The Great Recession and the Future of Cities

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Abstract

This paper describes the serious fiscal crisis faced by cities around the world following the Great Recession of 2008. Five years later, the after-effects of this major crisis continue to be felt and limit economic opportunities in cities.

Section 1 summarizes how the crisis was triggered and how it unfolded in the US, then spread to the rest of world—highlighting the links between financial sector and housing sector.

Section 2 discusses the impact of the crisis on urban revenue and expenditure, and the stimulus programs and recovery plans devised as a short term response by cities around the world. Section 3 then discusses longer term strategies to ensure the financial, social and environmental sustainability of cities.

The authors make the point—and back up our assertions with specific examples—that urban decision-makers must take a long view and find ways to create opportunities for their citizens, making sure that their decisions are financially sustainable in the long term. Today's decisions should not lock cities out of options tomorrow, and cities must be managed with flexibility so as to adapt to unforeseen new circumstances. The authors also argue that, while there has been a lot of talk about “smart cities” and new technologies among urban specialists and urban planners, it is ultimately the focus on basic economics (sustainable financing, providing good services to consumers and incentives for providers), good governance and good institutions that will create sustainable, dynamic and livable cities.

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1. The Great Recession

Five years after the onset of the “Great Recession,” its after-effects continue to be felt around the world and limit economic opportunities. The worst economic crisis since the Great Depression erupted in September 2008 with the collapse of Lehman Brothers, largely as a result of accumulating defaults on mortgages and derivative products. The ensuing financial crisis quickly led to a halt in credit to the private sector and a sharp rise in interest rates. U.S. financial institutions collapsed, leading to a collapse of equity markets and industrial production and spread throughout the world. Worldwide, the impact of the crisis reached proportions rarely experienced before in modern history. Not all countries were affected by the financial crisis but all economies, developed or emerging, entered into a recession.

The trigger of the crisis was the burst of the U.S. real estate market bubble. The bubble was triggered by the Fed’s low interest rate policy following the burst of the dot-com bubble in 2001 and magnified by the financial deregulation in the 1980s. In combination with a range of policies aimed at expanding the availability of mortgages to low-income borrowers in the subprime market, policy led to excessive risk-taking and higher leverage, resulting in excess liquidity, and bubbles in both housing and equity markets. The wealth effect of these bubbles enabled US households to over-consume, which, together with the public debts arising from the Afghanistan and Iraq wars and a range of tax cuts, increased the United States’ current account deficits. If this hypothesis is correct, there is a causal link between the monetary, fiscal and housing policies of the United States, and its large current account imbalance.¹

Housing prices had begun to rise sharply and increasingly deviated from their fundamentals in the late 1990s as a result of the degradation of underwriting standards in the housing industry. Housing prices peaked in April 2006 and began to fall precipitously in the second quarter of 2007. Everyone ignored the risks posed by the housing bubble—that ignorance no doubt assisted by the huge amounts of money being made. When the bubble burst, much of that AAA paper turned out to be worth just pennies on the dollar. The Federal Reserve tightened monetary policy and banks started asking borrowers of “ninja” loans to start paying off their debt.² As the downturn in house prices intensified, mortgage delinquencies and defaults accelerated, further accelerating the decline in the real estate market. Overextended banks drastically reduced offering mortgages. In a downward spiral, the decline in prices pushed more and more borrowers with adjustable-rate mortgages to default, thus further endangering the position of banks and other financial institutions that had collected subprime loans securitized through new instruments, in particular Collateralized Debt Obligations (CDOs).

The loss of value of CDOs led to large-scale sell-offs of assets connected to these defaults.³ This affected in particular hedge funds that had become highly leveraged—the riskiest having a debt-to-equity ratio of 20 to 1. When in the summer of 2007 the market began to fear that subprime CDOs might lose much of their value, two hedge funds run by Bear Stearns, which had invested several billion dollars of short-term loans into highly illiquid subprime CDO tranches, started to

¹ Lin and Treichel (2012). Much of our description of how the crisis unfolded in the US is taken from this paper.

² NINJA stands for “no income no job or asset” (loans made without declaration of income from the borrower).

³ Lewis (2010)

lose most of their value. As a result, banks withdrew the short-term financing upon which the hedge funds had relied. The pieces of the shadow banking system—hundreds of hedge funds, money market mutual funds, and mutual funds, that perform the roles of banks but are not regulated as such—fell like dominoes.⁴

In March 2008, Bear Stearns filed for bankruptcy and was bought by JPMorgan for less than a tenth of its pre-crisis value. In September 2008 Merrill Lynch, Lehman Brothers, and AIG filed for bankruptcy, largely as a result of their exposure in the real estate market.⁵ The banks had highly leveraged positions that were vulnerable to a small decline in housing markets. Lehman Brothers' collapse (the largest bankruptcy in U.S. history) led to a complete halt of credit between financial institutions because the uncertainty of their balance sheet positions made intra-bank lending too risky. This sudden halt triggered a liquidity crisis.

The U.S. government quickly responded with a \$700 billion bank bailout to rescue the financial sector from complete collapse as leading banks, insurance companies and pension funds faced bankruptcy. Under the Troubled Assets Relief Program (TARP), the US Treasury was allowed by Congress to insure or purchase up to \$700 billion of commercial or residential mortgage securities or any other financial instrument related to them to promote financial market stability and encourage banks to resume lending, both between banking institutions and to consumers and businesses. AIG, the largest insurance company, was also saved from a liquidity crisis by an intervention from the Federal Reserve Board. To help financial institutions restore credit, the Fed lowered its effective rate to a nominal rate of almost 0 percent. Shortly before the collapse of Lehman Brothers, the government had already taken over the semi-public companies Fannie Mae and Freddie Mac, which were in a difficult position given their operations as sellers of mortgage securities in the secondary mortgage market.

After the financial system and the housing sector, the real economy was affected. Consumer credit, which had been growing steadily during the boom years, fell sharply. Companies that had expansion plans could not raise the capital necessary to finance it. Worldwide, the number of new start-ups fell considerably, as lending for new projects became too risky. The U.S. recession started in December 2007 and lasted for 18 months. Unemployment rose nationwide, but its distribution was uneven across sectors, skills and states. The construction and durable goods sectors were the most severely hit. The downturn was more drastic in states that had experienced a large housing boom, or in the rust belt where the relative size of manufacturing is important.

