

The Political Economy of “Food Security” and Trade: Uneven and Combined Dependency*

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ABSTRACT This article critiques the notion of food security through trade promoted by supranational organizations like the United Nations Food and Agriculture Organization, the World Bank, and the World Trade Organization. We use and refine the food-regime perspective to contest this unwritten rule of the neoliberal food regime. Rather than “mutual dependency” in food between “North” and “South,” as argued by Philip McMichael, however, we show that food dependency has been stronger on basic foods in developing countries, while advanced capitalist countries’ dependency has been mostly on luxury foods. Also, the more that developing countries become dependent on food imports and exports, the more they will be importing the “world food price” for the relevant commodities. Food-price inflation will more adversely affect their working classes, which spend larger shares of their household budgets on food. Our empirical focus is on food dependency in emerging nations—Brazil, China, India, Mexico, and Turkey—in comparison with long-standing agricultural exporting powerhouses, the United States and Canada. Using longitudinal data from FAOSTAT, we show that food security in the neoliberal food regime can best be characterized as “uneven and combined dependency.”

Introduction

Trade liberalization has been a hallmark of the neoliberal reformation of capitalism since the 1980s. If agricultural trade was liberal during the

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first food regime from the late nineteenth century to World War I, it focused on national markets in the second food regime from the aftermath of World War II to the late 1970s. By the 1980s, agriculture had become the most inward-looking sector of national economies, and national agricultural sectors were highly protected. One of the chief discursive tools used to liberalize agriculture in the 1980s was “food security,” which was supposed to be best achieved through trade rather than self-sufficiency.

The purpose of this article is to offer a critique of the notion of food security through trade as promoted centrally by supraprstate organizations like the United Nations Food and Agriculture Organization (FAO), the World Bank, and the World Trade Organization (WTO). The empirical question that emerges, which we address below, is to what extent does food-import dependency help enhance—or worsen—food security in developing countries compared with that in advanced capitalist countries? Our hypothesis on this is simple: the more that developing countries become dependent on food imports and exports, the more they will be importing the “world food price” for the relevant commodities. Food-price inflation will more adversely affect their working classes, which spend larger shares of their household budgets on food. We offer tentative corroboration of this hypothesis by an analysis of how food-price inflation has affected the seven countries we studied. Clearly, the impact was much lower in Canada and the United States, but it was severe in all developing countries.

Our empirical focus is emerging nations—Brazil, China, India, Mexico, and Turkey—in comparison with two long-standing agricultural-products-exporting powerhouses, the United States and Canada. We contrast food consumption and trade in large countries with those in varying locations in the world economy, countries with varying agricultural-products-exporting strengths. We use FAO data comparatively for two periods, 1985 and 2007. Starting the analysis with 1985 allows for a contrast between the time before and after the neoliberal reformation of agricultural trade rules.

Philip McMichael (2009a:287) has argued that what he calls the “corporate” food regime has led to “deepening food dependency in both directions,” that is, in the “North” and “South.” Using longitudinal data from the FAO’s FAOSTAT database, however, we add nuance and specificity to what we call the “neoliberal” food regime, and show that its food security can best be characterized as “uneven and combined dependency.” This is a modification of Leon Trotsky’s (1934) “unequal and combined development,” and indicates that states’ insertion and adaptation into this regime are based on their different stages of

development (quoted in Morton 2011:3). That is, we wish to show that emerging food dependencies under neoliberal capitalism are not parallel between advanced capitalist countries and emerging economies. Rather, the former display mild levels of dependency on the importation of what we call “luxury” foods (which invariably make small contributions to total caloric intake), while the latter generate varying degrees of dependency on the importation of “basic” foods—very “uneven” types of dependency. Wealthier countries are importing high-value and high-quality foods, while they are exporting mass and industrially produced cereals, often the product of biotechnology (e.g., maize and vegetable oils).

In addition to this very uneven dependency, we see an increasing trend to homogenize food-consumption patterns across the world, where the dominant economic actors are large agribusiness multinational corporations (ABMs) orchestrating global food production and dissemination. The most significant ABMs are based in the United States. Although they participate heavily in the international economy, their most significant locale remains the United States (Panitch and Gindin 2012).

The new rules of the game seem to fundamentally change the role of state intervention and open the door for ABMs to operate relatively freely in a variety of national markets. This process coincides with the new technical revolution in agriculture represented by biotechnology (Kloppenborg 1988; Otero 2008; Pechlaner 2012), which we see as an enabling technology that was taken over by large ABMs. In their hands, biotechnology has become the central technological form of the neoliberal food regime, extending the modern agricultural paradigm that originated with hybrid corn in the United States in the 1930s (Kloppenborg 1988; Otero 2008). Centered on transgenic crops that were engineered to resist the effects of herbicides aimed at weeds, biotechnology has made modern farmers around the world dependent on inputs purchased from ABMs, and transgenic corn has become one of the most traded agricultural commodities in the world. Thus we see that the very uneven food dependencies are at the same time “combined” in this uneven pattern of capital accumulation across the world economy.

How are we to characterize the food regime emerging from the new regulatory configuration that places trade at center stage in achieving food security? Any theoretical characterization of the emergent food regime would have to fulfill at least two analytical requirements: It must contribute both to enhancing our knowledge and understanding of reality and pointing toward the basis on which it can be transcended in a progressive direction to reduce or eliminate food vulnerability and ensure true food security. To characterize the food regime, we need to first clearly decipher its central dynamic factors in order to then identify

its chief antagonisms and transformative elements. Because the food-regime argument takes a worldwide perspective on capital accumulation in food and agriculture, in which it sees systematic divisions and dependency between North and South, we explore the data for two advanced capitalist countries in comparison with a few developing but “emerging” countries from the South. The point is to make it as hard as possible to falsify the dependency assumptions of world-systems theory: If even these emerging markets are indeed dependent on the North, then a much more dire outcome can be expected for smaller developing countries. Rather than peripheral in the world economy, our sample of emerging countries may be regarded as semiperipheral, in the sense that they may be best placed to buck any dependency trends involved in a world economy with enhanced trade. If, however, dependency between North and South varies significantly across countries, then we need a more nuanced analysis than that allowed by McMichael’s perspective. In fact, we argue that we need a mesolevel analysis of the food regime that accounts for specific national-level variation in food dependency.

