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**World Economic Crises in Times of
Environmental Scarcity and Wealth
Concentration**

by

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Abstract. Three new structural factors underlie the latest great world crisis: (1) the incorporation of highly populated countries into the growth process; (2) The increasing scarcity of the environment and certain natural resources; (3) the dramatic concentration of wealth and income in the advanced economies over the last two decades. These structural changes have significantly tightened the links between world growth and commodity demand, made the world commodity supply increasingly inelastic, and rendered economic growth more dependent on lax monetary and financial policies, respectively. All this may make the world economy highly vulnerable to crises and may make the recovery from the current crisis more difficult.

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World Economic Crises in Times of Environmental Scarcity and Wealth Concentration

I. Introduction

This paper focuses on new structural factors which have played an important but often neglected role on the genesis of the current world crisis, and that may also have profound implications for long term economic growth. We examine the synergistic interactions of three structural factors: (1) the emergence of highly populated countries, mainly China and India awakening from centuries of economic lethargy, as leaders of world growth, and as massive providers of industrial goods and consumers of primary commodities; (2) The increasing scarcity of the environment and certain natural resources which for the first time in history is beginning to be reckoned with in rich and poor countries; (3) the dramatic concentration of wealth that has taken place especially in the advanced economies over the last two decades.

Structural factors (1) and (2) have made commodity prices highly responsive to economic growth. The increased economic importance of population giants still at an early stage of development such as China, India and others has increased the commodity and energy intensity of world growth as their growth is highly dependent on a rapid expansion of commodity-intensive and energy-intensive industries (Farrell and Grant, 2005). At a time when global environmental scarcity is finally making commodity supply increasingly less elastic this implies that fast world economic growth is now closely associated with commodity price increases that eventually manifest themselves in increased inflationary pressures.

Central banks respond to inflationary pressures by tightening monetary policies to prevent excessive inflation while hopefully still leaving some space for economic growth to continue albeit perhaps at a more moderate pace. However, for reasons to be clear below, the

structural factor (3) is likely to make the real economy much more sensitive to tight monetary and financial policies than in the past. That is, the space left by tight monetary policy for continued economic growth has narrowed considerably as a consequence of factor (3).

Wealth concentration in advanced economies has been associated with the stagnation of the middle class over the last two decades, both phenomena in turn at least partly caused by new policies implemented over this period (Krugman, 2006). This suffocation of the middle class in most advanced economies, what Paul Krugman has called “the great wealth transfer”, has caused the vast majority of the households to increasingly rely on new borrowing to finance consumption leading the debt to income ratios to explode (Taylor et. al., 2008). Given that a significant part of such debt is often subject to periodic interest rate adjustments, the sensitivity of households’ available income (after debt service) to interest rate hikes has increased dramatically. To the extent that global economic growth is closely dependent on rapid consumption growth especially in the USA and other advanced countries, this has caused an increasing dependence of economic growth on lax monetary and financial policies in such countries. These policies are essential to allow consumers easy access to credit and relatively low debt service burden despite the increased household debt/income ratios.

In the USA, for example, the share of the richest 10% of the households continuously increased from about 35% of the total household income in the 1980s to reach 50% in 2007, its highest participation ever (Saez, 2009). Ominously, the only other period over the last century in which such a share reached levels close to 50% was in the years prior to the Great Depression. In fact, in the period 1917-28 the share of the top 10% increased almost exactly as rapidly as in 1996-2007 to peak at 49% in 1928 (Picketty and Saez, 2003). We argue that this is not merely a coincidence; we show that increasing income concentration to extreme levels make

economies depending on domestic demand increasingly more vulnerable to deep and prolonged crises. While domestic income concentration may not directly increase crisis vulnerability in economies that rely primarily on exports as an engine of growth, it does so for countries that rely on domestic demand such as the USA. Moreover, the USA and some other rich countries provide massive markets for the rest of the world which means that a demand contraction in these countries may drag the world into recession.

We show that a greater sensitivity of commodity prices to world economic growth and a greater dependence of growth on lax monetary policies in the advanced countries are likely to make fast economic growth with price stability much harder to sustain in the future. In addition, we show that this may make the recovery from the current crisis more difficult, implying a more protracted crisis than most previous ones.

We provide an in-depth analysis of the emergence of the great recession within the context of a new economic order that the three structural factors listed above have given rise to. This analysis encompasses a retrospective analysis of the articulation of the rich country-poor country worlds emphasizing how the economic success of many highly populated and historically poor countries have made the world economic growth increasingly less exclusive. Next, we briefly examine the consequences of radical new policies implemented by a series of conservative governments supported by a reinvented intellectual *laissez-faire* market ideology in the advanced economies. A result of these policies has been an increased concentration of wealth in most countries (Jerzmanowski and Nabar, 2008; Philippon and Reshef, 2009). Thus, while economic growth across countries has become less exclusive, income growth within countries has become more the privilege of a rich minority. We show how the unusual nature and depth of the current crisis has been a corollary to these developments.

II. A New Economic Order: Retrospect

The dematerialization of production in the North

For much of the 20th Century persistent economic growth was the privilege of an exclusive club comprising no more than a fifth of the world population (which we henceforth call the “North”). As the North grew richer it experienced continuous structural change leading to an increasing “dematerialization” of its production (López and Stocking, 2009). The structure of GDP in the North became increasingly more focused on services and, in general, on activities that are human capital and high tech dependent while the resource-based and later most manufacturing sectors gradually shrank as a share of total output. Figure 1 shows the intensity of this process over the last half century in the USA as reflected by the persistent decline of the shares of both primary commodity outputs as well as of manufacturing in total GDP. Manufacturing, agriculture, forestry, fishing, oil extraction and mining have dramatically reduced their combined participation in GDP from more than 40% in the early fifties to less than 20% in the early 2000s.

FIGURE 1 HERE

This dematerialization of production was not, however, fully matched by a similar dematerialization of consumption in the North. While some shifting in the structure of consumer demand away from certain commodities such as food products into services did take place consumers in the North continued to expand their demand for energy and industrial goods, especially durables, at a pace that often exceeded growth of per capita GDP (Ghertner and Fripp, 2007). The dematerialization of consumption occurred at a much slower pace than that of domestic production. This made the North increasingly more reliant in the rest of the world (the

“South”) as a supplier first of primary commodities and, especially over the last three decades, of manufacturing goods as well.

In fact, an examination of the evolution of trade flows clearly shows a rapid increase of net imports of primary products as well as of industrial goods as a proportion of total imports and GDP. Figure 2 illustrates this for the USA. It shows the significant rise in the participation of imports of industrial goods in total imports and the large increases in the imports of manufacturing and industrial goods as a proportion of domestic industry value added. This is also true for most other commodities including metals (Figure 3). The rise of the imports of industrial and commodity goods has been particularly steep over the last two decades.

FIGURES 2 AND 3 HERE

The Roles of the South

For our purposes we distinguish two groups of countries in the South, the natural resource-rich ones (most of Latin America, Sub-Saharan Africa and parts of Asia) and the labor-abundant countries (most of Asia). The labor-abundant South includes the population giant countries, mainly China and India and a few others, which account for a very large portion of the total world population; in contrast, the resource-rich South is relatively sparsely populated. While at times the South as a whole was able to exhibit some modest growth, up until the last three or four decades most of the South could not sustain such growth for prolonged periods of time. The resource-rich South became mainly a passive supplier of primary commodities to the North.

From colonial times the North had established efficient commodity-producing enclaves in the resource-rich segment of the South keeping the markets in the North as their almost exclusive goal. The increasing demand for commodities from the North was matched by the continuous exploration and new Northern investments in the expansion of these enclaves

economies in the resource-rich South. In a context of resource abundance and no effective regulations limiting the environmental damages causing resource extraction in the South, combined with continuous Northern investments in resource extraction in the (resource-rich) South allowed the long run supply curve of commodities to be for a long time essentially flat (López and Stocking, 2009). As has been documented by several studies, these enclaves spillover little into the rest of the economies in the South and thus they generally did not brought much growth to the South (de Janvry, 1975). The South remained essentially stagnated which meant that it exerted little pressure on commodity demand what, in turn, facilitated the stability of their prices. This process continued well into the second half of the twentieth Century (Sokoloff and Engerman, 2000; Acemoglu et. al. 2001; Khor, 2000). Thus, for much of the Twentieth century the North could grow with the luxury of constant and even at times declining commodity prices (Figure 4).

FIGURE 4 HERE

The Emerging Labor-Abundant South

As shown by the so-called resource curse literature, the continuous enclave-based expansion of natural resource extraction in the resource-rich countries of the South has in most cases been insufficient to promote sustained economic growth (Barbier, 2005). However, the labor-abundant South was better positioned to benefit from the increased demands for industrial goods arising from the dematerialization of production in the North that occurred especially over the last three decades.

First, the “Little” Giants

The stagnation of the labor-abundant South started to change in the 1970s with the emergence of a few relatively small countries in South East Asia (Korea, Taiwan, Hong-Kong, Singapore

and a few others) which were able to rapidly grow for prolonged periods of time relying on a manufacturing export-oriented strategy. Despite their small size, these new emerging industrializing countries (NIC) became important exporters of manufactured goods to the North. The emergence of these little giants of manufacturing exports allowed the North to deepen its relative specialization in clean non-material outputs increasingly relying on the NIC as efficient suppliers of industrial goods (Krugman, 1994; Lall and Albaladejo, 2004; Noland, 1997). While the NIC had high population densities, their total population size was relatively small to have a significant impact on the world demand for primary commodities (such as energy, metals and food commodities) despite their rapid growth. This meant that the expansion of the NIC did not signify greater demand pressures on world commodity prices, which as can be appreciated in Figure 4, continued to remain essentially stable during the NIC boom period.

Thus, by the late eighties the world had achieved a remarkable equilibrium: The North plus a few NIC were able to grow fast, the North on the basis of clean service oriented production which greatly facilitated its environmentally “sustainable” development at low cost, the NIC supplying the North an increasing portion of its growing industrial demands at low market prices albeit at great domestic environmental costs, and the still languishing resource-rich segment of the South supplying raw materials also at low prices but at the cost of a continuous erosion of its natural resources and environment¹.