Alexander Field has noted the similarities between the crises of the 1920s and 2000s: in both cases, the housing market precipitated the crisis and credit extended during the boom—both its quantity and quality—created obstacles to recovery. But the explosion of mortgage debt and the housing prices bubble between 2001 and 2007 were really unique, as shown by Figure 1. “Between 2001 and 2006 institutional restraints on lending that had for the most part obtained for half a century broke down under the banner of deregulation, “innovative” ways to finance housing, and shoddy and sometimes fraudulent work by mortgage appraisers, originators, securitizers, and ratings agencies.” (Field 2012).

⁴ Roubini and Mihm (2010)

⁵ *ibidem*

Figure 1. United States Housing Prices, Building Costs & Interest Rates, 1900-2010

Source: Robert Shiller <http://www.econ.yale.edu/~shiller/data.htm>

The recession in the United States quickly spread to other economies. In 2009, world output fell by almost 2 percent; in the US it fell by 2.6 percent, in Japan by 5.2 percent, in the UK by 4.9 percent and in EU countries by 4.3 percent. In emerging markets, GDP growth slowed down to about 0.5 percent, while developing countries maintained a reasonably good growth performance (above 4 percent) until 2011. World trade in 2009 was 65 percent lower than in the previous year. Equity markets collapsed. Unemployment around the world rose sharply. It surpassed 15 percent in countries like Spain and Greece that already had high levels of unemployment before the crisis. The US financial crisis spread through three main channels. One channel was money markets. Following concerted efforts by central banks to inject liquidity into the system, commercial banks significantly decreased lending rates. Trade was another channel. As a result of the freeze of credit markets, exports collapsed—on a year-to-year basis—by 30 percent in China and Germany, and by 45 percent in Japan, for instance. Remittances from some workers, in particular laid off migrant workers from Central America in the US construction sector dropped. The collapse in international commodity prices, and especially oil, as a result of the fall in demand in advanced economies was another channel through which the crisis spread.

The global slowdown heightened vulnerabilities that had already been in place before the crisis. Notably, countries that had also experienced housing booms, like Ireland and Spain, or had high fiscal deficits before the crisis, like Greece and Portugal, now teetered on the brink of a sovereign debt crisis and required support from the European Central Bank and the International Monetary Fund. In the Eurozone, the crisis turned into a sovereign debt crisis, with potentially significant consequences for the world economy as a whole. In the developing world, a large

number of countries which had managed to escape the financial crisis in 2008-2009 experienced a slowdown. The weak global recovery has given way to a synchronized slowdown, as financial market stress in the euro area periphery intensified. Global confidence, industrial and trade activities are reacting sharply to worldwide uncertainties. Prospects remain clouded by risks from Europe (including that of a Euro Area crisis), the American “fiscal cliff,” a possible Chinese banking crisis followings its property boom, and the rapid escalation of internationally traded grain prices. Even assuming sentiment improves, recent events imply a downward adjustment to economic forecasts—with global GDP expected to expand only 2.5% in 2012, with growth accelerating to 3.0% and 3.3% in 2013 and 2014.

Figure 2 shows spending in construction as a GDP share in Ireland and Spain, the two European countries with the biggest housing bubbles. The area below the hump curve and above the long-run average of investment in construction (red line) represents the Alcidi-Gros estimate of excess construction and thus estimate of the overhang (of housing and other fixed structures). For Ireland the cumulated excess of construction between 1997 and 2008 is equivalent to about €99 billion, or 55 % of (2008) GDP. In Spain, the cumulated excess is more than €380 billion or 37% of (2010) GDP. The long run ‘equilibrium’ rate of construction spending (as a share of GDP) is 5 percentage points higher in Spain than in Ireland and above most European countries. For the macroeconomy, housing prices are less important than the amount of real resources used in the housing sector. What matters for the real economy is the size of the construction sector, especially employment, and its time path relative to the long-run equilibrium, argue Alcidi and Gros (2012).

Figure 2. Spain and Ireland, 1995-2013. Construction Spending and Long-run Average Investment in Construction (red line) as shares of GDP

Note: Investment in construction as share of GDP on the vertical axis, the red line is the average over the period 1970-2000.

Source: Alcidi and Gros (2012). Data from European Commission.

2. The Impact of the Great Recession on Cities

A large number of publications from international organizations, NGOs, and associations of municipalities published surveys of the impact (or likely impact) that the crisis would have on cities at the onset of the Great Recession (Clark 2009, European Commission 2011, United Cities and Local Governments 2009, Paulais 2009, United States Conference of Mayors 2010, United Nations-Habitat 2010, URBACT 2010, Lee, Morris and Jones 2009, Wial and Shearer 2010).

City officials around the world have reported that the Great Recession has had a major impact of on economic activity—for instance 80% of the 131 cities from the 25 European Union member countries surveyed by URBACT in 2009 reported such an impact. These effects range from the closing and bankruptcy of many companies, to the slowdown in economic activity in all its branches, decrease in investment, restriction of loans, reticence of companies to take risks in times of uncertainty, decrease in the number of new startups, and decline in exports.

The most serious impact is the sharp increase in unemployment (and underemployment) in cities, small or large. The issue is more serious in developing countries where a large number of persons are underemployed or work in the informal economy. For example, in Mexico, in September 2010, open unemployment in the 32 most important urban areas reached 6.6% of the labor force but the underemployment rate was 8.5%.

Urban poverty rates have also increased dramatically. In the US principal cities, for example, the poverty rate has shot up from 16.5% before the crisis to 20% in 2011 (Perlo 2011). Below, these trends are illustrated using recent census data.

United States, 2005 to 2011. Poverty by Residence (in thousands)

Year	Inside metropolitan statistical areas		Inside principal cities		Outside principal cities		Outside metropolitan statistical areas /15	
	Poor	Percent	Poor	Percent	Poor	Percent	Poor	Percent
2011.....	38,202	14.6	20,007	20.0	18,195	11.3	8,045	17.0
2010	38,466	14.9	19,532	19.8	18,933	11.9	7,877	16.5
2009.....	35,655	13.9	18,261	18.7	17,394	11.0	7,914	16.6
2008.....	32,570	12.9	17,222	17.7	15,348	9.8	7,259	15.1
2007.....	29,921	11.9	15,983	16.5	13,938	9.0	7,355	15.4
2006.....	29,283	11.8	15,336	16.1	13,947	9.1	7,177	15.2
2005.....	30,098	12.2	15,966	17.0	14,132	9.3	6,852	14.5

Source: US Census Bureau – numbers in thousands

In many countries that experienced housing crises, the number of housing foreclosures in metropolitan areas rose considerably.⁶ In the United States, while 7.5 million foreclosures occurred in a period of 27 years (from 1979 to 2006), there were 6 million in 2007-2009 according to the firm RealtyTrac, Inc. The highest rate of foreclosures occurs in cities with the highest unemployment rates and where the market value of housing has plummeted (giving rise to mortgages being greater than the market value of the house). Detroit had a rate 5 times above the national average, Las Vegas 4.6 times, and Riverside, California, 3.8 times.