We first review the concept of food security and how it became linked to trade. We then synthesize McMichael’s characterization of the corporate food regime, contrasting it with what others have called the neoliberal food regime. The third section offers empirical evidence on the actual and specific effects of the neoliberal food regime, including food-price inflation. The conclusions discuss official reassessments of the food security and trade link, summarize our substantive conclusions, and recapitulate points about naming and characterizing the third food regime of capitalist accumulation in agriculture.

Food Security and Trade

In the post–World War II period, agriculture remained the exception for trade liberalization, outside all multilateral agreements. Agriculture in most countries, especially the larger ones with greater agrobiological diversity, had focused primarily on “self-sufficiency” for domestic markets and traded their surpluses. The state intervened vigorously in most cases with several kinds of farm supports: from direct subsidies and cheap loans to technical assistance for production and organizational help to market farm products nationally and even internationally. Support has also included concessional sales of surplus production to export markets, compensation to control supply through “set aside” land schemes, and use of sanitary and phytosanitary regulations to protect home markets (Thomson and Metz 1998).

Such an exceptional situation for agriculture started to change slowly but surely after the Uruguay Round of the General Agreement on Tariffs

and Trade (GATT). Negotiations for this round, started in 1987 and concluded only in 1993, took effect starting in 1995 in the brand new World Trade Organization, which absorbed the GATT and its more limited mandate.

The United States dominated the food regime after World War II. Such domination has involved a central double standard ever since: The United States has promoted free trade around the world while practicing protectionism and subsidies for its agricultural sector. This position was also adopted by the European Union, Japan, and Canada, and has prevented any advancement in the talks at the WTO's Doha Development Round, which were started in November 2001 specifically to address agricultural trade liberalization. This double standard of advanced capitalist countries has faced strong resistance from governments of developing countries, and resistance by social movements from below has also been key to blocking agricultural trade liberalization.

The concept of food security has been central to the neoliberal pitch for opening national agricultures. The latest incarnation of the concept, which has evolved through time, is as follows: "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life" (FAO n.d.) The official view distinguishes between four dimensions of food security: physical availability of food, economic and physical access to food, food utilization, and stability of the other three dimensions over time. Food security is achieved once all four dimensions are simultaneously fulfilled (FAO 2008:1).

We can trace the idea of food security back to the 1948 United Nations Declaration of Human Rights, which included the "right to food" as part of human rights. The term "food security" as such, however, was not articulated until 1974 and it did not come to dominate official discourse in suprastate organizations until the mid-1980s, once the neoliberal reformation of capitalism was in full swing (Jarosz 2011). From this time on, food security became irrevocably linked to "trade and aid" as key ways of making food available. The official view justified the neoliberal shift from a supply-led to a free-trade-oriented food security paradigm relying on the ideas of "balancing supply and demand," "differentiating between food self-sufficiency and food security," and "comparative advantages" (FAO 2006:1, 2003:35).

Following FAO's reconceptualization of food security, the influential World Bank report on poverty and hunger (Reutlinger and van Holst Pellekaan 1986) drew a close link between food insecurity and high

levels of structural poverty and low levels of income, which all hinder the demand side of food security (FAO 2006:1). Furthermore, the report went on to clearly state that “there is no necessary link between self-sufficiency and food security” (Reutlinger and van Holst Pellekaan 1986:31). Prior to the 1986 report, the World Bank had already drawn attention to the need for identifying cost-effective ways to improve food security (Reutlinger and van Holst Pellekaan 1985:6–7), labeling food self-sufficiency as a costly and inefficient solution, and arguing for a free trade model (3, 18). Similarly, the World Bank document on rural well-being (Serageldin and Steeds 1997:16) argued that “only with stable, integrated long-term access to world markets can countries comfortably refrain from costly food self-sufficiency policies.” The World Bank (2001) insisted that “the overall benefits of liberalization will always outweigh the costs” (2), even though this might lead to negative outcomes in the short run in certain cases.

According to an FAO training manual on food security policies (Thomson and Metz 1998), one should rule out food self-sufficiency as an expression of an autocentric development approach, which should be replaced by an outward-looking view of development incorporating international specialization and comparative advantage. In the 2000s, FAO continued to argue for an import-driven, outward-looking model of food trade based on comparative advantages, recognizing that food imports constitute a fundamental means for achieving food security (FAO 2000, 2003, 2005).

Meanwhile, nonetheless, FAO (2003) cautioned that the benefits of *comparative* advantage could be reversed once large multinational corporations gain *competitive* advantage to the detriment of small producers’ and states’ ability to derive gains from international free trade. In contrast to comparative advantage, which ensures—at least in theory—a positive-sum game by enabling all players to specialize in the branch in which they could be most efficient, competitive advantage entails the monopoly over profits derived from the monopoly over specific products in a given branch, mostly thanks to the player’s technological superiority (FAO 2003; Lara 2007). In agriculture, this situation is embodied in the corporate control of biotechnology production in contract farming, supermarket control of purchasing, and multinationals’ control over the distribution chain between production and final sale (FAO 2003).

The most significant social movement that has challenged trade liberalization in agriculture has been Via Campesina, a transnational grassroots organization of peasants and farmers from 57 nations (Desmarais 2007). While not opposing trade as such, Via Campesina’s central proposal to ensure food security revolves around the program of “food

sovereignty.” The food-sovereignty movement aims to make sure that states have the right to protect markets, democratic control of the food system, and revaluation of peasant production. Once this goal is achieved, surpluses can be traded. One could argue that the political struggle of Via Campesina centers on defending the value of peasants’ and small farmers’ labor power. More broadly, this movement also defends the ability of small-commodity producers in agriculture to guarantee food security if they are not made to deal or compete directly with large ABMs.

According to Wittman, Desmarais, and Wiebe (2010) and Fairbairn (2010), food sovereignty emerged as a counterframe to the neoliberal conception of food security that champions the principles of keeping the markets free of government intervention, further liberalizing food and agriculture, and increasing productivity through high-tech approaches (e.g., the adoption of genetically modified seeds). Rejecting the neoliberal approach to food as a regular commodity and to peasants as atomized individuals, food sovereignty highlights peasant solidarity, collective rights, and ownership of resources by identifying the power dimensions inherent in food and agriculture (Fairbairn 2010; Wittman et al. 2010). Wittman et al. (2010:2) define food sovereignty as “the right of nations and peoples to control their own food systems, including their own markets, production modes, food cultures and environments.”