Next, the “Real” Giants

The late eighties brought even more dramatic change as other labor-abundant countries of the South implemented significant pro-growth policy reforms. The emergence of the new industrial giants (NIG) mainly China, India and a few other large initially poor countries able to grow at remarkably fast rates was in part a consequence of drastic policy reforms in these countries.

These new policies included pro-market reforms, privatization of state enterprises, export promotion through exchange rate policies and other incentives, and weak pollution regulation which effectively meant the ability to expand manufacturing production with little environmental constraints. In addition, the success of these new policies was assured by the rapidly growing consumer demands of the North for industrial goods.

The NIG were as effective suppliers of industrial goods as the NIC but at a much more formidable scale (Bosworth and Collins, 2008; Panagariya, 2006; López, 2008; Lall and Albaladejo, 2004). Industrial export-led growth has allowed them to experience similar unprecedented economic growth for over two decades as the NIC did. Both the NIC and NIG based their development on the rapid expansion of industrial exports which was made possible by undervalued exchange rates². This, in turn, meant enormous accumulation of foreign exchange which was recycled into the North, especially the USA and parts of Europe creating large current account deficits (Figure 5)³. The large financial resources flowing into the North made possible low interest rates and a great availability of easy credit. In addition, the inflow of capital from both the NIG and oil exporters into the North contributed to a continuous appreciation of equities and real estate which prolonged the economic boom and financial bubble. This, in turn, fed a massive appetite in the North for more industrial imports from the emerging and prosperous NIG.

FIGURE 5 HERE

Again, a remarkable and seemingly self-sustained equilibrium was created: The NIG's massive financial assets created by its industrial export success fed the North boom which, in turn, feedback the continuous expansion of the NIG. In fact, the real annual GDP growth rates of China and India over the last two decades has been consistently above 8%, more than three

times faster than the growth rate in the advanced economies (IMF World Economic Outlook). More importantly, the NIG became large contributors to world economic growth. They are estimated to have contributed more than US\$ 350 billion to the annual growth of the world in the early 2000s. That is, more than a third of the total annual growth of the world estimated at about \$1.1 trillion. As can be seen in Table 1, the participation of China and India, at about \$200 billion, constituted almost 20% of the total annual growth in the world in the 2000-07 period compared to only about 5% in the 1980s.

TABLE 1 HERE

Finally, Commodity Demand Pressures

The new North-NIG boom equilibrium of the second half of the 1990s and early 2000s had one important difference with the earlier North-NIC equilibrium of the eighties and first half of the nineties: the NIG constitute almost 50% of humanity compared to at most 5% of the NIC. That is, the emergence of the NIG brought about a dramatic expansion of the growth club and, hitherto inedited in history, an important part of the South (most of the labor-abundant South) became an increasingly more important and rapidly growing consumer of energy, raw materials and other primary commodities. Persistent economic growth ceased to be an exclusive attribute to a small portion of humankind to now, for the first time in history, the majority of the world population lived in countries that were able to grow. Only the resource-rich South remained more or less stagnated.

The leading recent role of the NIG in world economic growth has meant that growth has become much more commodity and energy dependent than in earlier decades when world growth was mainly circumscribed to the North. This is due to the large increase in the absolute scale of economic growth caused by the incorporation of 50% of the world population, formerly

stagnant, to the growth process. In addition, the fact that the massive population of the now growing NIG still has a low per capita income implies that their income elasticity for food, energy and other primary commodities is much higher than the elasticity of the high income economies. That is, the continuous upward shift of the world primary commodity demand curve associated with income growth is now much faster than in previous decades.

Thus, the startling and persistent growth of the NIG brought about not only a drastic increase in the supply of industrial goods but also a dramatic increase in the NIG demands for energy, food, and other primary commodities. At first, since the NIG started from very low levels of consumption of such goods, their increased demand for these commodities had little consequence for world commodity markets. By the mid nineties they had become important net importers of primary commodities and energy. After more than a decade of 8-10% annual growth rate the enormous population size of the NIG caused their demand for commodities to reach a sizable portion of the total world demand as it is today. Figures 6 and 7 illustrate the rapid increase in the level of consumption and share in total world consumption of energy as well as certain other commodities over the last two decades of China and India.

FIGURES 6 AND 7 HERE

III. Environmental scarcity and Commodity Supply

The increased connection between commodity demand and economic growth brought about by the incorporation of the NIG into the growth mode has happened at the time when natural resources in the resource-rich South are becoming less abundant and when the dire environmental consequences of the frenetic expansion of natural resource extraction are finally beginning to be taken seriously. While the underground availability of most raw materials may still be plentiful there are signs that their supply must rely in increasingly more expensive

sources; moreover, resource extraction has led to massive environmental costs affecting ever more crucial ecosystems, water quality, forests and other increasingly scarce environments⁴.

Under increasing pressures from international NGOs, from local communities becoming aware of their ancestral rights over natural resources and from part of the domestic civil society, governments in the resource-rich South are finally beginning to take into consideration some of the large environmental costs that commodity extraction entails. More countries are now enforcing at least some modest environmental regulation affecting the use of many ecosystems which tend to be destroyed by callous resource extraction⁵. That is, resource-rich countries in the South have begun doing what the few natural resource-rich countries in the North (i.e., the USA, Australia and Canada) did several decades ago; impose significant limitations to resource extraction to mitigate damages that such extraction causes into fragile ecosystems. These restrictions ultimately make the extraction of commodities more costly even in cases where the ground resources are still plenty.

This means that now, perhaps for the first time in history, the long run supply curve of resource commodities has become relatively inelastic. The limited capacity of the natural resources is finally translating into a more and more vertical supply of commodities. Ironically this is due not so much to the scarcity of the underground stuff but mainly because of the limited capacity of ecosystems crucial to support life to renew themselves in conditions of intensive resource extraction.

The world commodity demand curve is now shifting upwards more rapidly with economic growth at a time when the long run commodity supply curve has become less elastic. Hence, it appears that world economic growth and commodity prices are now more intimately related than in previous decades. This may explain the large run up in commodity prices that

took place in 2003-07 which contributed to trigger the current recession. Since the increased commodity price sensitivity to economic growth is symmetric, this also explains the rapid reduction of commodity prices over the last year and a half when world growth turned negative.

Climate change

In addition, there is climate change: The emergence of the NIG and the stubborn reluctance of the USA to participate even in the modest efforts of other advanced economies to mitigate greenhouse gas emissions have implied that such emissions have continued at high levels (Bohringer and Loschel, 2003; Loschel and Zhang, 2002). At the same time increasing evidence indicates that an impending climatic disaster may be avoided only if greenhouse gases are drastically reduced. The carbon emissions by the NIG constitute an increasing share of the total world emissions reaching more than 25% by 2006 (Figure 8); more importantly, the elasticity of emissions to growth in the NIG is very high which means that their continued economic growth will mean large increases in their emissions.

FIGURE 8 HERE

Thus, world economic growth is now even more closely linked to carbon emissions than during the late 20th century. Even stabilizing world emissions at the current unsustainable levels will require much greater and costly efforts by the North to compensate for the increasing emissions from the NIG. Reducing the magnitude of climate change constitutes a new constraint on economic growth especially to the North which over the last decades has been in reality ignored. That is, an important yet hitherto effectively ignored limit to growth for the North has become even more serious with the advent of the NIG into one of the engines of world growth. Sooner or later this constraint will have to be reckoned with.

IV. The New Policies of the North

The North “Liberates” its Economy from Government Oppression

By the early eighties the North started its own “structural change”. The view that the private economy was being suffocated by “big government” including too high taxes became quite accepted among policy-makers and economists. It was thought that by acting on these issues it could be possible to increase economic efficiency and thus allow economic growth to speed up. Most countries in the North embarked in a far reaching policy experiment that was justified as a means to increase market incentives to investment and innovation.

The new structural change policies included several “pro-market” policies in conjunction with a pervasive process of extricating the government out of the economy. It included large cuts in taxes and in a broad spectrum of social spending as well as a vast financial deregulation. Even more important than the financial deregulation was “de-supervision” implemented through deliberate government actions to weaken the powers of the regulatory agencies by cutting their budgets, personnel, and attributions (Caprio et. al., 2008). In addition, structural change especially in the USA also included some subtle and some other not so subtle policies and legislation directed to weakening labor unions and successive administrations allowed the real minimum wage to gradually erode (Autor, Katz, and Kearney, 2006). These policies were successful in significantly reducing the bargaining power of workers which ultimately may have translated in lower real labor earnings with the exception of those of top executives, financial traders and a few others. While some of these policies may have accelerated investments, especially financial ones, they also appear to have had some serious presumably unintended consequences on income distribution.

The Government is out, Wealth Concentration is in

These very policies that were intended to increase economic efficiency and continued economic growth in the North may have been in part responsible for the massive concentration of income observed over the last two and a half decades⁶. While these policies may not have been the sole cause of growing inequality, the evidence suggest that they significantly contributed to that trend (Sloan, 1997). Figures 9 and 10 give an idea of the large concentration of income that has taken place in the USA and UK, respectively, especially since the early eighties. In the USA the middle class (which we define as the second, third and fourth quintiles of the household income distribution representing about 200 million people) continuously reduced its participation in national income from almost 54% in 1980 to 47% in 2006 while the poor (the bottom 20%) reduced its participation from 5% to 4%. Most of these reductions benefited the rich, the top 5% of the households, which increased their participation in national household income from 17% to 22.5% over the same period. Similarly, over the period 1980-2006 the share of the middle class in the UK fell from 55% to 50% and that of the poorest quintile also decreased from 10% to 8%. Concomitantly, the share of the top 10% of the households increased from 20% to 27% of the total household income.

FIGURES 9 AND 10 HERE

This concentration of income implied that the mean real household income of the middle class in the USA barely increased over the last three decades, from \$48,000 in the early eighties to \$52,000 in 2007 (Figure 11). That is, while the annual per capita GDP in this period grew by more than 2% the annual household income growth of the middle class was about 0.3%. By contrast, the mean real household income of the top 5% of the population rose dramatically, from \$155,000 to \$290,000 over the same period at a much faster rate than per capita GDP.

FIGURE 11 HERE

Dilemmas and paradoxes

The new policy environment induced highly auspicious profit incentives needed for continued economic expansion. However, the income concentration made it in principle more difficult to match the increased profit incentives with the needed expansion of domestic demand to sustain such profits over time as well as economic growth. As income becomes more and more concentrated the middle class - the backbone of the consumer economy- is squeezed. This makes it much harder to achieve the required rates of domestic demand growth necessary to sustain profits and economic growth rates at high levels.

