The Impact of the U.S. Housing Bubble and Crisis on the Process of Urban Sprawl in the Phoenix Metropolitan Area

Diploma thesis

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Abstract

The Phoenix metropolitan area which most notably emerged after World War II represents the second wave of U.S. urbanization. Fuelled by increasing automobile use, the invention of air-conditioning and the settlement of military air bases and its associated industrial manufacturing, Phoenix became one of the fastest growing regions in the U.S. in terms of population and economic growth. The resulting urban development pattern can be characterized by excessive suburban growth and low-density single-family housing at the urban fringes. Thus, the region has been blamed regularly for its unsound and unsustainable sprawling development. The seemingly unlimited amount of open space has provided the region with reasonable housing prices and has attracted more and more residents. This rapid development of suburban areas has benefitted from federal housing policies since the Great Depression which preferred single-family development in suburban jurisdiction. Since the 1990s, lenders and loan companies have developed a huge variety of “exotic” loans and mortgage products in order to provide financial means even to residents with less or none equity, triggering a tremendous demand for single-family housing and instigated an unreal appreciation of housing prices in the early and mid 2000s which was crucial for recent suburban growth in many parts of the United States. After the burst of this bubble, real estate markets all over the country came down to earth and foreclosures have become the rule rather than the exception. The Phoenix region was no exception either, but one of the worst examples of declining real estate prices and countless foreclosures in the entire United States. During this boom and bust period, excessive suburban growth have been affected tremendously. While the housing boom enforced the new construction of single-family units at the urban fringes, the subsequent meltdown stopped this development almost entirely.

Key words: Housing bubble/crisis, suburban growth, urban sprawl, Phoenix metropolitan area
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1 Introduction

The financial crisis, which hit the world in 2008, has often been considered as one of the worst recessions after the Great Depression. Bailout packages, which are supposed to help banks and even entire nations to survive the recent crisis, have dominated the mass media for the last few years. However, the local and even the personal dimensions of this crisis fade into obscurity when we consider the efforts to rescue the global economy. Particularly those people, who suffered, and still suffer from this economic breakdown, often go unheeded. The U.S. subprime crisis starting in spring of 2007 precipitated many local housing markets into ruin and left millions of Americans with nothing, since they lost their homes, mostly due to foreclosure. Although these initiating events started as far back as four years ago and the scope of this housing crisis has grown into a financial crisis of global scale, the consequences for local housing markets and homeowners are still present. “A record 2.87 million properties got notices of default, auction or repossession in 2010, a 2 percent gain from a year earlier (...)” (cf. BLOOMBERG 2011). And even forecasts do not bolster and reveal that the crisis is far from coming to an end. BLOOMBERG further announces that foreclosures will rise by another 20% in 2011 compared with the foreclosure record in 2010.

Apart from the personal consequences, this housing crisis has had implications for the urban development of certain markets. Particularly the growing housing bubble caused a tremendous building boom all over the United States. Single-family units experienced a gigantic price appreciation and reached their all-time peak in many American markets. Within one decade many local housing markets experienced unprecedented ups and downs in price. It is obvious that these extreme price fluctuations have left their marks in the urban form. Thus, the question arises, how urban growth was affected by these conflicting developments.

Several regions in the United States have been hit harder than others. Particularly Florida, southern California, Nevada and Arizona experienced unprecedented appreciations of housing prices and an amazing downturn when the bubble burst. One of those suffering regions is the housing market of the Phoenix MSA¹, without doubt the major market in Arizona. As a typical southwestern region, the market revealed a tremendous rise of real estate prices. The median price for a new single-family home rose by 96% from

¹ Phoenix MSA is short for Phoenix-Mesa-Glendale metropolitan statistical area. See chapter 5.2 for detailed explanations of the MSA concept.
2000 until 2006, the prices of resale homes rose by even almost 120% during the same period. Consequently, the FORTUNE MAGAZINE classified Phoenix together with six other U.S. cities as “dead zone” in May 2006. This classification is due to the enormous increase of housing sales prices. While a 5% price increase had been registered in 2002, home prices rose by 40% in the fourth quarter of 2005, the biggest increased out of the six “dead zone” cities. Average home prices were 28% above the estimated fair value (cf. FORTUNE MAGAZINE 2006). Other jurisdictions in the metropolitan area revealed even higher price appreciations: Scottsdale noticed a 150% price increase for new homes and a 138% increase for resale homes, and in Fountain Hills new home prices rose by 258%. The entire region was affected by this bubble and experienced a tremendous single-family building boom.