⁶ The data in this paragraph are from Perlo (2011)

In particular, cities face an extremely difficult situation at four levels, as explained in more details in the paragraphs below.

1. The first major consequence of the Great Recession is its impact on the revenue of local governments around the world. Municipal revenues—either generated by local governments or derived from State transfers— decreased because of the economic slowdown, as did the fiscal value of real property. Some municipal governments also lost major assets that they invested in risk funds and banks that collapsed during the crisis (United Cities and Local Governments 2009). Cities like London, Frankfurt or New York, whose economies were dependent on financial markets, were badly hit by the decline in tax revenue and the surge in unemployment in the financial sector.
2. Expenditures—especially spending to address social needs—also rose because of the slowdown in economic activity and the corresponding increases in unemployment and social welfare needs. The decline in revenue and increase in expenditure lead many cities to experience the worst “fiscal crunch” in decades (Perlo 2011).
3. Financing capacities shrank owing to the difficulty in obtaining loans and the increase in the cost of money. Banks and bond issuers—the main financiers of cities—have been heavily impacted by the Great Recession. All major rating agencies viewed the impact of the economic downturn on the credit qualities of municipalities as significant because of declines in the tax base, expenditure pressures or rigidities, and increasing and more expensive debt. From October 2008 to January 2010, Moody’s rating actions affected 72 subnational governments, or 24 percent of the rated universe, outside the United States (Canuto & Liu 2010). Foreign investment to finance infrastructure has declined; operations underway have been put on hold in many instances and many projects have either been cancelled or delayed (Paulais 2009).

Impact on Municipal Revenue

The economic downturn has led to a decline in own revenues in cities around the globe. Municipal associations of European countries indicate that 61% of respondents have experienced a drop in own revenues (more exactly 61% for taxes and 42% for fees). In the USA, a survey of local governments shows an expected drop in revenues of 0.4% in 2009. Developing and transition countries—for example, Belarus, Burundi, Uganda, and Ukraine—expect decreases in their own revenues.

Although own revenue decreases result from reduced economic activity and tax bases, other crisis impacts can affect revenues as well. Some countries also expect decreases from tax evasion and general difficulties with tax compliance (e.g., Australia, Ghana, New Zealand and Uganda). In some countries (e.g., Benin, Mali and Niger) the lack of overall liquidity due to a drop in (national and local) revenue has resulted in the treasury system of these countries giving priority to national expenditures and the diversion of local revenues (cash) to finance them (United Cities and Governments 2009). Revenue declines from shared taxes are another source of fiscal stress. European municipal associations, for example, indicate that 36% of respondents have experienced a drop in revenues from shared taxes. Significant reductions in revenue sharing from natural resources are reported by Bolivia (20 %) and Peru (30 %).

By contrast, transfers from central government—often a vital component of municipal revenues—have had mixed outcomes following the crisis. While local governments in some nations have experienced a drop in transfers, others have seen a higher flow of capital as central governments take measures to combat declining economic output. European municipal associations illustrate these mixed outcomes, with a slight majority of 55% of respondents to an URBACT study indicating lower intergovernmental transfers from the national budget. The case of Flanders, Belgium demonstrates that real cuts in transfers also may take place in other forms. There, nominal transfers for police services have increased but they finance a lower share of costs than previously because of the rate of growth of wage costs. On the other hand, transfers to municipalities in several countries (Australia, Canada, Denmark, Finland, Norway, Spain, the USA, Colombia, Chile, Brazil, Mexico, etc), have increased to compensate for lower own tax revenues or additional resources have been made available as part of economic stimulus packages.

Finally, many governments lost streams of revenue derived from capital holdings and other assets. For example, Belgian municipalities experienced major losses from the bankruptcy of Dexia bank, in which they owned shares (because Dexia was originally a bank providing governments and local public finance operators with banking and other financial services). Local governments in a number of other European countries, including Iceland, the UK and the Netherlands, lost substantial assets deposited in banks that failed during the crisis.

Impact on Municipal Expenditures

Municipalities in many countries have been forced to reduce current expenditures not only for maintenance and operation but also for some categories that have been relatively unaffected in past crises, such as public sector employment and social services. Making matters worse, these cutbacks are of course not without social and political repercussions. For example, Argentine President Cristina Fernandez has recently made severe cuts to Buenos Aires' budget, impacting spending on everything from public transportation to hospitals to the electricity system. As a result, public workers went on strike in August, and debates between city officials and dissatisfied labor unions are continuing (The Economist, August 18, 2012).

Other cities have reacted differently during the crisis. Several recent reports⁷ show that cities around the world are competing against each other to attract talent and money.⁸ This is why several countries reported increases in municipal expenditures in the midst of the Great Recession. These expenditures finance investments that are expected to help improve the local economic development climate. How local governments have been able to manage these increases is not always clear, except in the countries in which local governments have benefitted from increases in transfers or national fiscal stimulus packages, or where local governments can borrow relatively freely (see below). Presumably local governments can increase priority spending on social programs by reducing other expenditures.

Capital spending outcomes on the other hand, as with government transfers, have been mixed since the start of the crisis. In fact, these two outcomes are often fundamentally related. A

⁷For example Dobbs, Remes, Manyika, Roxburgh, Smit, & Schaer, June 2012 and Schwab & Sala-i-Martin, 2011.

⁸ See also the useful report by Greg Clark (2011) at www.TheBusinessOfCities.com

survey carried out by UCLG in 2009 shows that local capital expenditures have actually increased in some countries because municipalities have participated in national economic stimulus programs that have targeted local infrastructure projects (United Cities and Local Governments 2009). However, in a great variety of countries, including Bulgaria, Mexico, Nicaragua, Philippines, Russia, and Ukraine, municipalities have cut back on capital spending. In Senegal, the reduction in capital transfers to cities has led to a cutback in local investments since these transfers are used to fund the municipal matching share of specific projects for which financing is also received from a national fund supported by multinational institutions (Paulais 2012).