Efe Can Gürcan (2011, forthcoming) has argued that food sovereignty points to the importance of state–social movement partnership in achieving food security. Such a partnership rests on a four-pillar strategy, which includes: (1) land collectivization through radical agrarian reforms with a strong emphasis on cooperative organizing, (2) socializing participatory urban agricultural practices (in light of growing urban rates in the Third World), (3) supporting local agricultural markets that would promote local access to food, and (4) encouraging transnational peasant alliances that would empower peasant movements vis-à-vis the state.

So, how can we adjudicate whether food security can be achieved via trade liberalization or a food-sovereignty program? Let us turn to the food-regime analysis for possible answers.

Food Regimes Revisited

The concept of the food regime was introduced by Harriet Friedmann and brought to prominence through the works of Friedmann and Philip** McMichael (Friedmann 1992, 1993, 1995; Friedman and McMichael 1989; McMichael 1992, 2005, 2009a, 2009b). A food regime

is a temporally specific dynamic in the global political economy of food. It is characterized by particular institutional structures, norms, and unwritten rules around agriculture and food that are geographically and historically specific. These dynamics combine to create a qualitatively distinct “regime” of capital-accumulation trends in agriculture and food, which finds its durability in the international linking of agrifood production and consumption relations in accordance with global capital-accumulation trends more broadly. Each food regime is thus grounded in relatively stable (albeit typically uneven or asymmetrical) international trade relations.

Friedmann and McMichael’s work on food regimes responded to an otherwise difficult-to-disentangle interrelationship between agriculture and food and global capital-accumulation dynamics. Indeed, Friedmann and McMichael’s (1989) conceptualization of the first two food regimes—the settler colonial (1870–1914) and the surplus (1945–73) regimes—did much to illuminate how state creation, technological development, and hegemonic power, among other factors, interacted to create the international division of labor in agriculture and food that characterized each of these regimes. The food-regime perspective gained prominence by a steady flow of critique from scholars who clearly valued the goals of this perspective but eschewed the broad brush of the regulation-school and world-systems theory in which it was rooted. David Goodman and Michael Watts (1994), for instance, argued that agriculture must be viewed as an exceptional sector that has too much national variation to be understood through a largely structuralist theory of food regimes. Others critiqued the food-regime theory for downplaying national differentiation and the role of local forces in shaping national agricultural practices (e.g., Bonanno and Constance 2001, 2008; Le Heron and Roche 1995; Moran et al. 1996; Novek 2003; Pechlaner and Otero 2008, 2010).

The food-regime approach’s greatest strength and weakness lies in its provision of a “structured perspective” for understanding “agriculture and food’s role in capital accumulation across time and space” (McMichael 2009b:140). Yet the sweeping historical and political dynamics that broadly articulated the shape of the first two regimes disappointed those hoping to gain predictive power from the perspective’s insights. There has been dissent over the naming and defining features of the evolving third regime. The root of this “naming” disagreement is more than strictly academic and represents our concern with accurately projecting—and thus potentially influencing—the future. We do not wish the debate to sidetrack us from what is really important, however. We agree with Bonanno and Constance (2001:12) that “linking local

studies to grand narratives constitutes a noteworthy contribution," and it is along these lines that we would like to direct our study.

Notably, both McMichael and Friedmann themselves have long since reduced their structural emphasis and refocused their attention on the "transition periods" between regimes. While they are often still macro-oriented, particularly McMichael, refocusing on transitions necessitates allowing for the processes that influence them. Most importantly, we wish to contribute to the ongoing amendments of the food-regime argument that hold the most promise for making important links between the local-national and the global. Some particularly interesting attempts to do this have been by scholars who more narrowly focused their attention on a limited number of variables in the food regime, such as Araghi (2003), Holt Gimenez and Shattuck (2011), and Winders (2009).

McMichael characterizes the third food regime as a corporate food regime, which he defines as follows: "The corporate food regime is . . . a relatively stable set of relationships privileging corporate agriculture, in the service of capital accumulation on a world scale and at the expense of smallholder agriculture, local ecologies and 'redundant' urban fringe-dwellers" (2009a:289).

This characterization does highlight the main beneficiaries of the food regime, as well as the most negatively affected people and ecologies. Yet these are the consequences of the regime, not its prime movers, which have yet to be identified. Even if the main beneficiaries are identified as possible targets of political action, without acknowledging the specific role of the state it is hard to devise any concerted action to redirect the shape of the food regime, other than directly boycotting some of the main ABMs.

McMichael attempts to trace the "construction and reconstruction of world food orders, with distinct organizing principles (empire to state to market) across the periods of British, United States, and neo-liberal political-economic hegemony" (2009a:283n8). These "organizing principles" may be broadly present, but they are too vague and abstract. If the first food regime was dominated by British imperialism, the second and third have been dominated by U.S. imperialism, although the latter is of a different type. Further, the state played central if differentiated roles in each of the three food regimes, as did the market. Therefore, abstract characterizations such as McMichael's obscure how "empire, state and market" change their contents in different historical periods and do not allow us to determine the specific mechanisms by which food regimes operate—or how they can be changed.

Imperialism in the twenty-first century is U.S.-led and tries to assert the primacy of "the market," but this realm is not an abstract reality in

which any economic agent can play. In fact, there are huge differences in the competitive advantages of various economic actors. It so happens that U.S.-based (and other) ABMs can best thrive and eliminate competition with specific regulations favoring private property rights, intellectual property rights, and the free flow of commodities across national borders, and so on. In McMichael's characterization of the corporate food regime, states serve the market. But who is the market? It is not an abstraction, separate from specific economic actors, including corporations of various sizes, consumers of various sizes, and even states of various sizes and strengths. As Karl Polanyi suggested in his seminal work (1944), the market cannot be imposed to become a self-regulating mechanism because it is so destructive that society reacts back to protect itself.

Thus, we contrast McMichael with Pechlaner and Otero's characterization of the emerging food regime as a "*neoliberal* food regime" (2008, 2010), which we favor. States continue to be central agents in this regime. Far from being characterized by "deregulation," with states giving corporations free rein in the market while they reduce their direct intervention in the economy, states have been central in imposing what we call "neoregulation." Neoregulation is constituted by the series of international agreements and national legislation that promotes the neoliberal agenda, including favoring ABMs. For example, without the agreement of states and their ruling classes, the neoliberal structural adjustment programs of the 1980s would have been very difficult if not impossible to impose in developing countries, namely in Latin America. Neoregulation has included trade liberalization, the consolidation of intellectual property rights, and the rest of the legal framework that favors the predominance of large ABMs. The net effect of neoliberalism has no doubt been to benefit large ABMs, but the role of neoregulation has been central to their rising prominence.