The extreme price appreciation and the concomitant construction boom are only one reason for the relevance of examining the housing bubble and crisis and the impact on the process of urban growth in this region. A more evident reason is connected with the region’s historical urban growth pattern. Like many other southwestern regions, Phoenix grew in a low-density pattern dominated by single-family housing. KOLANKIEWICZ & BECK examined the nation’s “worst sprawlers” and ranked the Phoenix urbanized area 9th among all urbanized areas of the United States (see Fig. 1).

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**Fig. 1:** The ten worst U.S. sprawlers

Source: Own chart based on data of KOLANKIEWICZ & BECK 2001
This growth has been determined by a tremendous population increase. From 2000 until 2009 the population of the Phoenix-Glendale-Mesa MSA increased by 33.11%. This makes it the 11th fastest growing metropolitan area in the nation. Considering only metro areas with more than two million inhabitants, the Phoenix MSA is even the fastest growing metropolitan area in the United States (see Tab. 1).

This population growth refers predominantly to single-family homes. Since the single-family home is the predominant housing type in the Phoenix MSA and thus has contributed a lot to excessive urban growth, the question arises, how this process has developed during the building boom and the following breakdown.

*Tab. 1: Population growth of MSAs over two million inhabitants*

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Phoenix-Mesa-Glendale, AZ</td>
<td>33.11%</td>
<td>3.21%</td>
<td>4'364'094</td>
</tr>
<tr>
<td>Atlanta-Sandy Springs-Marietta, GA</td>
<td>27.87%</td>
<td>2.75%</td>
<td>5'475'213</td>
</tr>
<tr>
<td>Riverside–San Bernardino-Ontario, CA</td>
<td>26.41%</td>
<td>2.59%</td>
<td>4'143'113</td>
</tr>
<tr>
<td>Orlando-Kissimmee–Sanford, FL</td>
<td>25.69%</td>
<td>2.54%</td>
<td>2'082'421</td>
</tr>
<tr>
<td>Dallas–Fort Worth–Arlington, TX</td>
<td>24.08%</td>
<td>2.43%</td>
<td>6'447'615</td>
</tr>
<tr>
<td>Houston–Sugar Land–Baytown, TX</td>
<td>23.80%</td>
<td>2.40%</td>
<td>5'867'489</td>
</tr>
<tr>
<td>San Antonio–New Braunfels, TX</td>
<td>20.52%</td>
<td>2.11%</td>
<td>2'072'128</td>
</tr>
<tr>
<td>Sacramento–Arden–Arcade–Roseville, CA</td>
<td>17.63%</td>
<td>1.80%</td>
<td>2'127'355</td>
</tr>
<tr>
<td>Denver–Aurora–Broomfield, CO</td>
<td>16.32%</td>
<td>1.70%</td>
<td>2'552'195</td>
</tr>
<tr>
<td>Portland–Vancouver–Hillsboro, OR–WA</td>
<td>15.79%</td>
<td>1.65%</td>
<td>2'241'841</td>
</tr>
<tr>
<td>Average of all MSAs over 2,000,000 inhabitants</td>
<td>12.01%</td>
<td>1.23%</td>
<td>4'685'671</td>
</tr>
</tbody>
</table>

As implied above, the main objective of this study is to explore the impact of the recent housing price fluctuations on the process of urban sprawl in the Phoenix MSA. The housing bubble prior to 2007 and the subsequent housing crisis have been taken into account. This leads to the major question of this study.

*How has the housing bubble and crisis affected the process of urban sprawl in the Phoenix metropolitan statistical area?*
To answer this question a temporal approach has to be chosen to examine bubble and crisis separately, since it might be assumed that both phenomena have had different impacts on the region’s suburban growth. It is believed that the bubble prior to 2007 aggravated the process of excessive suburban growth, whereas the crisis stopped, or at least slowed down, the process. A bit vague is the effect of foreclosures. Although the entire metro area has been heavily affected by foreclosure, it is, however, not clear whether foreclosed properties have revealed a distinctive spatial pattern.

Hence, four sub questions have been formulated, each as a component to answer the main question.

1. Did the bubble enhance the process of suburban growth?
2. Which jurisdictions have suffered most from the housing crisis?
3. Where has single-family construction declined most after the breakdown?
4. How is suburban growth expected to develop in the future?