Reduced Financing Capacities

As cities have struggled to regain stability after the crisis, so too have the various external sources of capital on which cities usually rely. Perhaps most importantly, the cost of borrowing has increased during recession, as creditors are wary of buying emerging-market bonds during bad times. This, in turn, prevents emerging-country governments from smoothing the cycle by borrowing, as their rich counterparts can often afford to do. Generally speaking, fiscal policy is procyclical in developing countries, in contrast to high-income countries where it is countercyclical. This is supported by strong evidence in Ilzetzki & Vegh (2008) and Kraay (2012). This being said, even developed nations have been struggling. In the U.S. tightened credit markets have made it increasingly difficult for cities to maintain debt-funded projects, particularly for infrastructure, and have resulted in higher debt costs. Additionally, in many EU countries like Greece, Spain and Portugal, cities have had difficulties to borrow due to legal constraints (including consolidated public sector limits arising from the Maastricht Treaty). The downturn has also reduced foreign direct investment in developing country cities.

The ability to weather this crisis, as in previous crises, has been different for central and sub-national governments. While the former can incur large deficits financed by debt, the latter (outside of a number of generally federal or quasi-federal countries) are often very constrained by law and financial market realities in terms of the extent to which they can run budget deficits and borrow. Without sufficient ability to borrow, subnational governments will find themselves in a very difficult position. The situation is likely to be most serious for local governments (middle and little cities, municipalities and villages) because of their heavy dependence on transfers as well as their more limited fiscal autonomy and ability to manage external shocks (United Cities and Local Governments 2009).

While the borrowing capacities of many municipalities currently remain limited, recent global trends illustrate a general movement towards the increased financial independence of cities. Canuto and Liu (2010) argue that this phenomenon can be attributed predominantly to three driving forces. First, decentralization has given local governments increased responsibility to plan for and finance local projects. Second, widespread urbanization has forced municipalities to make massive investments in the new infrastructure required to accommodate large increases in the urban population, prompting cities to pursue mechanisms through which to access new sources of capital. Third, subnational debt is becoming a more common practice as cities have started issuing more bonds to finance public investments. This global trend towards decentralization informs much of the discussion that follows, in particular relating to countries' stimulus packages, and cities' options for implementing sustainable financial mechanisms.

Stimulus Packages

Many high and middle income countries adopted fiscal stimulus measures to mitigate the negative impact of the global economic crisis on aggregate demand.⁹ The composition of these fiscal stimulus packages varies greatly from country to country. For instance, the additional spending is composed almost entirely of transfers and other public consumption measures in Japan; almost entirely of public investment spending in Saudi Arabia and South Africa; or heavily tilted toward tax cuts on consumption in India. Packages in several countries also include tax cuts on capital or on labor (IMF 2008).

Municipalities in many developed and developing countries have taken stimulus measures to mitigate the impact of the recession on the local economy, often coordinated with—or financed by—the central government¹⁰. In many cases, local authorities were empowered to bid for and spend central government funding. For example, the city of New York drew up a “Financial Recovery Bill: Priorities for the City of New York Report” coordinated with the ARRA—with Mayor Bloomberg commissioning a Citywide Performance Reporting Online System to allow citizens to track the spending of stimulus dollars. In Spain, the central government in Madrid provided resources to local government to invest heavily in city infrastructures and renovations. In other cases, stimulus funds are centralized and the national government coordinates spending—which indirectly benefits local authorities.¹¹ In some cases, cities such as Barcelona (whose sound fiscal management put them in a strong position to spend stimulus money) generated their own stimulus funds. In other cities, improved cost efficiencies allow cities to self-finance or partly finance stimulus spending. For example, the Mayor of London tried to generate efficiency savings of £950 million over three years across the Great London Authority Group.

These examples suggest that city governments were often able to strengthen the overall economic impact of stimulus spending while making meaningful investments in infrastructure. But do stimulus packages succeed in halting the decline in urban employment and in allowing urban economies to recover? Based on the existing evidence, stimulus spending is often considered successful when the spending focused on “releasing bottlenecks to growth”, including on infrastructure, telecommunications, and education. That being said, little research has focused specifically on the urban impact of stimulus spending.

Several recent analyses give a *general* sense of the impacts of stimulus spending in various countries, Wilson (2012) finds that spending from the American Recovery and Reinvestment Act had a positive and statistically significant impact on total nonfarm employment at the one-year

⁹ Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, United States, United Kingdom and others.

¹⁰ See United Cities and Local Governments (2009)

¹¹ In France, President Sarkozy announced a \$25 billion investment fund in November 2008. In the UK, the central government bailed out a number of key employers and financial institutions. In October 2008 for instance, banks such as the Royal Bank of Scotland, HBOS and Lloyds TSB received a cash injection of £37 billion to prevent their collapse. In Japan, a stimulus package of \$51 billion was announced by Prime Minister Taro Aso in October 2008. It included a ¥ 2 trillion (\$ 20.3 billion) in special benefits to all households. In China, President Hu Jintao announced a 2-year \$586 billion stimulus package (four times larger than the US bailout plan) in November 2008. It focused heavily on Chinese cities and included tax reform, increased spending on education, health, and housing and—especially—funding for major infrastructure projects such as roads, railways, airports, and the power grid.

mark after the legislation was enacted. It also had a positive and significant impact on employment in the subsectors of state and local government, construction, manufacturing and, depending on which measure of stimulus spending one uses, the education and health sectors. In its first year, ARRA spending yielded about eight jobs per million dollars spent, and they estimated the employment to have reached 3.4 million (based on announced funds) by March 2011.

Another authoritative analysis of the impact of fiscal stimulus programs is Auerbach and Gorodnichenko (2012). They find estimates of the government spending multiplier for the USA between 0 and 0.5 in expansions, and between 1 and 1.5 in recessions, while noting that “as we enter a period of unprecedented long-run budget stress, the US postwar experience, or even the experience of other countries that have dealt with more acute budget stress, may not provide very accurate forecasts of future responses.”