Consequently, a "midrange" position between the structuralist perspective, where ABMs control the agrifood system, and the postmodern position, which focuses on the "micro aspects of the uneven process of globalization" (Constance 2009:51) is more promising. This midrange "views the globalization of the agrifood system as a contested terrain characterized by the struggle of opposing class- and/or interest-based groups" (Constance 2009:51; see, e.g., Bonanno and Constance 2000, 2008). Naming the third regime a neoliberal food regime is thus less about naming, per se, and more about the epistemological and political consequences of its characterization.

To the extent that states have been key to imposing the neoliberal food regime, they become central targets for subordinate groups,

communities, and classes to redirect it from below in a popular-democratic direction. Agricultural biotechnology, as an important sub-project of the neoliberal regime (Pechlaner and Otero 2008, 2010), is a prime example of this type of targeting. Enhancing the possibility of resistance and contestation thus requires that we have a clear and nuanced theoretical characterization of the neoliberal reformation and its expression in the food regime.

Ideas about national differentiation and local-level contestation are actually implicit in the food-regime concept, but they are not highlighted. The issue of crisis, or transitional periods, between each regime has contestation at its heart, however. As contradictions in each regime upset its stability, the door is opened to influence from below. The importance of contestation—such as by social movements—has been given greater sway in later work by its founding scholars, particularly as they attempt to address the issue of transition and its potential influences. McMichael (2005), for example, remains macro-oriented but considers the impact of international movement activities, notably La Via Campesina. Friedmann focuses on the impact of competing trends, such as “supermarket norms” from “above” versus “alternatives” from “below” like slow foods movements (Friedmann and McNair 2008) or “green” pressures, such as from consumers and local-level social movements (Friedmann 2005). Given the rise of supermarkets as key economic agents of the neoliberal food regime and their proximity to consumers, they could just as well become a key target and an avenue to redirect it in a more sustainable direction.

Polanyi’s articulation of a double movement—whereby the destructive tendencies of unregulated markets are met by a societal protective mechanism, resulting in a back-and-forth movement of liberalization and reregulation—allows for a perspective on how opposition can manifest a societal shift. A condition of this kind of protective movement, of course, is that the market basis of the negative societal impact is revealed. For example, food regimes, we will remember, are stabilized by numerous “unwritten rules” or assumptions. According to McMichael (2009a), one of these assumptions, supported by states (and suprastate organizations, we would add), is that free trade in food will guarantee food security. This assumption has now been shattered by the global food-price inflation crisis set off in 2007.

A “friendly amendment” to the food-regime argument contributed by Farshad Araghi (2003), and further developed by McMichael (2009a), characterizes the regime as a political regime of global value relations. In particular, Araghi calls attention to the inseparability of agriculture and food from the reproduction of labor power (2003:51). Notably, the

displacement of peasants occurring in numerous countries has generated a relative surplus population that has contributed to lowering the social wage (McMichael 2009a:284). Not only has this displacement left an open space for intensifying capitalist production in agriculture, but the increased availability of workers in developing countries has also rendered their labor power cheaper across the economy, and decreased their purchasing power accordingly. Not surprisingly, many workers have migrated in search of higher wage rates to the point that neoliberalism has been called “the age of migration” (Castels and Miller 2003).

Viewing the food regime from the value perspective, then, means that any national comparisons of food production, trade linkages, and so on must also include indicators of how liberalizing agricultural trade has affected the cost of reproducing labor power. We do this indirectly by comparing dependency on basic and luxury foods. Basic foods are those that provide the largest percentage of caloric intake while being the least processed, and luxury foods are value-added foods, including wine and other alcoholic beverages, fruits, and vegetables, which make a proportionally lower contribution to caloric intake. Fruits and vegetables exported from developing countries to advanced capitalist countries, in particular, are produced with specific standards of looks and quality that may not even be available domestically, or not affordable for most people. From this perspective, food sovereignty is not just about quantity but also about quality of food. Furthermore, luxury food exports are similar to what James Cypher and Raúl Delgado Wise (2010) have called “disguised maquiladoras” for their high labor content. What is being exported in this case, however, is not only the labor power of Mexicans but also scarce environmental resources like water.

Rather than deeply examine the historical specifics of certain nations, however, we attempt to broaden our understanding by taking a sampling of countries. We also seek to more specifically differentiate agricultural dependencies than using the broad framework of a world-system, dependency-theory argument would do. McMichael, for example, cites Mexico’s increased exports of fruits and vegetables and imports of corn to argue that this amounts to an asymmetrical form of “corporate ‘food security’, based in a dialectic of Northern ‘overconsumption’ and Southern ‘underconsumption’ ” (2009a:288). Mexico, in particular, however, has actually increased its importation and domestic production of meats based on subsidized U.S. grain. Primarily Mexico’s middle and ruling classes consume meats, making them a “value-added” or luxury food, while the working classes have in fact had to face an escalating price for imported basic foods and higher prices for the fruits and vegetables that Mexico increasingly exports. In other words, formerly produced

primarily for the domestic market, fruits and vegetables have become more expensive for Mexico's consumers with the internalization of their world prices. But the higher-income groups in Mexico have also expanded their access to and consumption of meats. In other words, asymmetry is not between countries as such: It is not countries as such that "overconsume" or "underconsume"; the analysis needs to account for differential class diets.

Thus there is theoretical and empirical importance to introducing some nuances into the dependency style of analysis to develop an analysis that distinguishes between basic- and luxury-food imports and exports. While advanced capitalist countries, namely the United States and Canada, have become dependent on some luxury goods like fruits, vegetables, and alcoholic beverages, they much more than offset this with a strong agricultural surplus. Furthermore, luxury foods in advanced capitalist countries do not make much more than 2 to 3 percent each of average daily per capita caloric intake. By comparison, cereals like maize and wheat constitute over 40 percent of caloric intake in Mexico. These are examples of what we mean by "uneven and combined dependency," in parallel to Trotsky's (1934) phrase about capitalist development in Russia.