The analysis of these sub questions is meant to reveal the distinctive character of both, bubble and crisis, and their impact on the suburban development of the Phoenix metropolitan area. After answering each question individually, the results will be summarized in order to draw a conclusion regarding the main question.

Before making an analysis, comprehensive background information shall be given. Thus, chapter 2 illustrates the theoretical discussion about urban sprawl, its reasons and consequences. The third chapter focuses on the character of the current housing crisis by giving an overview of its history, its consequences and the regional differences that have occurred. These chapters shall be the basis for further study. Chapter 4 introduces the study area and demonstrates how the region has been affected by extensive suburban growth as well as by the recent housing bubble and its subsequent breakdown. The goal is to emphasize the relevance of connecting both developments before entering the empirical analysis in chapter 5. Here, the research questions will be answered separately by analyzing real estate data and expert interviews. The analysis focuses on the examination of newly constructed single-family units to bridge the housing bubble and crisis and the process of urban sprawl. Finally, chapter 6 summarizes the results and comments on their possible
implications as well as the prospective development of the region with regard to suburban development in the post-crisis era.

2 The process of urban sprawl

The term *urban sprawl* was first used by the American planner Earl Draper in 1937, when he talked about the unaesthetic and inefficient development of American cities (cf. SIEDENTOP 2005, p. 27). That was the beginning of the discussion of unaesthetic and unsound urban development, which was dealt with at first among academics and researchers. While the postwar debate on sprawl was mainly rhetoric and closely connected with attacks on mass culture and suburbia in general, which often was denounced for its missing culture and social life, the discussion gained more depth in the 1970s, when many southern and southwestern cities of the United States started to prosper and to grow rapidly. A scientific exploration by quantitative means and a statistical analysis of the causes and impacts emerged. By 1950, one out of four Americans lived in the suburbs; by 1970, as many as two out of five. Subsequently, the suburban population accounted for more residents than central cities. Since 1980, more than 90% of metropolitan growth has occurred outside the city centers. From 1980 until 2000, the U.S. population grew by 24%, while urbanized land grew by 50% (cf. KLEINBERG 1995, p. 37; KNOX 2008, p. 42).

Sprawl was classified as the most consumptive residential development pattern in terms of space, natural resources and economic means. A broader public discussion began to thrive, leading to vast movements and anti-sprawl campaigns in the 1990s which were supported by private companies like the Bank of America (cf. TEAFORD 2008, p. 189). TEAFORD indicates that sprawl is nothing new, since even in ancient times those who could afford it, tried to escape the city (cf. ibid, p. 195). Even if the phenomenon itself is not new, the pace and scope of outbound urban growth and land consumption beyond urban fringes surely is.

Thus, it is hardly surprising that urban sprawl has even become a major political concern recently. Several U.S. states like Oregon, New Jersey and Tennessee have adopted anti-sprawl legislation and in 1998, 240 election ballots nationwide were sprawl related (cf. BRUECKNER 2003, p. 1).
Although sprawl seems to be endemic to the United States, since the debate has been most active and the anti-sprawl campaign has become an organized movement, urban sprawl is discussed all over the globe, in particular in England, Canada, Australia and continental Europe (cf. BRUEGMANN 2005, pp. 454-457).

What characterizes this phenomenon that seems to divide the American nation when it comes up for discussion? At all levels of society the topic of urban sprawl is subject to controversial political, scientific and public discussions. Hence, the goal of this chapter is to summarize the discussion, taking account of the main characteristics and features of urban sprawl, its causes and consequences. Finally, this chapter discusses the concept of suburban single-family housing, since it is of major importance for empirical analysis later on.

2.1 Definition and general characteristics

As illustrated above, sprawl is currently one of the hottest topics when it comes to urban development in the United States. In terms of its relevance it appears ironical that the term “urban sprawl”, after more than seven decades of research and public discussion, still lacks a tight and generally accepted definition.

“Urban sprawl is like pornography. It is hard to define, but you know it when you see it.”
CERVERO 2000, p. 5

As imprecise and lax this quotation is, as imprecise and manifold is the discussion of the concept of urban sprawl. Even if it is generally understood, detailed definitions are drawn up depending on the subject, the focus and the intent of the individual researcher, not least on the author’s personal attitude towards sprawl. Hence, a short overview of different definitions is given.