For a long time the persistence of a high rate of economic growth in the North has been highly dependent on equally rapid rates of consumption growth (Boone, Girouard, and Wanner, 2001; McConnell, Mosser, and Perez-Quiros, 1999)⁷. A continuous and rapid expansion of consumption in turn needs a prosperous middle class. But the middle class was increasing its income at a rate that was less than one eighth of the per capita GDP growth rate. So in principle the rate of growth of household income of the middle class was hardly sufficient to support the pace of growth in the economy's consumption that was needed to sustain economic growth in the North at its historical rates⁸. The dilemma was how to persuade the middle class to expand its consumption at a sufficient rapid pace to sustain annual per capita GDP growth rates of 2-2.5% despite that its real income was increasing at only 0.3% as Figure 11 shows.

The required expansion of consumption could only occur if credit was plentiful and cheap and if the middle class was enticed to accept ever increasing levels of debt. Why did households bite so massively into the easy credit temptation? The massive inflow of capital

from the NIG and oil-exporting countries was one ingredient. The almost complete financial deregulation and de-supervision by the government agencies which facilitated the proliferation of exotic and highly risky financial instruments was another one. The final ingredient was a cheerful Federal Reserve contributing with a generally permissive monetary policy in the face of obvious asset price bubbles and also failing to play its part in financial regulation.

These three factors created an unprecedented flood of credit and other financial resources into the consumer economy. This produced the conditions for the last component of the miracle (or better mirage): the dramatic appreciation of all sorts of assets, mostly real estate and equities, as a consequence of the increased asset demand induced by such a massive and continuous inflow of financial resources into the economy. Capital gains made the ordinary citizens feel richer despite that their income flow increased little as most of the income growth accrued to a very small minority of the population. Confounding necessarily short term capital gains with permanent income gains induced the middle class to cut savings, rapidly increasing consumption financed by easy credit often collateralized by inflated assets.

While the dilemma of sustaining economic growth in the midst of a stagnated middle class was “solved” via easy credit and low interest rates it nonetheless embodied ominous implications. This growth model requires ever increasing household debt in turn supported by ever increasing equity and real estate appreciation. In fact, the debt burden of the median household almost tripled in two decades, from 45% of its annual income in the mid eighties to 120% in 2004 (Taylor et. al., 2008). Obviously this was not something that can be considered a permanent solution.

The Monetary and Financial Regulation Syndrome: “Kicking the can down the road”

Almost two decades of monetary and financial profligacy in conjunction with an increasing concentration of income created the conditions for a potential economic tsunami. The high dependence of the middle class on debt and new borrowing reached by the middle of the current decade made the potential consequences of restricting the monetary policy and of tightening financial regulation much more costly than in previous times. In fact, for every percentage point that interest rates increase the median household after-debt-service income falls almost three times as fast when the debt/income ratio is 1.2 like it is nowadays than when it was 0.45 in the early eighties. In addition, with such a slow growth of middle class income, expanding consumption becomes almost exclusively dependent on new borrowing. Hence, tightening the enforcement of financial regulations that would restrict the obviously cavalier practices of the financial sector and/or tightening monetary policy could have much more serious effects on household demand. Hence, the effects of financial and monetary policy tightening on the real economy are likely to be much more acute than in earlier times when household consumption was more linked to permanent income than to new borrowing, in turn dependent on asset capital gains.

Awareness of this issue may make monetary and financial authorities more averse to promptly respond to monetary imbalances and may make financial authorities less prone to implement effective regulations even in the face of clear signs of serious financial “anomalies” such as prolonged asset bubbles. Thus, persistent soft monetary and financial supervisory policies may have contributed to create a serious policy syndrome: addiction. The longer it takes to implement monetary and financial correction the greater are the short run adjustment costs of doing so and hence the greater the incentives for policy makers to “kick the can down

the road”. This makes the monetary and financial authorities progressively more complacent thus allowing for even deeper disequilibria to develop which by the time the authorities are finally forced to take the necessary action could potentially trigger a much more serious crisis.

V. Commodity prices and inflation: the crisis

Given the relatively low share of commodities in the consumer demand in the North, at first the significant commodity price increases associated with fast world economic growth had little impact on inflation in the North. However, given the magnitude of the commodity demand increases that 8-10% annual growth rates in the NIG required, commodity prices continued increasing rapidly (Bosworth and Collins, 2008). As commodity prices skyrocketed in 2003-2007 they began to have an effect first in the overall consumer price index in the USA and many other countries which were not necessarily immediately internalized by the monetary authorities as long as they did not affect the so-called “core” inflation. However, core inflation was eventually affected and by the end of 2004 the core CPI more than doubled. This finally forced the US Fed to begin a belated process of monetary restriction causing a steady rise of the effective federal fund rate from 1.25% in the last quarter of 2004 to more than 5% by the end of 2007 (Figure 12).

FIGURE 12 HERE

Given the increased dependence of economic growth on an ever expanding household debt and easy borrowing that the income squeeze of the middle class required to sustain growth, the tightening of monetary policy in the 2005-07 period was to have much more traumatic consequences than previous episodes of monetary restrictions⁹. In fact, it triggered the end of the economic boom and the beginning of the great recession. First the higher interest rates caused a concomitant increase in mortgage rates leading to the sudden collapse of the housing

market which –at the peak of a prolonged price bubble- was highly vulnerable to mortgage rates. The fall of real estate value with the consequent evaporation of a significant part of earlier capital gains caused consumers to suddenly realize that they were not nearly as wealthy as they had been led to believe.

In addition, the drying up of credit made it increasingly difficult for the middle class to continue borrowing and, more important, the cost to consumers of servicing their accumulated debt went up significantly. The large debt-to-income ratio of consumers has made their income perhaps like never before greatly vulnerable to interest rate increases. All this prompted a first round of adjustment in household consumption. At the same time it caused widespread defaults in the housing sector which, in turn, led to the financial collapse inducing enormous capital losses to equity markets. The large capital losses meant the evaporation of the collateral asset values that supported continued borrowing, in turn, causing a second round impact on consumption which ultimately allowed the crisis to further impact the real sector causing high unemployment. This appears to be inducing a third round effect on the income and consumption of the middle class, which we are experiencing today. In addition, the subsequent collapse of the world economy led to a significant fall in world commodity demands and their prices.

Policy Responses to the crisis

The responses of governments in the North to the crisis have been directed to: (i) a widespread bailing out process which entailed massive transfers of state resources to the large financial and non-financial corporations; (ii) a drastic relaxation of the monetary policy bringing short term nominal interest rates to near zero levels and quantitative monetary easing meaning that the central banks have effectively become direct lenders, especially buying medium and long term government bonds and directly lending to large financial institutions at an unprecedented scale;

(iii) Massive fiscal expansion which have created deficits rarely seen in the history of the advanced economies.

The deficit-financed new fiscal spending is expected to replace in part the large reduction of private expenditures and in the process stimulate a recovery in economic activity that may entice consumers once again to reignite their pace of consumption expenditures. The private consumption would be stimulated by the economic recovery that the fiscal expansion would cause and by the near zero interest rates that the lax monetary policy would allow for.

However, the fiscal deficits effectively imply large new financial liabilities to ordinary citizens that sooner or later will have to be paid for either via higher taxes and/or inflation. That is, to the capital losses to consumers that the real estate and equity markets collapse caused, now one has to add the new potential capital liabilities generated by the fiscal deficits and increased public debt. In addition, the generous government aid to the financial firms and to other parts of the large corporate sector effectively means a new massive transfer of resources from the average citizen to the wealthiest segments of society. A second “great wealth transfer” may be underway thus exacerbating even further one of the fundamental factors behind the vulnerability of economic growth to deep crises.

VI. Conclusion

The confluence of three important factors has made the world more vulnerable to deep and long crises like never before since the Great Depression. One of these factors, the extreme income inequality in the advanced economies, is as deep as the one prevailing during the years prior to the 1929 depression. While world economic growth has become today much more commodity intensive than in previous decades, it is probably less intensive on primary commodities than in the years prior to the Great Depression. However, unlike the 1920s the world is now

experiencing increasing environmental scarcity which is making commodity supply more inelastic. As a consequence of this economic growth is now more tightly linked to increased commodity prices than in the 20th Century. The combination of great income inequality in the advanced economies –which provide essential consumer markets for world growth- and the high responsiveness of commodity prices to world expansion, has potentially lethal economic connotations.

While inflation in the advanced economies has become less directly influenced by commodity inflation, the persistent commodity price increases caused by rapid world growth eventually makes its way into the core inflation. This, in turn, forces restricted monetary policies. As a consequence of the highly concentrated income distribution monetary and financial tightening have now much more dramatic effects in the real sector of the economy than has historically been the case since the years prior to the Great Depression. The consequence: The world is now more crisis-prone and global economic growth may become much more difficult to sustain than in the past.

In response to the current crisis, the world is seeing an unprecedented combination of massive bailing outs of large corporations, fiscal stimulus and extraordinarily lax monetary policies in the advanced countries. Public credit has come to take part of the slack left by the reduced private credit caused by the financial debacle. A new period of easy credit for all appears to have come with the only difference that the source of easy credit is now public instead of private credit. In addition, fiscal stimulus has meant gigantic fiscal deficits as governments have been generally reluctant to raise taxes on the rich -beyond some isolated token gestures- to finance at least in part the deficits. While probably preventing the great recession to become a great depression, it appears that the anti-crisis policies have done little to

ameliorate the structural problems discussed in this paper. Moreover, the bailing out of large corporations may have exacerbated one of these structural factors by inducing a second round of wealth transfer from the middle class to the ultra rich.

The crisis brought about a temporary reduction of commodity prices and a concomitant fall in inflation. However, given that the structural factors discussed throughout this paper remain in place and given the enormous fiscal and monetary disequilibria created to confront the crisis, one could expect that any incipient recovery of the world demand may bring back commodity pressures and their prices are likely to retake their upward movement. Commodity price increases may bring again inflationary pressure. Inflationary pressures are likely to prompt governments to reverse monetary policy and to reduce fiscal deficits by increasing taxes. In addition, given the large fiscal imbalances any economic recovery would put additional upward pressures on long-term interest rates. Finally, the needed future tax increases almost surely will fall at least in part into the middle class thus exacerbating even further the structural factor (3)¹⁰. The net effect of all this: the incipient growth is likely to be suffocated at birth.