All the emerging countries we compare have become more vulnerable to food-price fluctuations, but Mexico has become decidedly dependent on the importation of basic and some luxury foods. Here we focus on main food sources flows and food security. Through this empirical analysis, we strive to tease out actual historical developments in agrofood trade, and thus better illuminate the threads that weave the tapestry of the food regime together. In this way, we increase our potential of providing insight into opportunities to challenge and transcend the antisocial tendencies of the unfolding regime.

Food Security or Dependency?

We constructed all data used for this article using the databases of the United Nations Food and Agricultural Organization, which are based on each country's official statistics and FAO's estimates. We conducted an inductive study, comparing food dependency levels in 1985 and 2007. The key general proposition made here is that emerging countries that have resisted an all-out neoliberal reform since the 1980s have retained a significant level of food self-sufficiency.

One of the chief challenges of empirically assessing food security is that its definition refers to individuals rather than nations. Given that the data we analyze refer to nations and averages of daily food intake per

person, we have to define some indirect parameters to assess whether the countries under study have seen their overall positions in food security become enhanced or deteriorate by joining the neoliberal food regime. In line with the food-sovereignty literature and program, we assume that food self-sufficiency is a better guarantor of food security. Our assumption is that losing self-sufficiency is a condition that may lead to a country's loss of food security or at least increase its vulnerability to price fluctuations in food. Further, increased dependence on agricultural exports necessarily internalizes the "world price" for the relevant crops to the domestic economy. Price fluctuations disproportionately affect the lower-income groups in any country. These groups tend to spend larger shares of their household budgets on food, which aggravates any conjuncture of food-price inflation. Food-price "elasticity" is much greater in developing countries than in developed ones (Von Braun 2007).

Food self-sufficiency is operationally defined as a country's ability to provide basic food for its people without relying on imports that exceed 20 percent of a given crop's domestic supply. Domestic supply is made up by the sum of already existing stocks, plus new domestic production, plus imports, minus exports. Given the cultural specificity of "basic foods," we tailor our food vulnerability assessments to each country through each nation's consumption data, by inductively selecting those crops that make up 50 percent or higher of each country's national daily caloric intake. In some countries this is made up of a limited number of crops and in others the diet is more diversified. With this determination of each country's basic crops, we then assess the level of dependency in each of these crops. Table 1 presents data on dependency levels in the top five foods for the seven countries in 1985 and 2007. A country with dependency levels reaching 20 percent or more of its domestic supply in a majority of its basic crops will be considered to have lost its food self-sufficiency. This condition increases the country's vulnerability to price fluctuations in food. Note that there are some overlaps in the food categories provided in Table 1, such as "cereals" and "corn," which accounts for why many countries show more than five foods, but the overlap was not double counted in the calculations.

Concentration of national diets on a few food sources can also increase food-security risks, either through price fluctuations, pests, or natural disasters. We thus constructed a basic index of the converse of food diversity—which we term "food uniformity index" (FUI)—by simply adding the percentages of a country's diet made up by its top five food sources. We then assessed these comparatively over the same period—1985 to 2007—to determine whether increased trade has made

Table 1. Dependency Levels in Top Five Foods (% = imports/domestic supply)

COUNTRY	1985		2007	
	TOP CROPS*	IMPORTS >20%	TOP CROPS*	IMPORTS >20%
BRAZIL	cereals, sugars, rice, wheat, vegetable oils, maize	wheat (51%)	cereals, sugars, vegetable oils, wheat, meats, rice, maize	wheat (69%)
CANADA	cereals, wheat, sugars, vegetable oils, meats, milk, animal fats	sugars (101%), veg. oils (23%)	cereals, wheat, vegetable oils, sugars, meats, rape and mustard oil, animal fats	sugars (103%), vegetable oils (45%)**
CHINA	cereals, rice, wheat, meats, pork, sweet potatoes, sugars	sugars (26%)	cereals, rice, wheat, meats, pork, vegetable oils, vegetables	vegetable oils (39%)
INDIA	cereals, rice, wheat, sugars, vegetable oils, pulses	vegetable oils (27%)	cereals, rice, wheat, vegetable oils, sugars, pulses	vegetable oils (42%)
MEXICO	cereals, maize, sugars, wheat, vegetable oils, meats, milk	milk (24%)	cereals, maize, sugars, meats, vegetable oils, wheat, milk	wheat (58%) vegetable oils (44%) maize (28%)
TURKEY	cereals, wheat, vegetable oils, sugars, milk, fruits	vegetable oils (38%)	cereals, wheat, vegetable oils, sugars, milk, maize, fruits	milk (22%) meats (21%) vegetable oils (44%)
UNITED STATES	cereals, sugars, wheat, vegetable oils, meats, milk, alcoholic beverages	sugars (20%)	cereals, vegetable oils, sugars, wheat, meats, milk, poultry meat	maize (25%) vegetable oils (27%)

Source: Constructed with data on “food balance” for each nation from FAOSTAT, for 1985 and 2007. Retrieved February 28, 2013 (<http://faostat.fao.org/site/368/default.aspx#ancor>).

Note: * Ordered by ranking in each country.

** This is an apparent dependency, as Canada also has an export rate of rape and mustard oil that almost triples imports of this and other vegetable oils.

Table 2. Food Uniformity Index (percent of food supply of top-five food sources)

COUNTRY	1985	2007
Brazil	64	59
Canada	63	61
China	79	71
India	74	73
Mexico	74	69
Turkey	76	78
United States	65	65

Source: Constructed with data on “food balance” for each nation from FAOSTAT, for 1985 and 2007. Retrieved June 28, 2012 (<http://faostat.fao.org/site/368/default.aspx#ancor>).

Note: Bold type indicates increasing uniformity of food sources.

our countries’ diets more or less uniform. An increasing FUI indicates reliance on fewer dietary sources. Greater diversity, or a lower FUI, would be logically consistent with the expansion of trade, as more complementarities are added to domestic climatic possibilities. Table 2 presents the food uniformity index.