“Sprawl is a pattern of land use in an urbanized area that exhibits low levels of some combination of eight distinct dimensions: density, continuity, concentration, clustering, centrality, nuclearity, mixed uses and proximity.”
GALSTER ET AL 2001, p. 685
“...unplanned, uncontrolled, and uncoordinated single-use development that does not provide for an active and functional mix of uses and/or is not functionally related to surrounding land uses and which variously appears as low density, ribbon or strip, scattered, leapfrog or isolated development.”
NELSON ET AL 1995, p. 1

“...uncontrolled development of land situated on the outskirts of America’s major cities.”
CALLIES, FREILICH & ROBERTS 1999, p. 597

“...unplanned and extensive urban expansion with less construction density...”
SCHEMIONEK 2006, p. 29

“...the movement of people (especially middle-class families) and jobs from older urban cores to newer, less densely populated more automobile-dependent communities...”
LEWYN 2000, p. 295

The above definitions illustrate that urban sprawl is defined either as a particular land-use pattern, a certain growth pattern or even as associated with inner-city migration. Furthermore, some definitions see sprawl as a condition or a process. BHATTA found further definitions which refer to a particular land-use behavior or a consequence of land-use behavior (cf. BHATTA 2010, S. 8).

SIEDENTOP points to the different interpretations of urban sprawl with regard to either density characteristics, deconcentration of urban functions or sprawl as morphologic process. Not only does this lack of an accepted definition exacerbate a theoretical discussion but it hinders the development of recognized means to measure essential characteristics of urban sprawl. This multi-layered phenomenon prevents sprawl to be explained with one approach (cf. SIEDENTOP, 2005, pp. 23-24).

Confusion becomes even greater when we look at the remarks by KNOX and BHATTA. Both highlight the fact that there is not only one form of urban sprawl, but a whole bunch of different manifestations: leapfrog sprawl, relatively compact polycentric sprawl, dispersed sprawl, relatively dense and evenly sprawl, low-density continuous development sprawl and ribbon development sprawl (cf. KNOX 2008, p. 43; BHATTA 2010, p. 12).
Furthermore, most definitions mingle characteristics, causes and consequences of sprawling development, and thus do not contribute to a distinct understanding of the phenomenon.

Considering this rhetoric and conceptual wilderness, it seems appropriate not to define sprawl by means of a tight definition but to approach it by certain features, characteristics and terms which are generally accepted and tend to appear in a majority of definitions. Terms like “leapfrogging”, “scatter”, “low-density”, “single-use” and “unplanned” are dominant attributes, when discussing excessive urban growth. In the following, these attributes are briefly explained in order to narrow down the excessive rhetoric debate on urban sprawl.

“Low-density” is used to illustrate housing density and primarily population density. This characteristic stems from the dominance of single-family houses which shape the picture of suburban areas. Since a person living in a single-family home accounts for more land than a person in a multi-family or apartment building, the population density is much lower than in central areas dominated by multi-story buildings.

The “scattered” appearance of growing urban areas is caused by the lack of planning authorities and the dominance of developers who buy land in the urban fringes around the urbanized areas and start to develop this land. Due to the fact that suburban development does not follow an urban master plan, these new subdivisions are developed all around the urbanized areas, depending on the availability of cheap land. The market influence is often more apparent than that of the local planning bodies. Closely connected to this scattered image, and certainly a catalyst for this development, is the “leapfrogging” of vacant parcels between the developed boundary of an urban area and new developments (cf. HEIM 2001, p. 246). The logic of this strategy is simple and follows profit maximization: the further a parcel of land is away from the urban boundary, the cheaper it is. Thus, developers prefer to skip parcels adjacent to developed structures to buy cheaper land beyond the urban fringes instead. This leapfrog development has one major disadvantage for urban growth because skipped parcels remain vacant. They are often too small to built new subdivisions on and they are more expensive since there exists already an infrastructure though rudimentary it may be, as the development built beyond these vacant areas had already taken care of roads, sewers etc. Thus, the scattered picture of an urban area is intensified. BOGART describes this development as if “people and buildings have been randomly distributed over the landscape” (BOGART 2006, p. 15).
“Single-use” zoning is another characteristic feature of sprawling urban development which allows only the development of one urban function. Entire subdivisions are restricted to residential use and lack commercial, cultural or political facilities. Thus, residents of those subdivisions are highly car-dependent to fulfill their daily needs (cf. LEWYN 2000, p. 300).