Fardoust, Lin, and Luo (2012) provide an analysis of the Chinese stimulus program of 2008-09. Its subnational component was designed to maximize the impact of the stimulus package on the economy and minimize the potential procyclical elements that are usually built into subnational fiscal mechanisms in federal countries. The paper focuses on two factors which the authors claim to be behind the success of the stimulus: investments in bottleneck-easing infrastructure projects and countercyclical nature of subnational spending based on the assumption that well-chosen infrastructure projects could improve business climate and thereby crowd in the private investment. The paper concludes that subnational government spending played a key role in strengthening the overall impact of the stimulus and sustaining growth. However it does not provide hard evidence about the causality between spending and recovery (like the Wilson paper does, for instance).

Recovery Plans

Recovery plans are policy instruments that are half-way between short-term “Keynesian” macroeconomic measures sustaining aggregate demand and long term investment strategies that would allow cities to sustain growth over time but may not be immediately feasible because financing is not available or the political situation is not propitious for reform. Their focus is to allow cities to recover from the urban recession to which is added a strategic dimension (which, itself, depends on the development stage at which the city and the country where it is located find themselves).

In Latin America, for instance, economists feel that tackling the Great Recession requires profound reforms and not only stop-gap measures. Profound reforms would allow Latin American cities to develop sustainable urban development trajectories. Some economists consider that large infrastructure projects are temporary labor absorption tool for cities (as opposed to temporary employment programs which can be used to keep very poor, unemployed workers earning a basic income in their home regions, and are a labor absorption tool to deal with a severe unemployment crisis, especially affecting low-skilled poor workers).

Similarly, in Europe, the Young Foundation argues for adapting recovery plans to put a ‘much greater emphasis on future growth industries rather than bailing out failing ones.’ Evidence

points to future growth areas in the health, science, education, social care, environmental services and tourism sectors. Unfortunately many current recovery plans have been ‘primarily oriented to sectors with smaller shares of employment and are likely to further shrink in the years ahead.’ URBACT (2012) considers that European cities have to be proactive in promoting integration by staying open to the world. This early intervention is especially important in a recession where tensions between groups are likely to rise as resources and jobs become scarce. European cities seem to be following this advice—promoting job opportunities while shifting the structures of both industry and government to be more sustainable in the long run. Several examples are illustrative. Turin, Italy, for instance, streamlined millions of euro through its Job Centre to relocate, hire, and retrain workers hurt by the crisis while simultaneously dedicating €60 million towards enhancing coordination between research organizations, government, and private actors involved in the “innovation process”. Rotterdam and Dublin have implemented similar plans to boost job growth in the short term and sustain it in the long term. While roads and bridges provide a classic outlet for funding aimed at immediate job growth, these plans also focus on a diverse range of industries, ranging from restaurants and tourism to alternative energy development, in order to sustain economic growth into the future. In addition to recovering jobs, cities like Newcastle, in the United Kingdom, are developing mechanisms to support homeowners by expanding affordable housing supply and establishing a “rent now buy later” policy in certain areas to accommodate short-term housing needs while the economy recovers (URBACT 2012).

3. Long Term Strategies for Sustainable Cities

Cities and local economies have been severely impacted by the crisis which has interrupted the business of local government in all corners of the world. The challenges of collapsed tax revenues, unemployment, disinvestment, disruption to municipal services, and the climate of uncertainty have challenged local leaders like no other previous crises (Clark 2009). Beyond short-term measures and recovery plans, cities need to take action to address the dramatic fiscal deterioration in their public finances that has taken place in recent years. In-depth reforms will be needed to improve the situation facing cities. In many countries, the very nature of the relationship between central and local governments hangs in the balance. The architecture of financial systems everywhere has been greatly undermined (Paulais 2009).

But local initiatives have also been the starting point for new economic strategies and innovative policies. The crisis, as stated by Clark (2009), has given rise to new leadership and new strategies and has ‘reinvented’ local development’ in several ways. Many city leaders have seen the crisis as an opportunity to embrace new strategic thinking about the future and focus on building sustainable, adaptable, and more distinctive local economies. Here are a few examples.

- * The Ajuntament de Barcelona has used the crisis to develop an economic framework at the metropolitan level. Links with, and the participation of, the Catalan Government has been essential for this process.

- * The Build Toronto Corporation was created in February 2009. The organization receives a stream of high quality land assets from the City Council with the objective of developing and using them for public benefit.
- * Barcelona, Edinburgh, Amsterdam and Istanbul founded the European Urban Investment Network together with Allianz, ECE, Eurohypo and ING Real Estate. It is an independent European network designed to promote and facilitate new forms of public and private co-investment in urban development, launched in October 2008, aiming to facilitate the dialogue between public and private sector, providing opportunities to bridge investment gaps and overcome city development challenges.
- * London signed in June 2008 the first City Charter as a Memorandum of Understanding between the Mayor of London, the London Boroughs and the City Corporation; a new concordat between the upper and lower tier of city government in London. It aims to ensure that London's public services continue to improve and to be delivered as efficiently as possible, and that decisions that affect Londoners would be made as close to the people as is possible.

All these initiatives are in keeping with the “Barcelona Principles” conceived at a March 2009 meeting in Barcelona with local leaders, the OECD Local Economic and Employment Program and the Barcelona City Government, to guide future action for cities (see box).

THE BARCELONA PRINCIPLES

1. *Provide proactive and collaborative leadership at the local level.* Don't waste the crisis, but respond with leadership and purpose
2. *Make the case for public investment.* Make the case for continued public investment and public services and the taxes and other sources of investment required.
3. *Robust long-term economic strategy.* In the long-term build local economic strategies which align with long-term drivers and identify future sources of jobs, enterprise, and innovation.
4. *Purposeful short-term action.* In the short-term focus on retaining productive people, business, incomes, jobs, and investment projects.
5. *Investment attraction and readiness.* Build the tools and approaches to attract and retain external investment over the long-term
6. *Relationships matter and need increased attention.* Building genuine long-term relationships with the private sector, trade unions, and other key partners.
7. *Effective public works and major investments.* Take steps to ensure the sustainability and productivity of public works, infrastructure, and major developments/events.
8. *Stay close to the people.* Local leaders should act purposefully to support their citizens in the face increased hardship
9. *Stay open to the world.* Local economies have benefitted and should continue to benefit from being open and attractive to international populations and capital
10. *Build national-local alliances.* Communicate and align with national and other higher tier governments

Source: Clark 2009

In the remainder of this section, we make four points which we think are important in the context of long term urban strategies.