Food Sources, Diversity, and Dependency

To determine the basic foods for each country’s domestic consumption (defined as the top crops that make up at least 50 percent of each nation’s daily caloric intake), we began by studying the top 25 crops that made up the largest percentage contributions to average daily per capita caloric food intake in each country, out of over 100 food categories recorded by FAO, which included milk. Somewhat surprisingly, the top five food sources made up at least 59 percent of caloric intake (going as high as 78 percent) for all of our countries. From the 25 main food crops in each country, we then identified those food sources with high dependency levels, that is, with imports that were higher than 20 percent of their domestic supply. Given that the top five food sources accounted for over 50 percent of caloric intake, we then conducted our dependency assessments on these, compiled in Table 1.

One general pattern for all countries is that the largest percentage of food sources is cereals. But the proportions vary considerably from one country to another, both in composition of cereals and their contribution to total food supply. For instance, Canada and the United States consume about half as much food in the form of cereals (around 23–25 percent) as Mexico does (around 43 percent), which makes its cereals import dependency all the more acute. Figure 1 depicts each of our

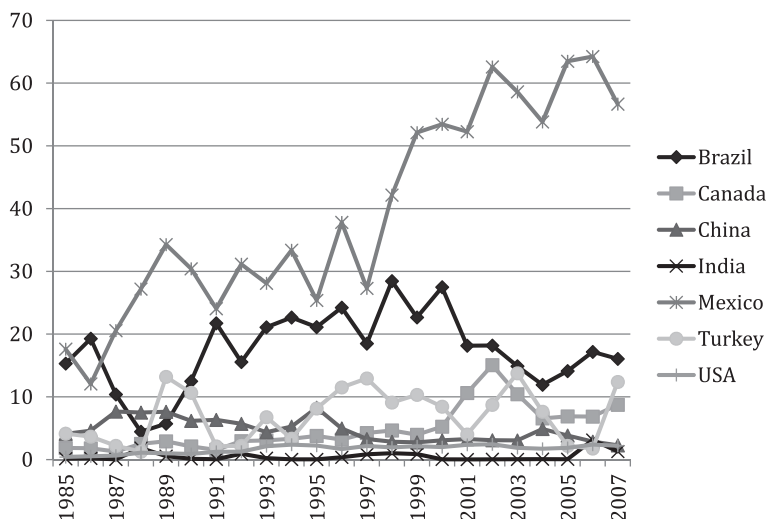


Figure 1. Cereals Dependency: Percentage of Imports over Domestic Production. Source: Constructed with data from FAOSTAT, 1985–2007. Retrieved August 26, 2011 (<http://faostat.fao.org/site/616/DesktopDefault.aspx?PageID=616#ancor>).

countries’ dependency levels on cereals, measured as the relation between imports and domestic production. Note that this is a less conservative measure of dependency than the one used in Table 1, which is the relation of imports over domestic supply (domestic production plus imports minus exports).

Vegetable oils had also become increasingly important by 1985, reflecting a global shift in diets away from roots and tubers and toward “livestock products and vegetable oils” (WHO/FAO 2002:section 3.2). In a basic reading of Table 1, we can see some increases in dependency. Mexico demonstrates the most dramatic shift to dependency in basic foods, having more than 20 percent imports for four of its top five basic foods. Turkey has developed significant dependencies in two of five crops. A few other countries, such as Brazil and India, have increased the level of import dependency in crops they were already dependent on. We discuss the data in more detail on a country-by-country basis next.

Starting with Brazil, we see that the country started the period with a 51 percent dependency level for wheat in 1985, which increased to 69 percent by 2007. This represents a 40 percent increase in dependency levels that were already acute for wheat. But no other main crop met the dependency level in Brazil, and wheat’s share of total food intake actually declined from 14 percent in 1985 to 12 percent in 2007. The most

remarkable trend is that wheat became the third major source of food, displacing rice, which moved to the fifth place after meats by 2007. Given the climatic requirements of wheat, this is likely a crop that is difficult to grow in Brazil. Yet it is continuing to import this temperate-weather crop.

Brazil's FUI declined from 64 percent in 1985 to 59 percent in 2007, indicating that its diversity of food sources was enhanced. The contribution of sugars to total per capita daily food intake declined from 17 percent to 13 percent by 2007, which is likely related to Brazil's enhanced sugarcane-based ethanol production to fuel its cars.

Canada had the same number of main crops that met our dependency criterion in both years, but with changing levels and with varying contributions by each crop to total food intake, as follows: Canada went from a FUI of 63 percent in 1985 to one of 61 percent, indicating that, similarly to Brazil, the country also went into a greater diversity of food sources. Of our sample of seven countries, all countries, except for Turkey, experienced increased food diversity in food sources with a declining FUI from 1985 to 2007.

In terms of dependency, the story of sugars is quite peculiar to Canada: the country has been a free trader in this crop for many decades, so it imports raw sugar from the free market, that is, the market for sugar beyond that for the roughly 80 percent of this crop that is precommitted in several regional trade agreements (Otero and Flora 2009). In 2007, Canada imported 103 percent of its domestic supply of sugar, which is explained by its processing and exportation of refined sugar. In other words, given the abundance of sugar production in the world and in spite of its price fluctuation, Canada cannot be deemed to have a compromised food supply based on its raw-sugar-imports dependency. The ranking of sugars in the top five food sources for Canada moved from second to third place in 2007, and its contribution to total food intake declined one point from 15 percent to 14 percent.

Vegetable oils, however, became the second source of caloric intake in Canada by 2007, after being third in the top-five sources in 1985. The imports of vegetable oils represent 45 percent of domestic supply for this caloric source. Their price was an important component of the food-price inflation crisis that started in 2007 (McMichael 2009a). In the case of meats of all types, while their contribution to total caloric intake declined both in ranking (third to fourth place) and in proportion (12 percent to 11 percent), their import level almost reached our dependency threshold, going from 12 percent in 1985 to 19 percent of domestic meats supply by 2007, and by 2012 it was sounding alarm bells (McKenna 2012). Overall, though, Canada continues to be an

agricultural exporting powerhouse, with a hefty agricultural trade surplus that more than makes up for all its food imports.

China had a FUI of 79 percent in 1985 and it decreased to 71 percent by 2007. The most important change in food composition was a considerable decline in rice’s contribution to caloric intake, from 36 percent in 1985 to 27 percent in 2007. Wheat’s contribution also declined from 27 percent to 20 percent in the same period. The most substantial relative increase was by meats (mostly pig meat), which doubled their food contribution from 7 percent to 14 percent. Vegetable oils made their appearance among the main food sources in 2007 with an 8 percent contribution to per capita daily caloric intake and a high dependency index of 39 percent of imports for this food supply. Whereas sugars contributed 3 percent of caloric intake in 1985, with a 26 percent dependency index, they disappeared from the list of main foods by 2007 with less than 2 percent. All in all, China’s food sources are less concentrated but more reliant on meats, reflecting the growing purchasing power of its rising middle classes. Except for vegetable oils, however, which did have a 39 percent dependency index in 2007, China is largely self-sufficient in food.