The attempt to summarize the above remarks leads to the definition of urban sprawl as a scattered, low-density, single-use development pattern at the urban fringe. This definition remains simple, since it considers only the noticeable appearance of sprawling urban regions and disregards reasons and consequences of this structure. Even if causes and impacts have to be excluded from a distinct definition, they are useful if we try to understand the emergence and the extent of urban sprawl, and for that reason will be illustrated subsequently.

2.2 Reasons for the emergence of urban sprawl

The reasons of sprawling growth are at least as manifold as are the attempts of defining it, although there seems to be broader agreement on the reasons for it than on a decisive definition as can be seen in most of the literature.

KOLANKIEWICZ & BECK quote population growth and increased per capita land consumption as the two main drivers for the sprawling consumption of undeveloped land (cf. KOLANKIEWICZ & BECK 2001, pp. 17-18). These factors certainly contribute to the excessive outward growth of cities, but are only the end of a chain of decisions made by various actors. In this context the question arises why urban growth, which has occurred since the 1970s, particularly in the southern and southwestern states of the United States, does not occur in the inner city by increasing the population density and the use of high-rise construction, in other words, why it occurs in a horizontal rather than a vertical way?

SIEDENTOP’s approach is more suitable, since he classifies the causes of sprawl in two main categories: political decisions as well as consumer preferences both fuel the process of excessive urban growth. More generally, reasons for sprawl are distinguished between supply-related and demand-related factors. This classification is appropriate, since the latest housing price fluctuations had been triggered by a combination of consumer demand as well as by decisions of political bodies.
BECK, KOLANKIEWICZ & CAMAROTA and BHATTA mention a huge variety of reasons for sprawl taking into account both perspectives (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, pp. 40-46; BHATTA 2010, pp. 18-28). However, their remarks reveal no classification and thus are assigned to one of the two categories which will be discussed separately.

2.2.1 Consumer preferences as a driving force of urban sprawl

Induced by the American Dream, one of the most desirable goals of U.S. citizens is the ownership of a single-family house on a huge lot. It is obvious that the fulfillment of this dream is impracticable in the dense cities where available lots are too small and bigger parcels of land are not affordable for most residents. Besides this pull-factor the main reasons for residents to move to the urban fringe areas are push-factors, triggered by inadequate social infrastructure in central areas. One phenomenon is school-flight from cities, particularly among white middle-class residents. In the United States, local school districts are responsible for raising much of their financial resources needed to cover costs out of local taxes. Since inner-city districts have less tax revenues available compared to suburban areas, their schools are assessed as inferior. Parents living in central cities have three opportunities: first, they could send their children to public urban schools with a majority of black and/or Hispanic people. In 1990, 17 large cities with majority white population had inner-city school systems in which more than 50% of pupils were black or Hispanic. The second opportunity is to stay in the cities and spend thousands of dollars for private schools. This might be a solution for families with only one child, but certainly impracticable for parents with more children. Thirdly, parents move to the suburbs to send their children to white middle-class dominated public schools and thus avoid inferior public urban schools as well as expensive private urban schools (cf. Lewyn 2000, pp. 299-300). Another push-factor is the high crime rate of inner-city areas. This environment is not appropriate for most parents to raise their children and hence they move to the secure suburbs. The last two reasons in particular, and insufficient public services in general, have caused the process of “white-flight”, describing the massive outward migration of white middle- and upper-class families to suburban jurisdictions, while blacks and other minorities started to integrate in the inner cities. Another push-factor, even if it is a minor one, can be seen in the event of 9/11 which called the future of high-rise living

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into question. People started to feel insecure and vulnerable not only in high-rise buildings, but in high-density areas in general. Hence, outmigration to less densely populated areas seems to be a consistent trend. Here, the threat from biological, chemical or radioactive weapons seems to be less serious than in crowded cities.

The white-flight has been facilitated by a rising affluence. The decision to move outwards has become easier just because the majority of the white middle-class workforce can afford it. Moreover, household size has declined during the last few decades: from 1970 to 1990 the average household size decreased from 3.14 to 2.65 people per household. This is a 15.6% reduction. In the end, the ratio of households per population has decreased and more houses have to be built. Furthermore, a lower population density takes up additional space. Subsequently, more land must be transformed for urban use.

Another reason for the expansion of sprawling patterns is the attitude of “NIMBYism”\(^3\). This term was created because of the suburbanites’ rejection of new projects (residential, commercial and industrial) in the vicinity of their properties. Due to their desire for low-density living they often fear that their properties lose its value. The consequence of this attitude is the construction of major projects further out where land is still undeveloped.