Returning to sustained economic growth appears to require dealing with the underlying structural factors: there is a need to make aggregate demand less dependent on easy credit by forcefully addressing the concentration of wealth and income and there is a need to promote fast environmentally and commodity-saving technological change so that world growth becomes less commodity and environmentally intensive. But these are changes that will require decisive policies and that would take some time to fructify. In the meantime, returning to the rapid growth enjoyed in the recent decades is likely to be difficult.

References

- Acemoglu, D., S. Johnson, and J. A. Robinson (2001), "The Colonial Origins of Comparative Development: An Empirical Investigation." *American Economic Review* 91:1369–1401
- Autor, D., F. Levy, and R. J. Murnane (2003), "The Skill Content of Recent Technological Change: An Empirical Exploration." *Quarterly Journal of Economics* 2003, 118(4): 1279–333
- Autor, D., L. Katz, and M. Kearney (2006), "The Polarization of the U.S. Labor Market." *American Economic Review* 96:189–94
- Barbier, E. (2005), "Natural Resources and Economic Development", Cambridge University Press, Cambridge, UK.
- Bohringer, C. and A. Loschel (2003), "Market Power and Hot Air in International Emissions Trading: The Impacts of US Withdrawal from the Kyoto Protocol." *Applied Economics*, 35(6): 651-663
- Boone, L., N. Girouard and I. Wanner (2001), "Financial Market Liberalisation, Wealth and Consumption.", OECD Economics Department Working Papers, No. 308.
- Bosworth B. and S. M. Collins (2008), "Accounting for Growth: Comparing China and India." *Journal of Economic Perspectives*, 22(1): 45-66
- Caprio, G., A. Demirguc-Kunt, and E. Kane (2008), "The 2007 Meltdown in Structured Securitization: searching for lessons, not scapegoats," World Bank Policy and Research Working Paper number 4756.
- Card, D., and J. E. DiNardo (2002), "Skill-Biased Technological Change and Rising Wage Inequality: Some Problems and Puzzles." *Journal of Labor Economics* 20(4):733–83.

da Motta, R. S. (2003) – “Determinants of Environmental Performance in the Brazilian Industrial Sector” Research Institute of Applied Economics (IPEA), Rio de Janeiro, Brazil

de Janvry , A. (1975), “The Political Economy of Rural Development in Latin America: An Interpretation.” *American Journal of Agricultural Economics*, 57(3): 490-499

Engel, S. and R. López (2008), “Exploiting Common Resources with Capital-Intensive Technologies: The Role of External Forces”. *Environment and development Economics*, December

Farrell, D., and A. Grant (2005). “China’s looming talent shortage.” *The McKinsey Quarterly: The Online Journal of McKinsey & Co.* 4: 1-7.

Freenstra, R. C., J. Romalis, and P. L. Schott (2001), "U.S. Imports, Exports and Tariff Data, 1989-2001." NBER Working Paper #9387

Ghertner, D. A., and M. Fripp (2007). “Trading away damage: Quantifying environmental leakage through consumption-based, life-cycle analysis.” *Ecological Economics*, 63: 563-577.

Gordon, R., and I. Dew-Becker (2007), "Selected Issues in the Rise of Income Inequality." *Brookings Papers on Economic Activity* 38(2):169–92.

Huber, R. M, J. Ruitenbeek, and R. S. da Motta (1998) "Market-Based Instruments for Environmental Policymaking in Latin America and the Caribbean: Lessons from 11 countries" World Bank Discussion Paper No. 381

Jerzmanowski, M., and M. Nabar (2003), “Financial Development and Wage Inequality: Theory and Evidence” (October 3, 2008). Available at SSRN: <http://ssrn.com/abstract=1280978>

Kaplan, S. N., and J. Rauh (2009), "Wall Street and Main Street: What Contributes to the Rise in the Highest Incomes?" *Review of Financial Studies*, RFS Advance Access published online on March 3, 2009

Khor, M. (2000), "Globalization and the South: Some critical issues." UNCTAD, Discussion Papers, No 147, April

Krugman, P. (1994), "The Myth of Asia's Miracle." *Foreign Affairs*, 73(6): 62-78

Krugman, P. (2006), "The Great Wealth Transfer." *Rolling Stone*, p.1015-20.

Lall, s. and M. Albaladejo (2004), "China's Competitive Performance: A Threat to East Asian Manufactured Exports?" *World Development*, 32(9): 1441-1466

Levison, A. and M.Scott Taylor (2008), "Unmasking the Pollution Haven Effect." *International Economic Review*, 49(1): 223-254

López, R. (2008), "Sustainable" Economic Growth: The Ominous Potency of Structural Change," Keynote paper presented at the Conference on Sustainable Resource Use and Dynamics (SURED), Ascona, Switzerland, June 2008

López, R., and A. Stocking (2009), "Bringing Growth Theory 'Down to Earth'." Working Paper #WP 09-01, Department of Agricultural and Resource Economics, University of Maryland at College Park

Loschel, A. and Z. Zhang (2002), "The Economic and Environmental Implications of the US Repudiation of the Kyoto Protocol and the Subsequent Deals in Bonn and Marrakech." *Review of World Economics*, 138(4): 711-746

McConnell, M. M., P. C. Mosser and G. Perez-Quiros (1999), "A Decomposition of the increased Stability of GDP Growth." *Current Issues in Economic and Finance* 5(13):1-6
Federal Reserve Bank of New York

Noland, M. (1997), "Has Asian export performance been unique?" *Journal of International Economics*, 43(1-2):79-101

Panagariya, Arvind (2006), *India and China: Trade and Foreign Investment*, Stanford Center for International Development, Working Paper No. 302.

Philippon, T., and A. Reshef (2009) "Wages and Human Capital in the US Financial Industry: 1909-2006" NBER Working Paper #14644

Piketty, T. and E. Saez (2003). "Income Inequality in the United States, 1913-98." *Quarterly Journal of Economics*, CXVIII, February.

Rodrik, D. (2007), "The Real Exchange Rate and Economic Growth: Theory and Evidence." John F. Kennedy School of Government, Harvard University, July 2007

Shapiro, M. A. (2009) "Environmental Sustainability in East Asia: Policies and Technological output" prepared for the APPAM-KDI Conference, Seoul, S. Korea

Saez, E. "Striking it Richer: the Evolution of Top Incomes in the United States (Updated with 2007 estimates)." University of California, Berkeley, Department of Economics.

Simpson, David R., M. Toman, and R. Ayres (2005), "Scarcity and Growth Revisited: Natural Resources and the Environment in the New Millennium." *Resources for the Future*: Washington, DC.

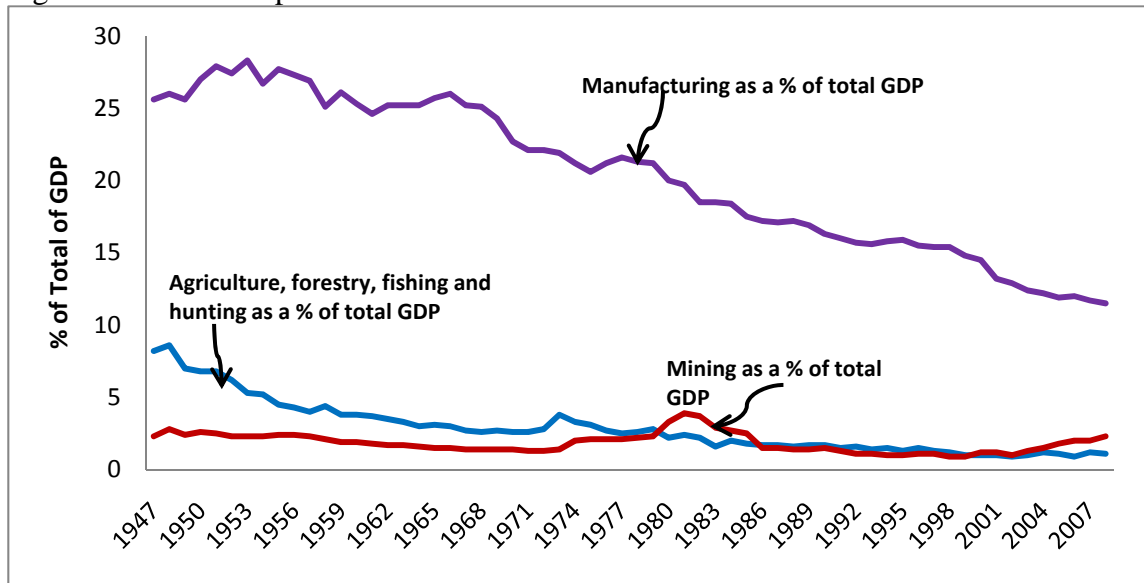
Sloan, J. (1997), "The Reagan Presidency, Growing Inequality, and the American Dream." *Policy Studies Journal* 25 (3): 371-86.

Sokoloff, K. L., and S. L. Engerman (2000), "History Lessons: Institutions, Factor Endowments, and Paths of Development in the New World." *Journal of Economic Perspectives*, 14(3): 217-232

Taylor, P., R. Morin, D. Cohn, R. Fry, R., and A. Clark (2008), "Inside the Middle Class: Bad Times Hit the Good Life." Washington, DC: Pew Research Center.

