the case of the Indian state, what might appear as ‘retreating’ (Strange 1996) from provision of social welfare is only part of the picture. In fact, I argue that the state continues to exercise its authority vis-à-vis other states and financial regimes – as India’s involvement with the WTO, TRIPS, and the Doha Declaration attests; it maintains a strong stance on behalf of its domestic business interests, as the story of the Indian pharmaceutical industry demonstrates. As Philip Cerny and colleagues (2005, 4) suggest, rather than

giving priority to the direct provision of domestic welfare, direct support for and ownership of key strategic industries and infrastructural services, maintenance of full employment, and the redistribution of resources among individuals and social groups, the state is becoming a ‘competition state.’

McMichael (2000, 166) argues that global governance trends, converging in the globalization project, constitute a “new threshold in world affairs.” In the contemporary context of the managed global economy, the states and global institutions now face a new reality -- international financial stability takes precedence over national development planning. McMichael refers to decentralization of state authority, such as divesting themselves of “certain budgetary responsibilities” and allowing space for non-governmental entities to address local issues (McMichael 2000, 153). In health, as in

other fields, the power to make crucial decisions has shifted somewhat to now include business and financial interests, multilateral organizations and PPPs, “reducing further the democratic space for national, let alone community involvement in such decisions” (Green 2008, 157).

It is important to understand that the intersection of sovereignty and territory hitherto embodied in the institution of the modern state is being transformed. What Sassen calls ‘insipient denationalizing’ signals the “relocation of some components of national state sovereignty onto supranational authorities or privatized corporate systems” (Sassen 1999, 160). And yet states continue to “anchor juridical and sometimes, jurisdictional relations” (McMichael 2008). Both Sassen and McMichael refer to a fundamental transformation of the sovereignty of the state system, which nevertheless does *not* signal an unequivocal declining significance of the state.

The rhetorically powerful and still dominant Westphalian model of “sovereign territorial states engaging in limited international cooperation for particular purposes is fast approaching the end of its useful life” (Cooper et al. 2007, 4). If the nation-state is unable to adequately address the range of global problems it faces -- be it transnational terrorism, climate change, international economic crisis or global public health issues -- its political authority inevitably shifts. These relocations of power and authority can occur vertically – to either supra- or sub-national authorities -- or sideways, to non-state actors. Thus, the broad theoretical questions on governance that the global realities prompt, have to do with *how* power and authority are exercised, because only a critical understanding of the mechanisms of global governance and the relations of power that

underpin them can help transform “the very foundation upon which ever-changing forms of political domination rest” (Soederberg 2006, 161).

Social protection can only be provided by a political process. Neither the market, nor institutions firmly rooted in its logic, can deliver it. There is a powerful – even if utopian – idea of redistribution on a global scale that in its different manifestations offers blueprints for righting the wrongs of an inherently unjust global order (Böröcz 2005). In the field of health, such a sentiment was beautifully expressed in the Alma-Ata Declaration in 1978, which states,

[a]n acceptable level of health for all the people of the world by the year 2000 can be attained through a fuller and better use of the world's resources, a considerable part of which is now spent on armaments and military conflicts. A genuine policy of independence, peace, détente and disarmament could and should release additional resources that could well be devoted to peaceful aims and in particular to the acceleration of social and economic development of which primary health care, is an essential part, should be allotted its proper share (Declaration of Alma-Ata 1978).

Nearly thirty years later, another proposal cites a calculation “that it would cost US \$ 100 a year by each middle class citizen in the developed world to finance the achievement of the Millenium Development Goals” (Kickbush 2004, 14). There are other powerful ideas, such as a tax proposed by James Tobin, a Nobel Prize laureate in economics, who suggests imposing a very small tax of about 0.5% on international electronic financial transactions that could raise US \$ 150-300 billion annually and could be used to eliminate the debt burden of the Third World countries (Waitzkin 2003, 525). As simple and powerful as these ideas are, they are not likely to come to fruition in any observable future. And barring that, we are left with the current world order and its institutions, charged with the task of social protection that they must carry out.

In her public lecture at the 10th International Congress on Public Health in 2004, Ilona Kickbusch, (2004, 3-4) then the head of the Division of Global Health at Yale University, delivered a poignant reminder,

Health lies at the core of modernity and development. It has shaped the nature of the modern nation state and its social institutions, it has powered social movements and defined rights of citizenship and it has contributed to the construction of the modern self and its aspirations. Within a very short historical time span – about 100 years – a long and healthy life has become a demographic fact, a societal goal and a personal expectation within developed societies. Within an even shorter time span – about 50 years – universal access to medical care has become a trademark of industrialized welfare states.

It seems that in a bout of collective denial and amnesia, the global establishment is failing to learn from the past. The global order is not conducive to welfare provision, and the most important institution that has been instrumental in providing social protection – the nation state – is constrained in its ability to do so both by global institutional order and by the predominance of a powerful and insipient ideology that relegates to it the role of upholding the market.

I would like to conclude with another powerful quote – Immanuel Wallerstein's (2001, 256) reflections on the world-systems paradigm and the promise that critical social science holds. As he states,

world-systems analysis is a call for the construction of a historical social science that feels comfortable with the uncertainties of transition, that contributes to the transformation of the world by illuminating the choices without appealing to the crutch of a belief in the inevitable triumph of good.

Perhaps, the triumph of good is not inevitable. But we should believe that it is possible, and strive to understand what stands in the way.