Housing investment, understood as buying houses to create retirement revenues, is also blamed for increased outward urban growth. People who can afford it buy a second or even a third house at the urban fringes to let it for a solid retirement income.

Last but not least, even the private business sector has changed its preferences settling more and more in suburban areas where they create corporate campuses. A growing number of corporations have opted for new headquarters in the suburbs, many in park-like campuses, in contrast to the congested city headquarters. Corporate executives favor suburban locations convenient to their homes and tap the supply of educated middle-class employers who can staff their offices (cf. TEAFORD 2008, pp. 37-38).

\(^3\) “NIMBYism” = Not In My Backyard.
2.2.2 Sprawl incentives by political decisions

In addition to consumer preferences a number of decisions made by officials, planners and developers fuel the process of urban sprawl. These decisions touch more than just the real estate markets and make it easier for residents to settle in outlying areas. Since the Great Depression and the subsequent wave of foreclosures the federal government has adopted a number of regulations which facilitate homeownership. These incentives included especially facilities in lending policy by insuring lenders against defaults, extending mortgage payback periods for buyers, decreasing interest rates and increasing maximum mortgages. All these stimuli have helped to prevent a lot of foreclosures and have boosted the single-family housing market by making loans more affordable. Today, like in the past, the housing sector contributes a lot to macro-economic development in terms of GDP as well as in terms of employment. In 2007, residential construction, remodeling, rental payments, operating costs and expenditures for furniture etc. accounted for 23% of the U.S. gross domestic product. In 2008, residential construction accounted for 4.9 million jobs, $368 billion in income and $142 billion in tax revenue (cf. SCHWARTZ 2010, p. 4, pp. 51-57). Thus, officials were, and still are, highly interested to keep this part of the economy running.

In general, suburbs receive more public subsidies for development than inner cities. These subsidies are direct, like tax incentives for developers and builders, but are also offered indirectly by providing infrastructure. An example of public subsidies outside the urban core is the expansion of the freeway and interstate highway system which has increased the accessibility of remote areas and facilitated spatial dispersion. Following the Interstate Highway Act of 1956, 40,000 miles of interstate and local highways were built, 5,000 miles located in metropolitan areas (cf. KLEINBERG 1995, p. 129). Such a fully developed highway system makes daily commuting easier and provides less expensive and time consuming commuting. Due to the lack of taxation, petrol prices are cheap, which in turn supports commuting. This fact, however, has to be reconsidered because petrol prices have increased tremendously during the last year.

Another means which fosters sprawl is the use of certain zoning ordinances. Many cities prohibit mixed-use zoning. This refers to the mixing of residential use with other urban functions as well as to the mixing of residential forms itself. The use of exclusionary zoning is a common strategy to avoid high-density residential forms like apartment buildings. By
determining minimum lot size, minimum house size and even the number of bed- and bathrooms, it is not only that these undesired types of housing but also new single-family developments are kept out of the suburbs because the remaining vacant parcels are too small to accommodate new developments. Suburbanites want vacant parcels to stay undeveloped to provide the desired low density of construction and population. Subsequently, new developments have to move further out. Another effect of these zoning regulations is reduced housing affordability. As minimum lot size is required, fewer houses can be built per acre, housing affordability declines and less affluent people with a desire for single-family housing are forced further out.

Another driving force of urban sprawl is the competition of jurisdictions for revenues. By attracting affluent residents, municipalities at the urban fringe allow high-class and low-density development and neglect useful growth regulations. This behavior is certainly backed by the lack of planning authorities and the major role of developers in exploiting new land, following the logics of profit maximization and satisfying consumer demand. As a consequence of the fragmentation of land-use planning among certain municipalities developers are able to play off municipalities against each other, choosing the least restrictive community to develop their projects.

Speculation and expectations of land appreciation, too, are a catalyst of outward urban growth. Due to the fact that land at the urban fringes is withheld by speculators, new development has to skip these parcels and look for desirable parcels beyond them.

The freedom of choice for one’s housing location is provided by improvements in the communication infrastructure. This has facilitated decisions to move to more remote areas, allowing home employment and more flexible work.

Another major factor in the rise of suburbs is the broad availability of reasonable mortgages to finance the desired single-family homes. Since the 1990s many “exotic” loans have been available, enabling families with less or no equity to make their dream of a single-family house come true.