- The focus of long term strategies for cities must be first and foremost to create opportunities for all its inhabitants and to ensure the sustainability of the city's economy.
- This will, almost certainly, make new investments or reinvestments necessary in many areas ranging from mobility to culture and to the green economy. Cities must be managed with flexibility so as to adapt to unforeseen new circumstances and today's investment decisions should not lock cities out of options tomorrow.
- In cities where public finances have deteriorated and where it is essential to restore their credit, urban decision-makers must make sure that their decisions are financially sustainable in the long term.
- While there has been a lot of talk about "smart cities" and new technologies among urban specialists and urban planners, it is ultimately the focus on basic economic principles, good governance and good institutions that will create sustainable, dynamic and livable cities.

Creating Opportunities for All

Dark clouds gather on the horizon today for most cities in developing countries. The future is uncertain and risky. But the future is also full of opportunities. Cities, rich and poor, face risks but they also have opportunities to manage their city well, ensuring that growth is inclusive, greener and more sustainable when the crisis subsides and growth resumes.

Creating opportunities for the population means ensuring that the quality of life of its inhabitants—particularly the least fortunate—is improved; that the city invests in human capital formation; and that all inhabitants are participating and included in political and cultural life.¹²

In order for cities to provide opportunities for their citizens it is helpful to understand the primary forces that dictate existing levels of opportunities experienced by urban populations. Bourguignon, Ferreira, and Menéndez (2007), using Brazilian household data, find that individuals' place of residence, parents education, occupation, and race are the most significant variables linked to opportunity. Their analysis additionally reveals a sizable inequality of opportunities in Brazil and shows that urban residents have potentially more opportunities than rural residents.

As cities plan for an uncertain future, current practices illustrate the positive outcomes that can result from the empowerment of citizens during the planning and financing of urban renewal projects. The Asian Coalition for Community Action (ACCA), for example, uses small grants (less than US\$58,000) funded by the Bill and Melinda Gates Foundation both to leverage government and private capital, and to promote community involvement in planning urban projects. The program has enabled the construction of street lights, community latrines, transport infrastructure and other public goods in cities of all sizes in Cambodia, Vietnam, Indonesia,

¹² On opportunities and empowerment, see Stern, Dethier and Rogers (2005).

Nepal, Sri Lanka, and other nations across Asia. The returns on investment are impressive: according to Boonyabancha and Mitlin (2012), \$2.3 million in ACCA funding had prompted almost \$41.5 million in additional investment from municipal and central governments, and private investors. Equally significant are the community development funds ACCA helps establish in order to facilitate cooperation between local interest groups and municipal governments. These funds have proven to be a powerful tool, enabling local communities to provide valuable input into the urban investments directly affecting their lives.

Similarly empowerment programs in cities around the world have achieved similar successes. Shack/Slum Dwellers International (SDI) is a network of grassroots organizations that enables impoverished urban citizens to invest in neighborhood social capital, using international financing from the World Bank, USAID, and the Bill and Melinda Gates Foundation to leverage additional funds from central government. With a focus on solutions that can be replicated at scale, SDI's reach is spreading quickly across Latin America, Asia, Africa, and other locations, predominantly in the Global South. Kenya's K-Rep Bank has begun a similar "metafinance" program to fund community-scale water projects, using aggregated household cash-flows to establish the creditworthiness of communities as a whole¹³. These programs have achieved such powerful results precisely because they invest in the human capital of urban populations, and promote the social, political, and economic inclusion of citizens that have previously lacked such empowerment.

When it comes to social empowerment, urbanization offers many opportunities, in addition to the obvious challenges. Because it brings diverse peoples closely together, urbanization generally promotes social transformation and social innovation. Social norms restricting the role of women are often less strictly enforced in urban areas, for example, and urban households typically reduce household size because of space constraints. On the economic front, urban areas offer what economists call "agglomeration externalities"—productivity-increasing benefits from locating near other producers or economic activities. These productivity advantages explain the emergence of high-technology regions like Munich in Germany, Seattle in the United States or Bangalore in India, but with a good investment climate they will apply also to other countries. Urban areas often also offer more opportunities for employment, education, and other services for migrants. The challenge is for all countries to take advantage of these opportunities for learning, innovation, and empowerment—in a word, for development—while limiting urban congestion, crime, and environmental degradation.

Managing Cities with Flexibility

As urban populations increase, new investments will be necessary in many areas ranging from transport to the green economy to make cities more liveable, sustainable, and attractive. But many investment decisions have long term consequences. Urban infrastructure, e.g. modes of transportation or communications can shape development for decades or centuries—a duration that extends beyond infrastructure lifetime. As pointed out by Hallegatte et al (2012), urbanization plans, risk management strategies, infrastructure development, and building norms have consequences over periods of 50 to 200 years. Moreover, urban investments will have to cope in 2100 with climate conditions that, according to most climate models, will be radically

¹³ See Walker (2012) for additional metafinance practices in India and elsewhere

different from current ones. Architects and engineers must therefore account for the future changes that can be expected. Table 1 below shows examples of sectors involving long-term planning, long-lived investments, irreversibility in choices, and exposure to changes in climate conditions.

Table 1. Sectors with irreversibility, high inertia and high exposure to climate conditions

Sector	Time scale	Exposure
Water infrastructure (e.g., dams, reservoirs)	30–200 yr	+ + +
Land-use planning (e.g., in flood plain or coastal areas)	>100 yr	+ + +
Coastline and flood defences (e.g., dikes, sea walls)	>50 yr	+ + +
Building and housing (e.g., insulation, windows)	30–150 yr	+ +
Transportation infrastructure (e.g., port, bridges)	30–200 yr	+
Urban planning (e.g., urban density, parks)	>100yr	+
Energy production (e.g., nuclear plant cooling system)	20–70 yr	+

source: Hallegatte et al. 2012

In all these sectors, the choice of technology leads to path dependence. The clearest example of path dependence is that of the standard gauge for railways (4 feet 8-1/2 inches or 1.435 meters) throughout North America, Europe and half of the world's railway routes. Despite having more technically and economically optimal alternatives, the decision by British engineer George Stephenson to use this gauge during the 19th century ensured that this outdated technology is still in use today (see Puffert 2000 and 2002). Making decisions on these kinds of investments therefore require anticipating the long term environment, the demand for infrastructure and the constraints under which they will function. This need for anticipation brings large uncertainty into the decision-making process, for instance from demographic or economic projections. Past evidence suggests that our ability to predict the future is rather limited but that uncertainty has to be taken into account before decisions are made.