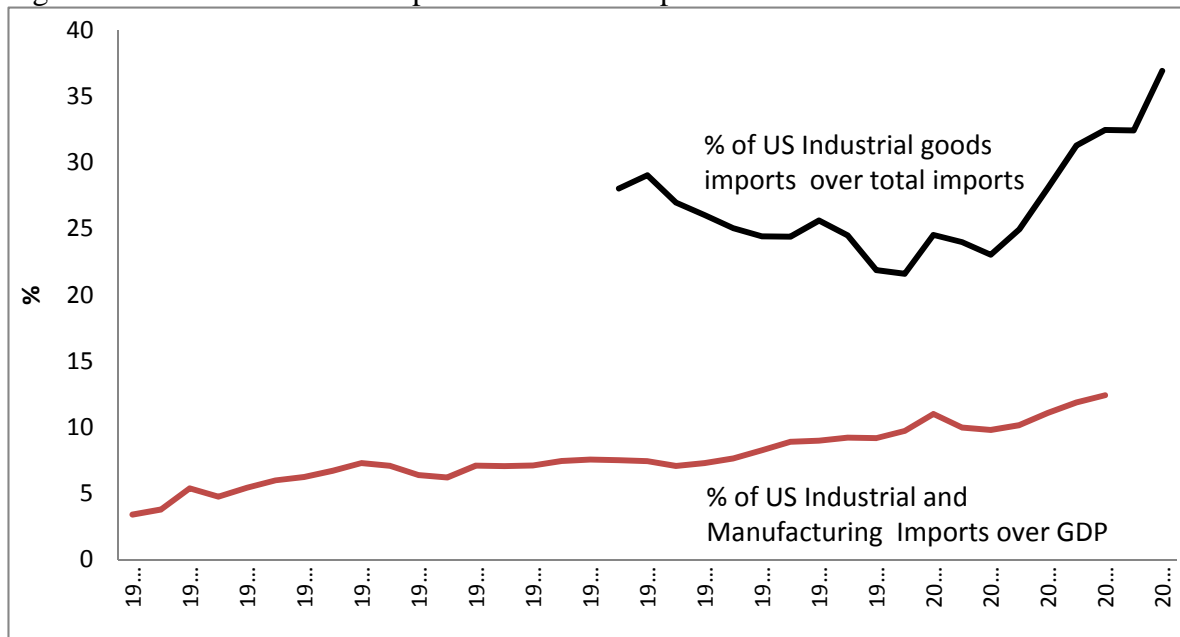
FIGURES

Figure 1: Sector composition of GDP in the USA



Source: US Bureau of Economic Analysis

Figure 2: Share of Industrial Imports over Total Imports and over GDP in the USA

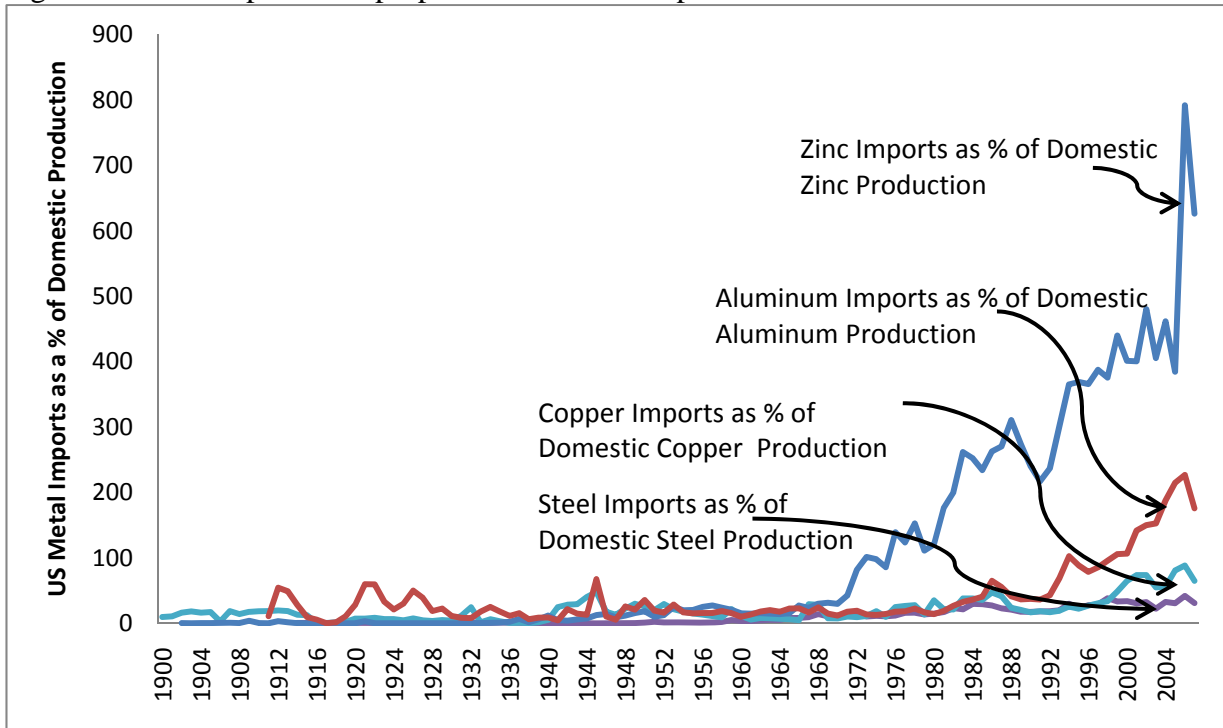


Share of Industrial Imports over Total Imports (Source: Bureau of Economic Analysis): Categories include: Fuel and lubricants, paper and paper base stocks, materials associated with non-durables, selected building materials, unfinished and finished metals associated with durables, nonmetals associated with durables.

Share of Manufacturing and Industrial Imports over GDP: (Source Feenstra et. al. ;2001),

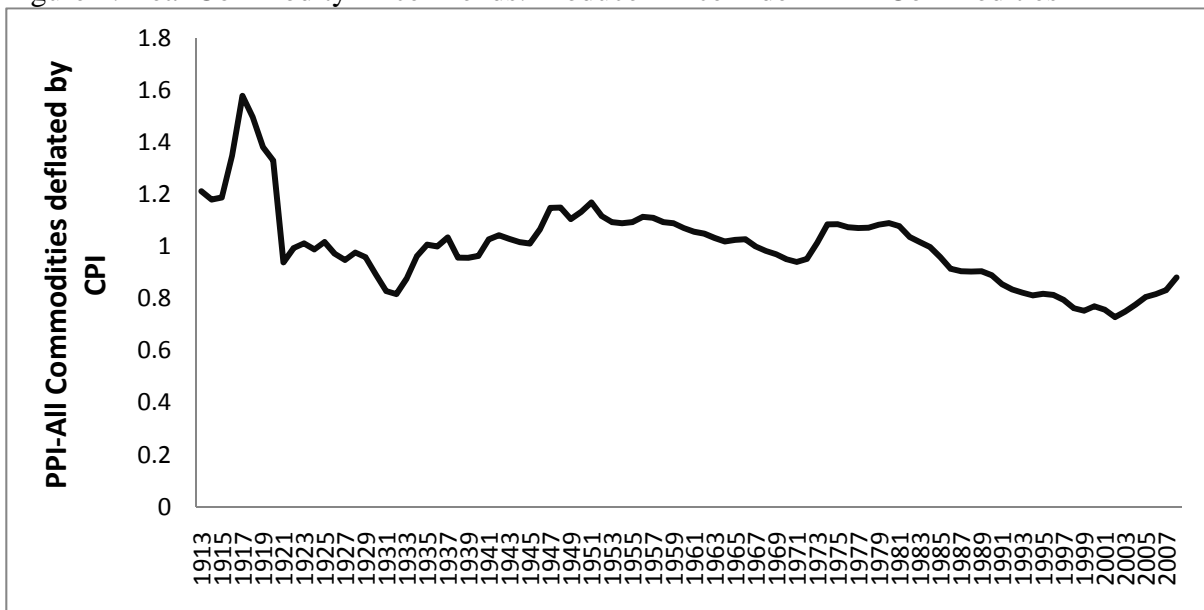
<http://www.internationaldata.org/>. Categories Include: Mineral fuels, lubricants and related materials (3), chemicals and related products (5), manufactured goods (6), machinery and transport equipment (7), and other miscellaneous manufactured articles.

Figure 3: Metal Imports as a proportion of domestic production in the USA



Source: US Geological Survey

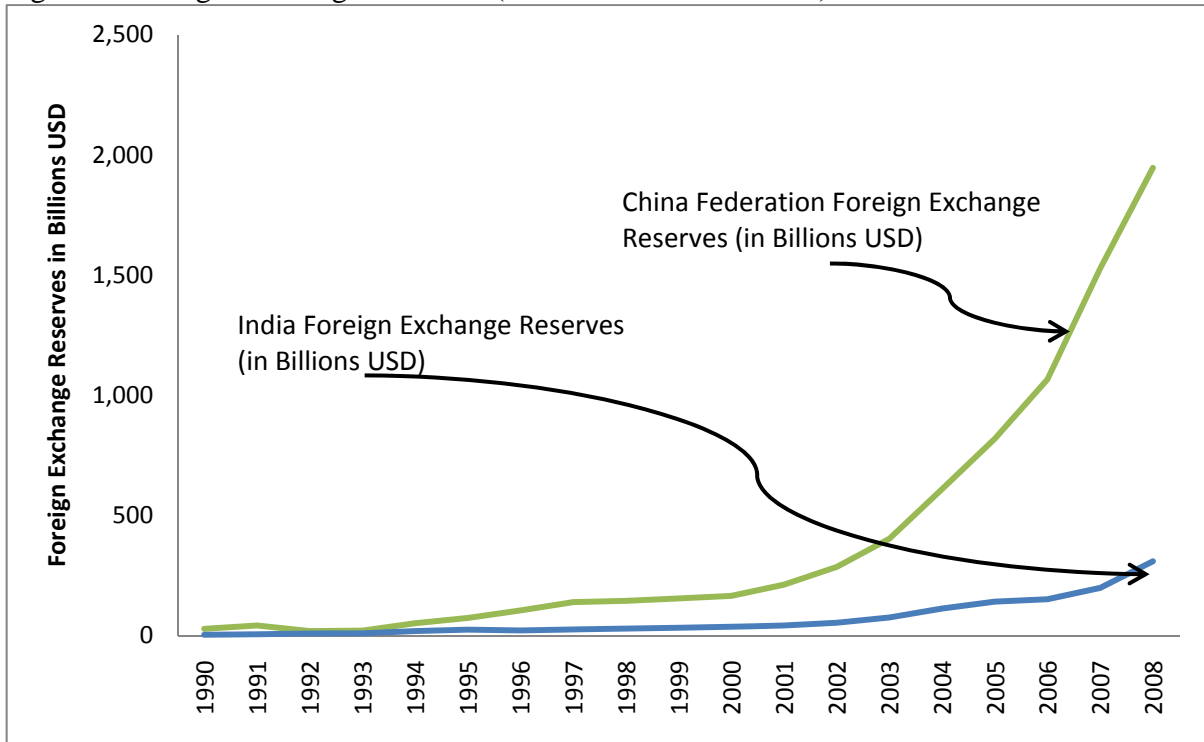
Figure 4: Real Commodity Price Trends: Producer Price Index – All Commodities



Source: US Bureau of Labor Statistics

Producer Commodity Price Index as defined by the US Bureau of Labor Statistics.