Government failure at all levels of urban renewal and revitalization can also be blamed for reinforcing urban sprawl. In particular, local government failed to offer alternatives to
suburban living and missed the chance to create a livable and sound inner-city environment for families (cf. FAINSTEIN & GREY 1997, pp. 29-31).

As indicated above, urban sprawl has a variety of reasons, combining consumer preferences and decision by officials and developers. Hence, political decisions creating sound urban development are needless unless residents are not willing to accept personal setbacks. It has become clear that urban sprawl is not only a question of urban planning, but one of widespread patterns of behavior and mindset.

2.3 Consequences of urban sprawl

The negative outcomes of sprawl, even if unintended, threaten the entire range of urban functions. They encompass social, economic and ecological issues as well as even aspects of public health. Most literature tries to attribute consequence to one of these main categories. This approach is, however, not satisfactory for a comprehensive analysis of sprawl impacts, since particularly social and economic issues overlap and cannot be looked at in isolation.

Hence, the three most highlighted problem areas, i.e. rising disparities between inner cities and suburbs, issues of individual transportation and land-use change, are used to illustrate social, economical as well as ecological costs imposed by sprawl on cities and their environment.

2.3.1 Disparities between inner city and suburb

Surely one of the most cited impacts of sprawl is the increasing disparity between the city center and suburban areas (cf. BHATTA 2010, p. 30). These disparities manifest itself in a broad variety of phenomena. One of these phenomena is an increased social and ethnic segregation. Due to the fact that affluent, mostly white middle-class residents abandon the inner city to move to the suburbs, a bigger share of less wealthy minorities remains in these areas. Since these residents lack the appropriate financial means, the tax base of inner areas is declining rapidly. This imposes a variety of burdens on inner-city districts. The inability to maintain a sound infrastructure is often highlighted as the main issue of these areas. This inability refers particularly to social and public services like schools, public transport, police and fire service or waste disposal. The disparity gets even worse as inner-city residents have to pay for a more complex suburban infrastructure (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 30). In
general, the per capita costs to maintain infrastructure and services in low-density areas are much higher as compared to denser areas in the city center. Since these costs are financed with local taxes, which do not differ by location, remote areas are subsidized by central-city residents. In the end, inner-city areas will become poorer and do not have sufficient financial means to prevent the deterioration of their neighborhoods, while suburban areas thrive, financed by inner-city funds. The consequence of this disparity is the outmigration of residents. From 1950-1990 the metropolitan population in central cities fell from 64% to 38% (cf. WASSMER 2002, p. 1309).

But not only the exodus of affluent residents, but also the subsequent outmigration of commercial activities curbs the tax base of central areas. The retail sector in particular has left the inner-city areas to settle in suburban settings close to the newly emerging suburban areas. After World War II the central business district (CBD) revealed a share of metropolitan retail sales of 25%. This share went down to 6.2% in 1977 and 2-3% in 2000 (cf. SCHWARZ 2000, pp. 29-30). The redistribution of retail activities and retail employment has a major impact on the place where people work and where they live and causes two-way car commuting. Since high-skilled jobs are still located in the CBD, low-skilled jobs move to suburban areas. Thus, suburban residents have to commute to the city center, while inner-city residents have to commute to suburban areas. For low-income workers without cars, this relocation of low-skilled jobs has a major disadvantage, since public transport is too time consuming or even non-existent. They need a car to get to their workplace, but they need a job to afford a car.

2.3.2 The issue of individual transport

Besides the social aspects of commuting there are other concerns of transportation emerging. Urban sprawl is not just facilitated by individual transportation and governmental subsidies for high- and freeways, but implies transport-related consequences for individuals and communities. In his study about Memphis, CISCEL illustrates the costs that residents have to raise for individual transportation (cf. CISCEL 2001, pp. 408-410). In 1990, 91.8% of the Memphis’ workforce used individual transportation and the average worker commuted 21.6 minutes. The total costs of this commuting amounted to $4.9 million per day and $1,278 million per year. He compared city commuters with suburban commuters and concluded that the latter ones tend to have slightly longer commutes and spend more money on commuting. While city commuters spent $2,696 per year on commuting, suburban
commuters had to spend $2,889. In general, the average worker had to spend 10% of his or her annual income in commuting. It becomes evident that urban sprawl does not only increase the cost for those who can afford it but for all those participating in individual transport. Even if cars are more economical, the gains are used up by longer commutes due to widespread daily needs. It is not surprising that sprawl increases the number and the length of daily trips. The average American household spent $5,666 on car-related expenditures in 1995 (cf. LEWYN 2000, p. 308). Families with a higher number of teenage children have to spend even more, as they tend to own more cars.