India’s composition of main food sources shifted a bit, with a 4 percent decline in the overall contribution by cereals to average daily per capita caloric intake between 1985 and 2007. Further, the contribution of rice declined from 33 percent to 30 percent, while that of wheat increased from 19 percent to 22 percent in the same period. An important shift in food composition was that of vegetable oil, raising its contribution by 50 percent, moving from 6 percent to 9 percent of total food intake. Vegetable oil’s rank among main food sources also increased from fourth to third place, and its dependency levels increased from 27 percent to 42 percent. The latter explains why the 2007 global food price inflation crisis had a considerable impact in India, also due to its importation of the world price for rice—still the major contributor to total caloric intake. India became the main rice exporter in the 1990s, but set export restrictions in 2007 to guarantee domestic supply during the global food-price crisis. It regained its top-exporting place again in 2011 by eliminating export floors, displacing Thailand and Vietnam (Mukherjee 2012; USDA 2012).

Pulses, consisting of dry, annual, high-protein grains like lentils and beans, also experienced a slight shift in India: from being 6 percent of total food intake in 1985, they fell to only 5 percent, but their import level increased from 3 percent to 17 percent of domestic supply, almost reaching our dependency threshold (20 percent). Sugars also experienced a decline in total contribution to food, from 10 percent to 8

percent, but their import level disappeared—from 10 percent of domestic supply to zero. Overall, then, India is a largely self-sufficient producer of food. Still, the disproportionate food-price inflation it has suffered since 2007 must be related to its increased dependency on vegetable oil imports and the internalization of the world price for both rice and wheat.

For Mexico in 1985, only 4 of the top 25 crops met our dependency criterion (20% percent of domestic supply): milk, with 24 percent imported; sorghum, 33 percent; oil crops, 46 percent; and soybeans, 63 percent. By 2007, however, the number of imported crops that met our criterion of dependency ballooned to over 10 of the top 25 food sources, as follows: cereals (total, excluding beer), 39 percent; maize, 28 percent; milk, 22 percent; sorghum, 23 percent; oil crops, 78 percent; meats, 21 percent; wheat, 58 percent; cereals (other), 100 percent; soybeans, 98 percent; starchy roots (total), 21 percent; and potatoes, 22 percent. Notice that some of these categories are subsets of a larger category, such as cereals (e.g., wheat and maize), oil crops and starchy roots (e.g., potatoes). Both soybeans and sorghum are used as animal feed crops, highlighting the larger role of meats in Mexico's diet, especially poultry meat (Martínez, Aboites, and Constance). Of the seven countries analyzed in this article, Mexico is clearly the one whose dependency levels on basic food imports have become most acute. Overall, Mexico had become dependent for well over 56 percent of its total food sources by 2007, without counting the importation of animal feeds. It should not be surprising, then, that Mexico's food inflation has been three to four times higher than that of its NAFTA neighbors, Canada and the United States, since 2000 (see Figure 2). Mexico decreased its FUI, indicating that its diet has become more diverse since trade liberalization, but more vulnerable to the price fluctuations of commodities with high dependency. As a result, food prices have increased at twice the pace of general inflation since 2007 and minimum wages have declined in real terms by 24 percent (Coneval 2012).

Turkey's main food sources have changed toward a much greater emphasis on vegetable oils (for cooking) and a decline in the ranking of fruits and vegetables as sources of food. In 1985 vegetable oils were already the second food source with a 38 percent dependency level. By 2007 vegetable oils accounted for 15 percent of total average daily per capita food intake. Wheat accounted for 41 percent, down from 47 percent in 1985. Sugars declined in their total contribution from 8 percent to 7 percent in the same period but remained in third rank. Fruits—excluding wine—and vegetables fell in rank, each contributing 4 percent to total food intake. Although lower in rank by 2007, this

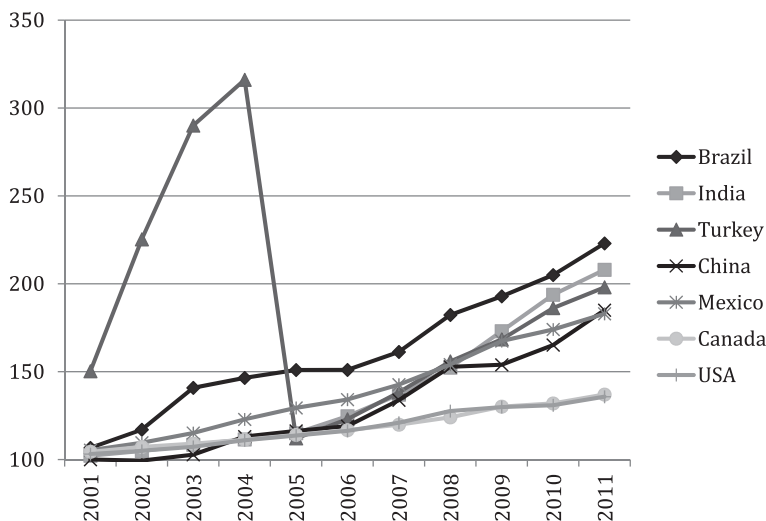


Figure 2. Food Price Index (2000 = 100). *Source:* Constructed with data from FAOSTAT, 2001–11. Retrieved August 9, 2012 (<http://faostat.fao.org/site/683/DesktopDefault.aspx?PageID=683#ancor>).

proportion is considerably higher than the role played by fruits and vegetables in our other countries of comparison. Food-trade dependency was present for vegetable oils in 1985, but by 2007 two of the top five food sources had high import dependency levels: 44 percent of vegetable oils and 25 percent of maize. The latter must be used primarily for livestock feed and this is reflected in the fact that imported meats, at 4 percent in 1985, were no longer imported in 2007, even though meats continued to offer 3 percent of total food intake. This is a much lower percentage than that accounted for by meats in most other countries in 2007, such as Brazil (12 percent), Canada (10 percent), China (14 percent), Mexico (9 percent), or the United States (12 percent). India, however, consumes even fewer meats than Turkey—they ranked as the 36th source of food in 2007.