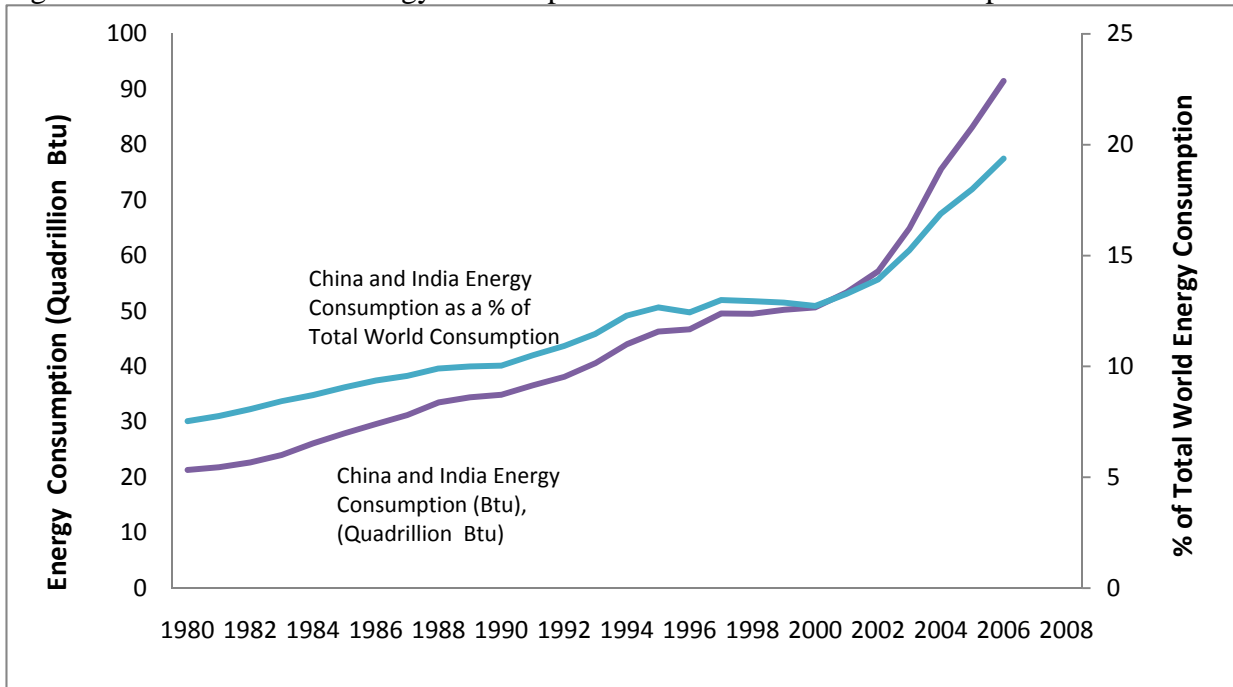
Figure 5: Foreign Exchange Reserves (in billions of US Dollars)



India Data Source: Bank of India,

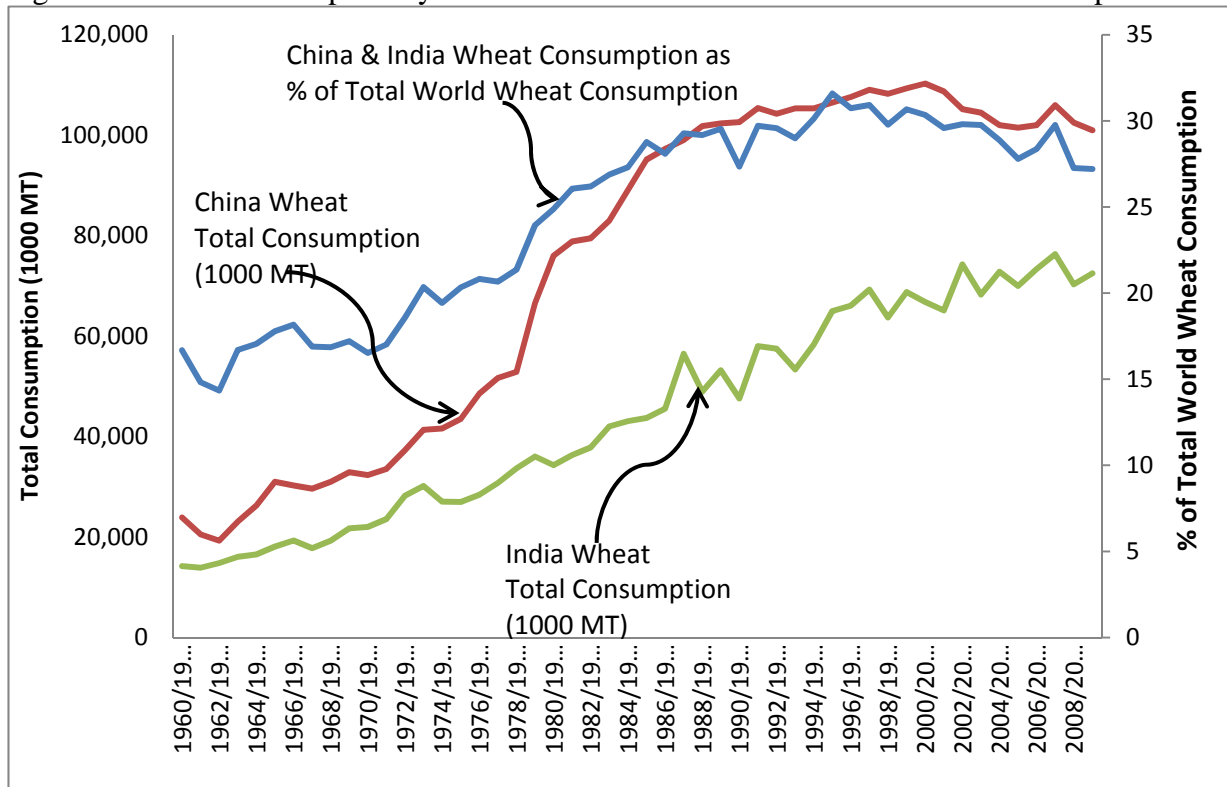
China Data Source: State Administration of Foreign Exchange, People's Republic of China.

Figure 6: China and India Energy Consumption and Share in World Consumption



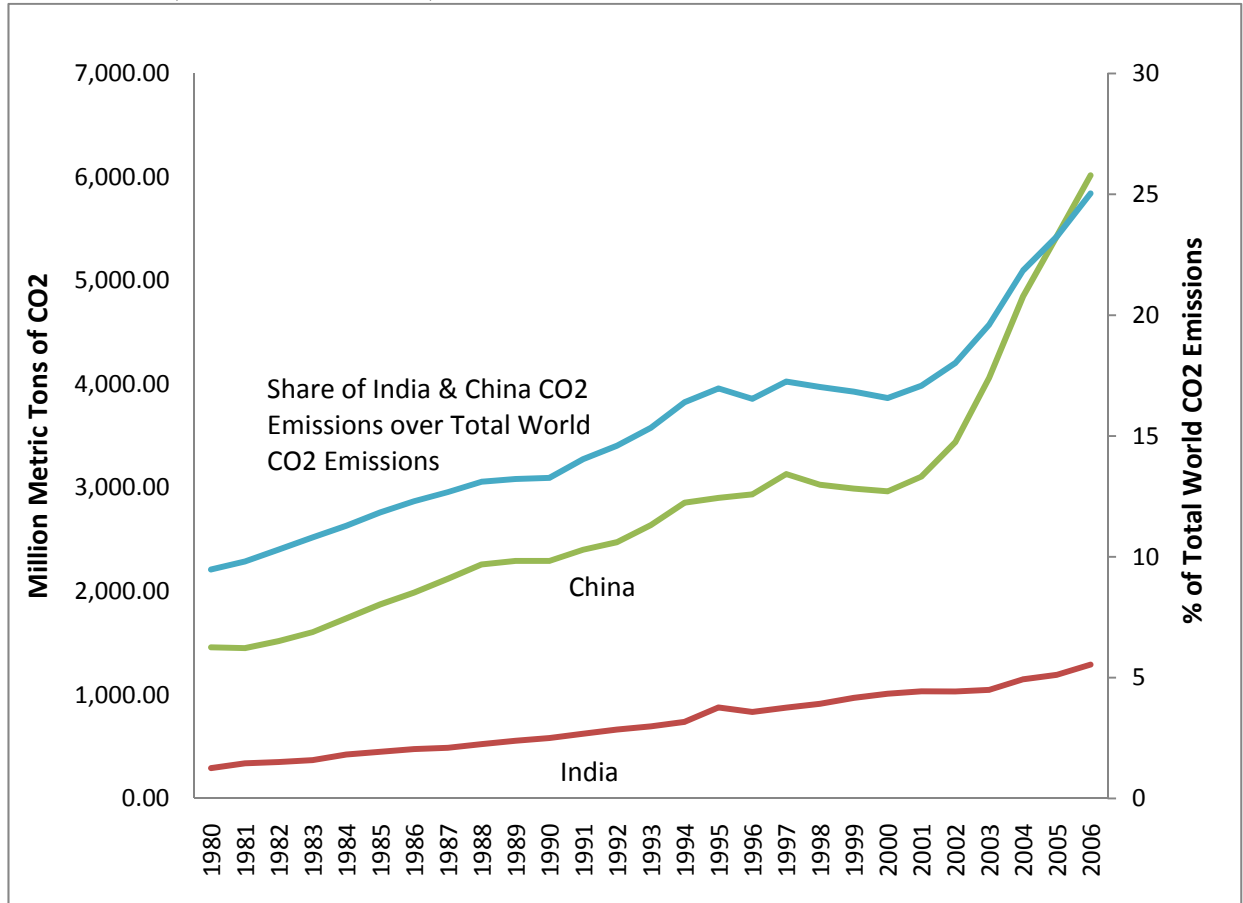
Source: Energy Information Administration (EIA)