APPENDIX

- GAVI 1999(1). Meeting of the Proto-Board, 12-13 July 1999, Seattle. Executive summary.
- GAVI 1999(2). First Board Meeting, 28 October 1999, New York. Executive Summary.
- GAVI 2000(3). Second GAVI Board meeting, 31 January 2000, Davos. Executive Summary.
- GAVI 2000(4). GAVI Board Teleconference, 31 March 2000.
- GAVI 2000(5). Notes from GAVI Board Teleconference, 26 May 2000.
- GAVI 2000(6). Third GAVI Board Meeting, 13-14 June 2000, Oslo.
- GAVI 2000(6a). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 1.1
- GAVI 2000(6b). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 2.
- GAVI 2000(6c). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 3.
- GAVI 2000(6d). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 4.1a.
- GAVI 2000(6f). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 4.2.
- GAVI 2000(6g). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 4.3.
- GAVI 2000(6h). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 5.
- GAVI 2000(6i). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 6.
- GAVI 2000(6j). Report of the Third GAVI Board Meeting. June 2000. Oslo. Annex 7.2.
- GAVI 2000(6k). Overview of the Operations Function in the GAVI Secretariat, 30 May 2000.
- GAVI 2000(7). Summary Report of GAVI Board Teleconference Discussion: First GAVI Proposal Review Outcome. 18 July 2000.
- GAVI 2000(8). GAVI Board Teleconference, 11 September 2000, Summary Report.

GAVI 2000(9). GAVI Board Teleconference, 4 October 2000, Summary Report.

GAVI 2000(10). Fourth GAVI Board Meeting, 19 November 2000, Noordwijk.

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GAVI 2000(10b). Report of the Fourth GAVI Board Meeting, November 2000, Noordwijk, Annex 3.

GAVI 2000(10c) Report of the Fourth GAVI Board Meeting, November 2000, Noordwijk, Annex 5a.

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GAVI 2001(13). GAVI Board Teleconference. 25 September 2001. Summary Report.

GAVI 2001(14). Sixth GAVI Board Meeting. 17 October 2001. Ottawa. Final Summary Report.

GAVI 2001(15). GAVI Board Teleconference, 26 November 2001. Draft Summary Report.

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GAVI 2002(18). GAVI Board Teleconference, 18 April 2002. Final Summary Report.

GAVI 2002(19). GAVI Board Teleconference, 23 May 2002. Summary Report.

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GAVI 2002(21). GAVI Board Teleconference, 8 August 2002. Summary Report.

GAVI 2002(22). GAVI Board Teleconference, 12 September 2002. Final Summary Report.

- GAVI 2002(23). GAVI Board Teleconference, 24 October 2002. Summary Report.
- GAVI 2002(24). Ninth GAVI Board Meeting, 19 November 2002, Dakar, Summary Report.
- GAVI 2002(25). GAVI Board Teleconference 19 December 2002, Summary Report.
- GAVI 2003(27). GAVI Board Teleconference, 27 February 2003, Final Report.
- GAVI 2003(28). Tenth GAVI Board Meeting, 6 March 2003. New York, Final Summary Report.
- GAVI 2003(29). GAVI Board Teleconference, 9 May 2003. Final Report.
- GAVI 2003(30). GAVI Board Teleconference, 6 June 2003. Summary Report.
- GAVI 2003(31). GAVI Board Teleconference, 30 June 2003, Final Report.
- GAVI 2003(32). 11th GAVI Board Meeting, 15-16 July 2003, Washington DC. Summary Report.
- GAVI 2003(33). GAVI Executive Committee Report, 29 October 2003.
- GAVI 2003(34). 12th GAVI Board Meeting, 9-10 December 2003, Geneva.
- GAVI 2004(35). GAVI Executive Committee Report, 4 January 2004, Geneva.
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- GAVI 2004(37). GAVI Board Teleconference, 6 May 2004.
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- GAVI 2004(39). GAVI Board Teleconference, 29 September 2004.
- GAVI 2004(40). GAVI Board Teleconference, 15 October 2004.
- GAVI 2004(41). GAVI Board Teleconference 8 November 2004.

- GAVI 2004(42). 14th GAVI Board Meeting, 4-5 December 2004, Abuja.
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- GAVI 2005(45). 15th GAVI Board Meeting, 28-29 April 2005. Final Summary Report. Geneva.
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- GAVI 2006(50). GAVI Alliance Board Meeting, 20 June 2006, Washington DC. Summary Report.
- GAVI 2006(51). GAVI Alliance Board Teleconference, 28 July 2006.
- GAVI 2006(51a) Covering Memo and multi-year Budget Request. July 2006.
- GAVI 2006(51b). Covering Memo and multi-year Budget Request. June 2006.
- GAVI 2006(51c). Proposed New Vaccine Financing Policies.
- GAVI 2006(52). Azerbaijan: request for continued support (2006-2008).
- GAVI 2006(53). GAVI Alliance and Fund joint executive meeting, 27 September 2006, New York.
- GAVI 2007(55). Request for increased funding: Bolivia rotavirus vaccine introduction.
- GAVI 2006(54). GAVI Alliance Board Meeting. 28-29 November 2006, Berlin, Final Summary Report.

GAVI 2007(50). GAVI Alliance and Fund Board retreat. 16 July 2007, Geneva.

GAVI 2007(60). GAVI Alliance Executive Committee teleconference, 26 July 2007.

GAVI 2007(61). GAVI Alliance executive committee meeting, 25 September 2007, New York, Final Summary Report.

GAVI 2007(62). GAVI Alliance and Fund Board Meeting, 28-29 November 2007, Cape Town, Final Summary Report.

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GAVI 2009(69). GAVI Alliance Fundraising Committee teleconference, 28 May 2009. Final Minutes.

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