The U.S. FUI remained stable at 65 percent accounted for by the top five food sources in 1985 and 2007. Yet while the United States imported larger proportions of foods in 2007 than in 1985, the country still did not meet our threshold of food dependency except for sugars in 1985 and vegetable oils in 2007 but the country also exports almost as much in vegetable oils as it imports. By 2007, there were several top 25 crops that met our dependency criterion, however. But this cannot be regarded as food dependency for two reasons: First, the foods involved are part of

what may be regarded as luxury rather than basic foods; second, they make up a proportion of total food intake that is less than 5 percent. Of all food sources that were not among the top five, only fruits—except wine—met our dependency criterion of over 20 percent imports: they went from 37 percent imports in 1985 to 52 percent in 2007. But fruits only constituted 3 percent of total food intake in both years. All in all, then, the United States is even less dependent than Canada, and also primarily in luxury foods.

In sum, our analysis puts to rest McMichael's assertion that the neoliberal food regime generates a "mutual dependency" for North and South in the world economy. What we have is actually an "uneven and combined dependency" in which advanced capitalist countries have increased their imports of fruits and vegetables, as well as other food items like wine and alcoholic beverages, but neither of these constitutes basic food and they make up a minor percentage of total food intake. Conversely, Mexico, which has taken up the neoliberal reforms most wholeheartedly of all the developing countries analyzed, has become clearly dependent on the importation of basic foods. Although its exports of fruits and vegetables to the North have increased considerably, they have not been sufficient to offset the even larger inflow of basic food imports. This makes Mexico a net food importer, in contrast to both Canada and the United States, which are both net food exporters. The other emerging but developing countries have retained their self-sufficiency to a much greater degree than has Mexico. Yet their food source profiles are becoming more "Westernized" in the sense that they now rely more heavily on wheat, vegetable oils, and meats.

How have uneven and combined dependencies affected food inflation? As Figure 2 indicates, there is a sharp disparity in food-inflation rates between developed and developing countries. Figure 2 depicts an inflation index constructed on the basis of making prices in 2000 equal to 100. Any price increases after this year are recorded as percentage increases in relation to prices in 2000. Figure 2 orders each country according to the latest inflation index from high to low. Brazil appears at the top with the highest food-inflation rate in 2011, and the United States at the bottom with the lowest. The United States and Canada had accumulated inflation rates since 2000 of about 36 percent-37 percent, respectively, while all the developing countries had rates three to four times higher.

Somewhat surprisingly, Brazil's inflation was greater than Mexico's, likely due to its strong export orientation, which has contributed to importing the world price for the relevant crops. While Brazil has a heavy

net food-trade surplus, as do Canada and the United States, it is among the developing countries that continued to score a "medium" food security risk by 2011. The rest of our emerging nations also had a medium risk, except for India, which had a "high risk" (Carrington 2011).

Conclusions

We started this article with a discussion of how suprapstate institutions promoted the idea of food security as achievable via trade (or aid). We thus start our concluding remarks with official assessments by these institutions on the historical record of trade liberalization in agriculture since the 1980s. The self-criticisms are quite sharp, even if neoliberal policies have not changed: the "markets," as it turns out, "for many temperate-zone products and basic food commodities are substantially distorted by government subsidies and protection, particularly in Organisation for Economic Co-operation and Development (OECD) countries" (FAO 2005:vii). Furthermore, trade liberalization "benefited countries competitive in the export market, but discouraged farmers where agriculture was not competitive. They now rely even more on food imports than before and are more susceptible to food price increases on the global market" (POED 2012:7). Finally, "the claim that [trade liberalization] will bring net gains to the least developed countries as a whole is at best questionable and at worst outright wrong" (FAO 2003:38).

In other words, the free-trade pitch made in the 1980s turned out to be mostly ideological rhetoric based on the comparative-advantages paradigm. But the realities of strong competitive advantages held by countries that traditionally exported agricultural products prevailed. This reality has not meant a "mutual" dependency in food between North and South. Rather, given the specificities of each country and the manner in which their states decided to incorporate their nations into the world economy, dependencies have become uneven and combined. While our data are still exploratory and need further refinements and additional national case studies, we can see that there are important differences in dependency patterns. Only the developing nation that wholeheartedly adopted neoliberalism (Mexico) became basic-food dependent. For the rest of the developing countries analyzed, to the extent that they became incorporated into the agricultural free-trade mantra, they also imported the world price for certain foods. The result has been increased food security risk, expressed in price inflation rates much higher than those in advanced capitalist countries.

Agricultural trade is expected theoretically to bring more diversified diets, although the opposite has been the case for Turkey. Yet, all other

countries did experience a stable or declining FUI by 2007. While increased food diversity is generally a good thing, the extent to which such diversity is based on import dependency makes food security more vulnerable to price fluctuations and natural disasters.

Further, from our broader assessment of import and export data, we saw that Canada and the United States have increased their imports of fruits and vegetables, which may be regarded as luxury foods. At the same time, their contribution to total food intake is quite modest, on the order of 2 to 3 percent for each. Our sample of developing countries, however, demonstrates an expansion of some degree of dependency on basic foods, with Mexico becoming decidedly dependent on a majority of these foods, which make up more than 50 percent of its average daily caloric intake. Here the empirical support for dependency being uneven and combined is strongest. It suggests a glaring need for supplementing traditional nation-based dependency analyses with a more nuanced analysis of intranational class diets. We hope to explore this further in a subsequent article.

What then is the proper name of the food regime that entered into crisis in 2007? In contrast to McMichael's corporate food regime, the proper label, we have argued, is neoliberal food regime. First, this label denotes the chief character of state intervention: neoregulation to enable ABMs to dominate markets, strengthen intellectual property rights, and so on. Second, biotechnology has become the dominant technological form, accounting for the greatest portion of U.S. agricultural cereals exports, that is, those produced with transgenic seeds. Finally, ABMs have no doubt become the chief economic agents, but if we miss the specific role played by the state, it will be impossible to devise appropriate action by social movements to debunk the neoliberal food regime. Only an adequate characterization of its main driving forces can allow for the design of bottom-up action to contest the uneven and combined dependencies generated by this food regime.

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