Figure 7: Wheat Consumption by India and China and Share in Total World Consumption



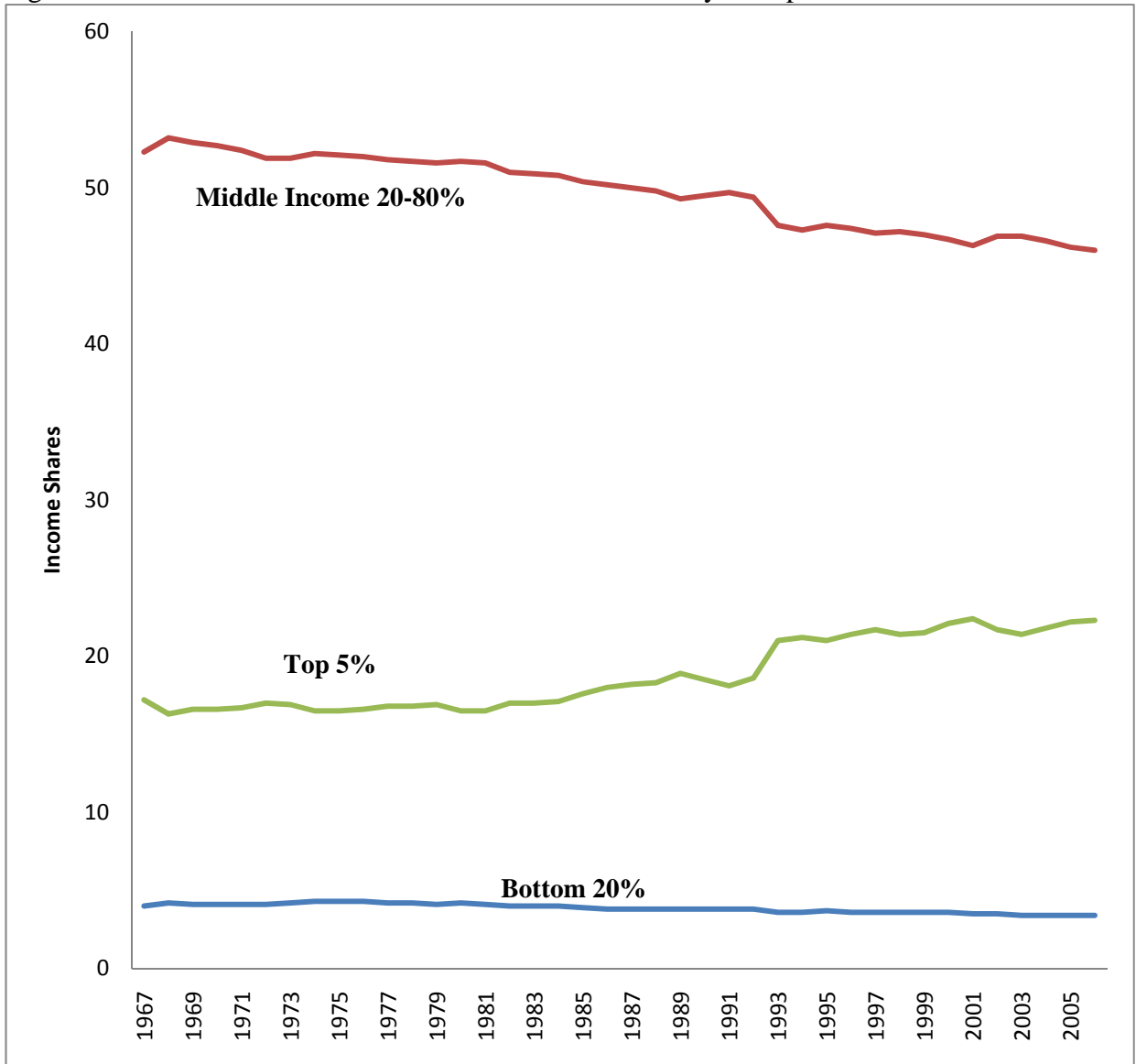
Source: USDA

Figure 8: China and India Carbon Dioxide Emissions From the Consumption and Flaring of Fossil Fuels (Million Metric tons)



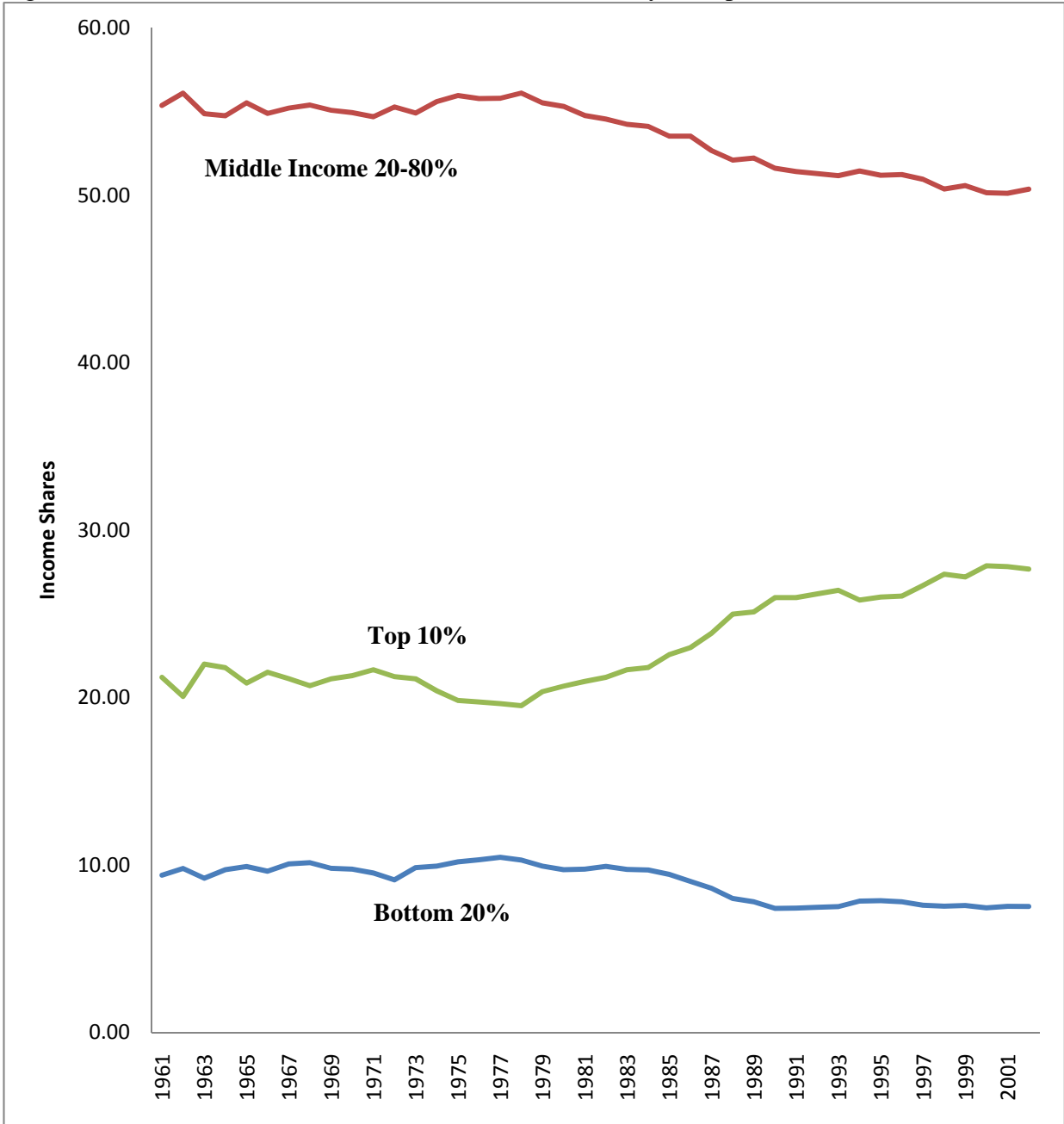
Source: Energy Information Administration