There are two ways to manage uncertainty. The first is for decision makers to use available decision-making methodologies, from simple heuristics (e.g., adding safety margins to all design characteristics to cope with larger-than-expected extreme events) to sophisticated methods (e.g., based on subjective probability and cost-benefit analysis). These techniques are described, for instance, in Hallegatte et al (2012). The second way to take the future into account and manage uncertainty is simply to use common sense, making sure that today's investment decisions do not lock cities out of options tomorrow so that they can adapt to unforeseen new circumstances.

Flexible vs. inflexible strategies can be illustrated by opposing China's strategies in energy and transport. China has been very innovative when it comes to renewable energy. About 17 percent of China's electricity came from renewable sources in 2007, led by the world's largest number of hydroelectric generators.¹⁴ Technology development and increased amounts of investment in renewable energy technologies and installations have increased markedly throughout the 2000s in China, and investment in renewables was part of China's economic stimulus strategy. China is one of the four largest producers of wind power (with the United States, Germany, and Spain)

¹⁴ By 2009, China had a total installed capacity of hydropower of 197 GW.

and is the world's largest manufacturer of solar panels. Researchers from Harvard University and Tsinghua University have found that the People's Republic could meet all of its electricity demands from wind power by 2030. Despite this, Wen Jiabao stated in March 2012 that China would end its "blind expansion" into wind and solar energy, and diversify into nuclear power, hydropower, and shale gas (Wikipedia). By contrast, when it comes to transport, China's cities have tended to adopt a rather inflexible strategy. Rather than learning from the example of the West, China has invested heavily in the same car-based transportation system implemented decades earlier in the US, EU, and other developed nations. It has built 20,000 miles of highways in one quarter of the time it took for the US to complete its own interstate system (Foreign Policy 2012). Perhaps more worryingly, it has shown heavy dependence on car-based travel in major cities like Shanghai. For a nation that urbanizing at such a rapid pace, this strategy could lock China into the same oil dependency and congested cities that the US currently experiences.

Lots of things will change in the next 30 years. We know that in three decades, technologies will be different, incomes much higher, and institutions (hopefully...) more mature. Decisions about investments have to be made today, but these decisions—even when they have an element of irreversibility—must leave room for adaptation and reforms in the future. Cities have to be prepared to adapt to changes, not only economic, financial, demographic/employment changes resulting from rapid urbanization—in a very uncertain international economic context—but also exogenous changes like climate change.

Innovative Financing

While today's urban investments must be flexible and sustainable in the long run, so too must the financial systems used by cities to fund these investments. In fact, innovative ways to finance these investments by leveraging domestic capital have emerged since the 1990s. Appropriate sustainable financing strategies depend on the size and institutional strength of the municipality (Viking 2006). In the early stages of development, when devolution is inconsistent and legal frameworks for borrowing are weak, successful urban financing is often based around loans and grants while such institutions are strengthened. As these institutions mature, more complex financing schemes become available, and various instruments can link urban systems of finance to both domestic and foreign capital markets. A brief exploration of successful practices at each of these stages of urban development is informative while considering strategies available to cities dealing with the effects of the most recent economic crisis.

Let us begin with urban areas whose financial institutions are incipient. Here, the World Bank's current lending practices provide a good example of how cities bolster revenue in the wake of the crisis, make intelligent investments in infrastructure, and simultaneously strengthen cities' capacities for financial management. Ethiopia's Public Sector Capacity Building Program—started in 2004 and supported by the World Bank—is an illustrative example. Under this program, performance-based grants have enabled urban governments to strengthen finance capacity and implement systematic reforms. Using this transparent and predictable source of funding, cities have computerized financial reports and strengthened systems of financial management, enabling the delegation of revenue collection to sub-cities, and an expansion of tariffs and service fees. Similarly, Jawaharlal Nehru National Urban Renewal Mission (JnNURM) in India ties municipal funding to obligatory reforms, including the adoption of

modern accounting systems, property tax reforms, and user fees for municipal services. This program will distribute up to US\$ 14.43 billion in seven years to eligible municipal governments. In recent years, similar lending practices have achieved similar improvements in urban financial capacity in Mali, Macedonia, Ghana, Nepal, and elsewhere.

As basic financial institutions improve, cities—especially those that are small and medium in size—can benefit tremendously from financing mechanisms which facilitate access to domestic and foreign capital markets. In Colombia, El Salvador, The United Kingdom, Georgia, The Philippines, Morocco, and many other nations, municipal development funds have accomplished precisely this goal¹⁵. By pooling the borrowing capacities of municipalities these funds are able to obtain more competitive financing rates than cities could individually. Funds raised can then be redistributed to cities on a retail basis, who in turn can utilize both fees and (when appropriate) carbon financing to mitigate all costs incurred. At a time when credit markets are tightening and urban borrowing capacities have been weakened, these funds provide an invaluable tool to bolster municipal budgets.

Moreover, experience shows that similar funds can be implemented at national, regional, or local levels. Chinese local authorities, for example, have overcome legal restrictions on borrowing by creating Urban Development and Investment Corporations (UDICs), which are able to finance urban investments through bank loans, public-private partnerships, issuing bonds, and property development. Ho Chi Minh City and other local governments in Vietnam have developed similar local funds which are able to issue bonds to create an additional source of revenue. In contrast, regional and state-level financing vehicles have enabled cities to access to capital markets in countries like Mexico, India and Brazil¹⁶.

Recent research and experience from India provide insight into the considerable potential of municipal corporations to fund urban infrastructure projects, particularly when partnering with local governments. Sridhar, K. S. & Reddy, A. V. (2010) examine four Indian cities and find that “if revenues from land leasing and sales by the urban development authorities were to accrue to municipal corporations... there could be an increase in municipality’s total revenues to the extent of 33 percent, own source revenues to the extent of 90 percent, and property tax revenues to the extent of nearly 930 percent.” While the authors explain that poor coordination between these two entities usually prevents such revenue streams from being realized, experience from Lavasa, India provides an example where these institutional barriers are being overcome. Here, the Lavasa Corporation, Ltd. has developed a novel public-private partnership, using real estate sales, annuities from joint venture PPPs, and private negotiations to fund urban infrastructure creation. The success of this program derives precisely from this collaboration between local authorities and businesses, and this collaborative approach can provide a model for other developing cities facing revenue shortages.