Figure 9: Income Distribution in the USA: Income Shares by Groups



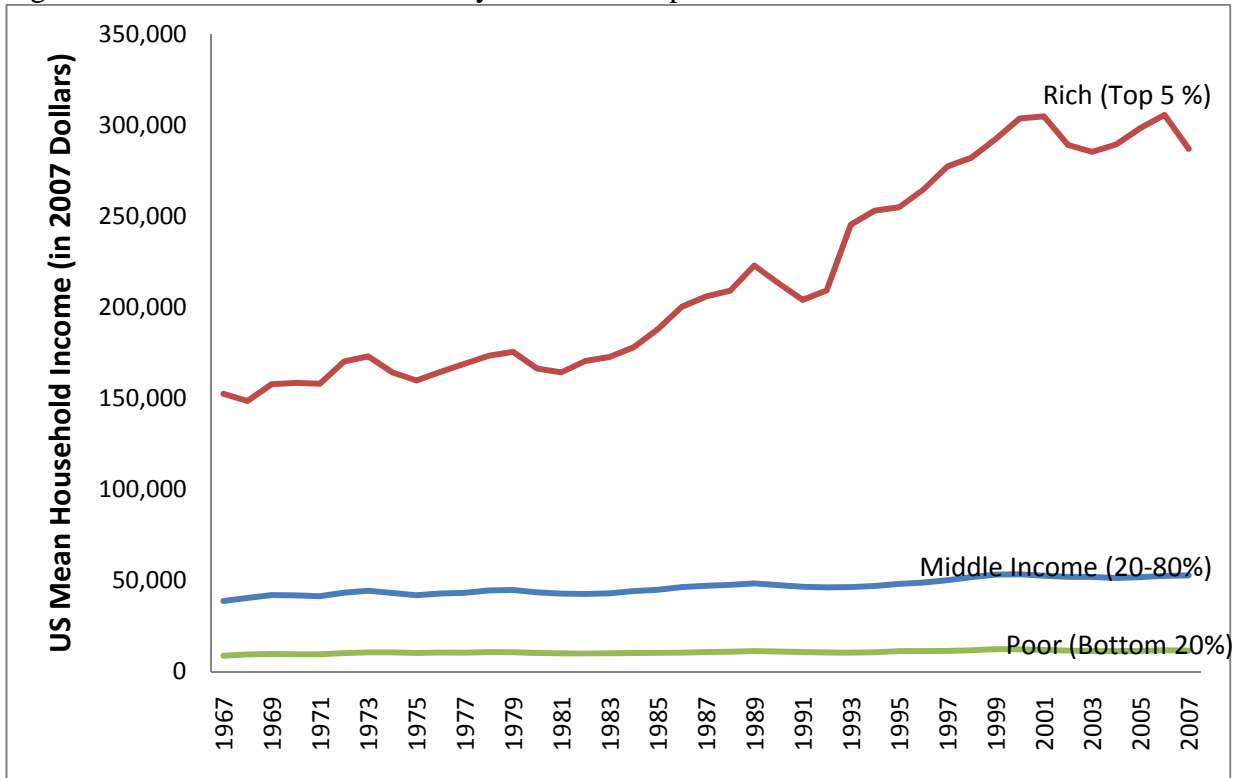
Source: US Census Bureau

Figure 10: Income Distribution in the UK: Income Share by Groups



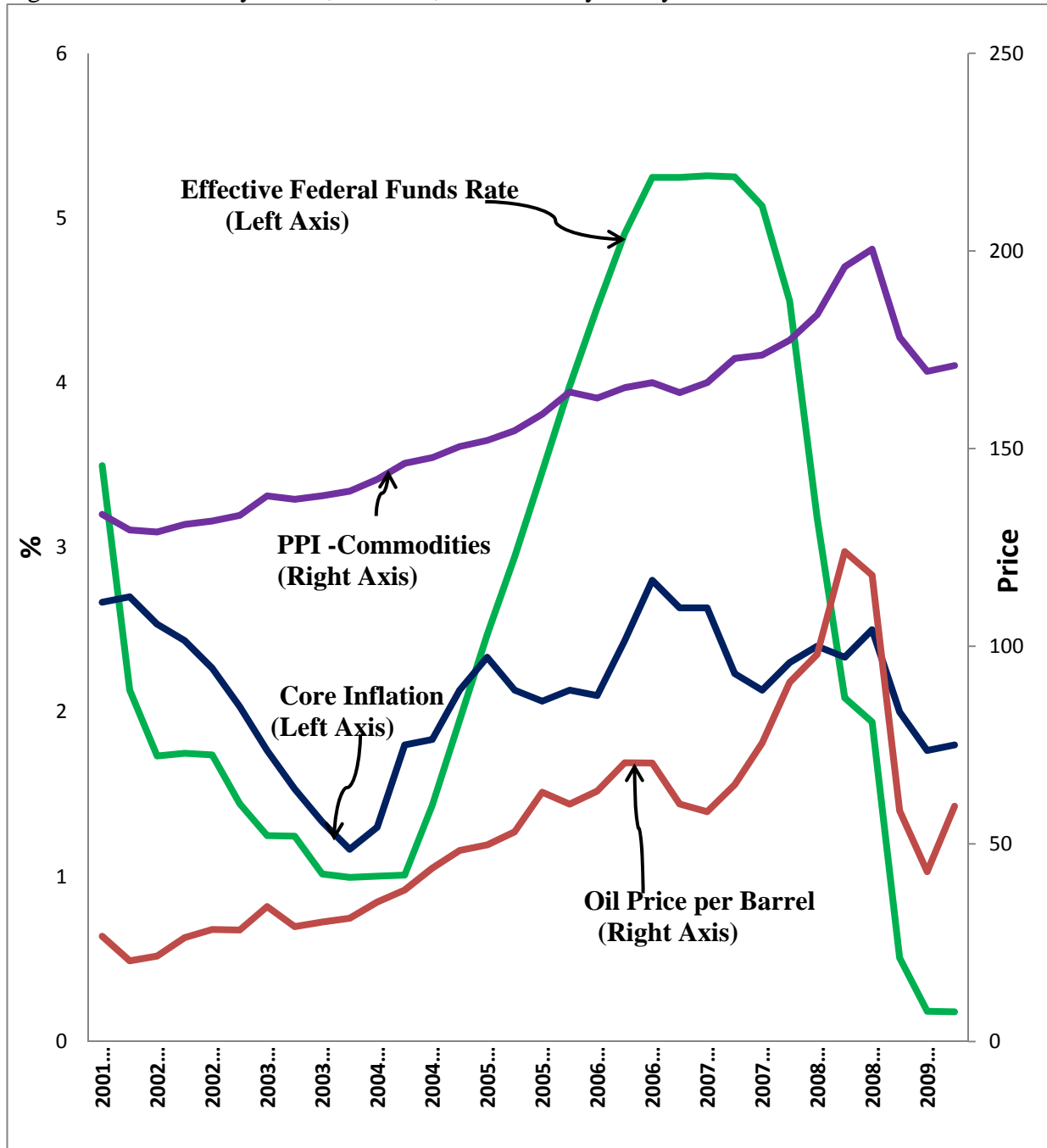
Source: World Income Inequality Database (WIID), United Nations University – World Institute for Development Economics Research (UNU – WIDER)

Figure 11: Real Household income by Income Groups in the USA



Source: US Census Bureau

Figure 12: Commodity Prices, Inflation, and Monetary Policy in the USA



Left Axis: Oil Price per Barrel, PPI – Commodities
 Right Axis: Core Inflation, Effective Federal Funds Rate

Source: US Bureau of Labor Statistics, Federal Reserve Bank of St. Louis

Table 1: Contribution to Change in World Real GDP (in millions)

Decade	China and India	Advanced Economies	Rest of the World	World
1961-1969	5,154	366,333	120,100	491,587
1970-1979	12,198	514,740	47,150	574,088
1980-1989	36,740	472,160	94,735	603,635
1990-1999	86,310	519,200	116,040	721,550
2000-2007	201,375	618,875	274,525	1,094,775

Source: WDI, World Bank

END NOTES

¹ Interestingly, the North started a dramatic reversal of its environmental degradation by the mid 1970s, which coincided with the emergence of the NIC as suppliers of dirty industrial goods at low costs. This process also coincides with the time when most of the modern environmental regulation in the North begun to be implemented. Perhaps increasingly stringent environmental regulation in the North was made politically acceptable precisely because of the rise of foreign dirty industrial good suppliers. López (2008) provides some evidence showing that one of the reasons why the North is able to enforce significant environmental regulation at a very low cost (estimated at less than 2% of GDP) is the emergence of the NIC and later of other big industrial suppliers which allowed the North to rapidly shift its production away from dirty industrial goods. This view is consistent with the econometric evidence provided by Levinson and Taylor (2008).

² According to Rodrik (2007), both China and India have not only had undervalued exchange rates over the last two decades but the degree of undervaluation has consistently increased over the period. Most of the NIC also based their industrial export take off on undervalued exchange rates although, unlike the NIC, in more recent periods some of them have allowed their real exchange rate to become less undervalued and even at times overvalued.

³ Germany and Japan-themselves large exporters of technologically sophisticated goods and services- were the exception. The large current account deficits that this process implied for the USA, UK and several other countries in the developed world did not happen in Japan and Germany.

⁴ With some important exceptions, the real limits to the supply of primary commodities are not so much the scarcity of in-ground raw materials, but rather the large and increasing environmental costs that their production entails (Simpson, Toman, and Ayres, 2005). Resource extraction greatly affects water quality (mining, oil extraction), soils and forests (e.g., mountain top removal for coal extraction). The US could, for example, dramatically increase its oil production at the cost of unacceptable further environmental destruction by expanding off-shore or Alaskan production.

⁵ In Brazil, for example, environmental criminal law has been enacted with stiff sanctions including imprisonment, and NGOs are frequently a main source of pressure for enforcement of laws directed to protect the Amazon (da Motta, 2003). Colombia in 1991 Constitution and Law completely reorganized environmental management resulting in a more serious enforcement. Priority has been given to the use of economic instruments, and especially to the use of retributive and compensatory pollution charges or taxes (Huber et. al, 1998). More recently, Taiwan, Korea, and China have enacted policies that are largely consistent with the international norms in targeting and reducing GHGs (Shapiro, 2009). Engel and López (2008) provide a detailed account of the recent emergence of organized local communities around the world able to exert rights and restricting access to natural resources.

⁶ The abruptness by which the North had to reconvert their industrial sector into a more service economy under the pressure of exports from the NIC was another factor that possibly contributed to the erosion of the middle class and concentration of income. A significant part of the industrial labor force which had achieved middle class status lost their jobs causing significant income losses to them over the adjustment period (this is sometimes referred to as the “lost generation”). There is a vast literature that tries to explain the concentration of income mainly focusing on the distribution of wages among broad groups within the labor force (Autor, Katz and Kearney, 2006; Autor Levy and Murnane, 2003; Card and di Nardo, 2002). Most of them emphasize issues related to the implications of new technologies and increased levels of human capital for wage distribution. A study by Gordon and Dew-Becker

(2007) has looked at consequences of decreased unionization of the labor force-a process that has accelerated precisely since the time of structural change- for wage polarization. Few studies have looked at the upper end of the wage distribution which appears to explain a high portion of wage concentration. Kaplan and Rauh (2009) does this showing that the amazing increases in executive compensation to investment bankers, hedge fund, private equity and mutual fund managers and traders as well as other types of top executives in large corporations explain to a large extent the observed polarization of wage income. We postulate that the incredible rise of executive compensation benefiting perhaps no more than 1% of the labor force is due mainly to extreme financial deregulation and other structural adjustment policies initiated in the early eighties.

⁷ Another possible source of growth was exports, but given the historically low weight of export value added in GDP, even rapid export expansion cannot give enough support to domestic growth. Investment, with less than 20% of GDP is also too small to make a significant difference for growth; also, investments are to a great extent driven by the consumer demand itself.

⁸ While the phenomenal increase in the after-tax income of the rich meant that their consumption expanded rapidly, the fact that the propensity to consume among the rich is far lower than that of the middle class means that the net effect on total consumption of the redistribution of income from the middle class to the wealthy is, ceteris paribus, negative.

⁹ The financial and real estate bubble that was highly dependent on cheap credit was part of this same phenomenon.

¹⁰ As this essay is being written the idea of a national sales tax in the USA is being increasingly regarded with enthusiasm by economists and policy makers. As is well known these taxes are highly regressive and would constitute yet another blow to the middle class.