While development funds can open much-needed channels for cities to access capital markets, cities may still require additional revenue streams to satisfy short-run capital needs and ensure long run financial stability. In such situations, a diverse range of innovative financial mechanisms have proven useful. For example, tax incremental financing (TIFs) allow

¹⁵ Serageldin et al (2008), Viking, N. (2006), and Paulais, T. & Pigey, J. (2009)

¹⁶ USAID (2011), and Serageldin et al (2008)

governments issue bonds on the future tax revenues they expect to make from a neighborhood, then invest the capital raised in improving that area. This type of financing usually leverages additional private capital from investors interested in preserving property tax rates in the selected area. Similarly, value capture finance allows governments to finance urban renewal projects by internalizing the (future) positive externalities generated by these investments. For example, a government could finance a public transportation project by increasing property taxes, or selling land, in the areas directly adjacent to a project. This practice has had success in London, Barcelona, Istanbul, Berlin, Hamburg, and Copenhagen for projects ranging from sports stadiums to row houses to metro development¹⁷, as well as in Hong Kong, Singapore, and Tokyo¹⁸. In different cities, service fees, land sales, and private investment helped governments recover the initial expenditures associated with projects.

Specialized development organizations can also help coordinate the financing and planning of urban infrastructural investments. For example, community development corporations have been created to purchase land, improve the land (often through the construction of affordable housing), then sell access to these improvements while retaining ownership of the underlying land. These entities can therefore reduce the costs of access to housing or other goods while minimizing speculation on land prices. Land banks, on the other hand, can fulfill a similar purpose. These public-private funds can hold land and direct investment towards the most profitable use of the land, using these profits to fund additional improvements on the land. Land banks can therefore act both as a short-term source of municipal revenue, as well as a tool to direct long-term urban development.

There is certainly no simple solution to the dwindling revenues, high borrowing costs, and reduced access to credit experienced by cities today. But the practices described above are a place to start. By thinking critically about their sources of capital—both domestic and international—and by strengthening relationships with both central and other urban governments, cities can begin to tackle the fiscal challenges of today while building sustainable financial systems for the future.

Smart Cities and Common Sense

In the community of urban specialists and urban planners, there has been a lot of talk about smart cities and a lot of emphasis on technology—but somehow this discourse misses the point. Clearly picking appropriate technologies is important, but ultimately the experience of development and the recent economic literature have shown that improvements in governance and institutions are more important for improving urban life.¹⁹ Ultimately it is basic economics (consumer preferences; incentives and human behavior) that will make a difference, not smart technology.

As a first step in following these basic economic principles, cities will have to be sustainable with respect to basic resources such as food, water and energy—or they will experience the fate of Fatepur Sikri, the beautiful city constructed by Emperor Akbar which was abandoned shortly after its construction in the 16th century due to the lack of water.

¹⁷ See Huxley (2009)

¹⁸ Salon, D. & Shewmake, S. (2011)

¹⁹ Acemoglu and Robinson (2012) contains a good summary of this literature.

Second, sustainable cities should limit the use of energy, raw materials, and greenhouse gas emissions in transport. Importantly, current practices show that the goals of environmental and financial sustainability are often not incompatible. In fact, current climate finance practices allow cities in the developing world to raise additional revenue for climate friendly infrastructure through the sale of clean development mechanism (CDM) carbon credits to more advanced nations. As an example, the bus rapid transit system in Bogotá—often praised for its green, flexible, and cost effective transformation of the city’s public transportation—is also expected to raise over \$25 million in additional funds from CDMs²⁰. Congestion taxes have also been implemented in cities like Milan, Singapore and London, raising city revenues from vehicle-based transportation while facilitating the efficient use of space and energy in central (and previously congested) urban areas. Finally, many feel that green bonds, which are currently used by institutions like the World Bank and the European Investment Bank to raise private capital for environmentally-friendly infrastructure investments, have great potential as a tool for urban governments to raise capital for similar projects²¹.

Finally, ensuring that city authorities are politically, fiscally and administratively autonomous and accountable is a critical step towards making sure that funds are both raised and spent in a manner that is sustainable and representative of the needs of their constituents. As Broadway and Shaw (2009) explain, political decentralization—reflected through popular and competitive elections—ensure that local governments respond to local needs. Of equal importance, fiscal and administrative decentralization—measured through the financial and discretionary independence of local officials—enable local governments to raise and allocate funding towards sustainable and inclusive investments.

Interestingly, Ivanyna and Shah (2012) have developed an interesting index of “closeness” of local decisionmakers to their people and show that the countries in which decisionmakers are closest to their people tend to be also those that have successful cities. In order, these are Denmark; Switzerland; Sweden; Finland; United States; Norway; Iceland; Japan; Hong Kong; Singapore; Austria; Korea and Canada.

Developing countries are also pioneering innovative ways to bring local citizens closer to urban investment decisions. In Brazil, a legal mandate requires popular participation in determining municipalities’ capital expenditures (usually comprising between 5 and 15% of total budgets²²). This participation takes many forms, ranging from budget presentations to direct involvement of citizens in allocating capital. Since its introduction in Porto Alegre in 1989, this mandate has proven a powerful mechanism promoting political inclusion and economic prudence, and its successes have inspired similar policies in almost 180 Brazilian municipalities, as well as cities in Argentina, Uruguay, Peru, Ecuador, Colombia, Bolivia, Mexico, and Chile.

²⁰ United Nations Environment Program, 2012

²¹ OECD 2012

²² Serageldin et al 2008

Conclusion

The ideas and examples outlined above are intended to highlight practices that have helped cities in their efforts to create inclusive and sustainable economies and to finance their investments. The principles of inclusiveness and sustainability discussed above are important goals in and of themselves, but research and experience also show that they provide a critical foundation for the economic success of cities. Cities around the world are proving that the most effective urban policies are often those that address multiple problems simultaneously. For example, green infrastructure investment can raise city revenue through carbon financing, congestion fees or green bonds, and financing mechanisms for poor communities can help raise private capital or central government support while empowering local citizens to provide greater input into the investment decisions affecting their own lives. Ultimately no single development strategy can be applied to cities everywhere. Long-term planning must take into account the current state of both development and decentralization within each nation. Taken together, the examples in this paper provide some insights into practices that can sustain cities into the future.

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