Apart from these economic issues, transportation causes further problems. The advantage of recreation by living in a green, clean and calm environment is shattered by more time spent in the car for commuting and its subsequent physical stress. “Road rage”\(^4\) has increased tremendously and is meanwhile indictable by a specific adopted law. As a matter of fact motor vehicles are responsible for crashes and pedestrian injuries triggered by inattention due to the stress mentioned. The additional time spent in the car diminishes the time for social interaction. Hence, sprawl has to be blamed for a decrease of social interaction and paves the way towards increasing anonymity and weaker neighborhood solidarity. Furthermore, this dependency on automobiles has promoted obesity and hypertension. Every half additional hour spent in a car increases the likelihood of obesity by 3% (cf. TEAFORD 2008, pp. 193-194).

In addition, the ecological threat caused by this car dependency is a serious issue. The rising number of congestions has increased the amount of emitted greenhouse gases tremendously leading to smog and acid rain. Solving the problem of congestion is a vicious cycle. Congestion motivates planners and politicians to expand the capacity of roads, thus facilitating more vehicles and subsequently even more congestion and causing even more greenhouse gases (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 29). Although cars have become more energy-efficient and less polluting, the time spent in traffic jams and the additional driven miles consume most of the energy savings.

The black surface of additional roads that absorbs more heat can get 50-70°F (28-39°C) hotter than its surroundings (cf. BHATTA 2010, p. 32). The lack of vegetation providing shadow and

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\(^4\) "Road rage" is the aggressive behavior evoked by traffic jams. The scope of this behavior ranges from insults to murder.
evapotranspiration contributes to this warming up which, in turn, causes higher energy consumption by using fans and air-conditioning.

2.3.3 Land-use change

The third serious outcome of sprawl is the land consumption beyond urban fringes to accommodate new urban development. The U.S. lost an area as large as the combined land mass of Maine and New Hampshire, or as large as South Korea, to urban development between 1982 and 1997. The rural land consumption in the 1990s amounted to approximately 2.2 million acres per year. So each year an area nearly as big as the Yellowstone national park\(^5\) was converted to urban development. If this rate continues until 2050, the United States will have lost an additional area almost as big as Sweden\(^6\) (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 19). The consequences are manifold. One million acres of valuable farmland are lost every year. This loss of farmland can be seen both from an ecological and economic viewpoint. Apart from the fact that valuable land for recreation is destroyed, economical pressure is put on the agricultural sector. In particular around metropolitan areas, where in some regions two-thirds of fruits and vegetables are produced (cf. ROME 2005, p. 446), transformation of agricultural land reduces employment. Not only jobs, directly producing agricultural goods, but all associated industries like seed and fertilizer production, are threatened. Less agricultural production means less demand for agricultural services and suppliers, and subsequently job cuts.

Another effect of excessive land consumption is the threat of wildlife and ecosystems by altering their patterns and fragmenting habitats. One out of every three endemic species is threatened by land consumption. Caused by sealing, rainwater and snowmelt cannot seep to groundwater. Subsequently, there is an increasing risk of flood hazards, particularly in coastal and humid regions. Another environmental threat is increased water consumption. The increase of suburban lawns can be blamed for a big share of this consumption. By 1980 the acreage of residential lawns was four-fifth the size of Pennsylvania. Water use for lawns was 150 times greater than for all other household uses. Another impact of increased lawn size is the use of chemical fertilizers and pesticides to keep away insects and bugs. The runoff from lawns has become a major reason for lake eutrophication and groundwater contamination (cf. ibid, p. 447).

\(^5\) The Yellowstone national park has an area of 2,219,791 acres.

\(^6\) Sweden spans an area of 173,745 square miles.
The energy efficiency of remote single-family land use is unsustainable and has to be asked into question in a general way. The further an area is away from the generator, the more energy has to be used for the mere distribution and the more energy has to be produced. Thus, remote subdivisions consume more energy, even if their residents would use less energy for their day-to-day life.

The land-use change from open land or farmland to monotonous single-family subdivisions is blamed for its architectonic bareness. Neighborhoods with a unique character are not so easy to build and thus would be less affordable. Hence, developers decide to build entire subdivisions using prefabricated construction. One subdivision looks like the other and entire regions perish in homogeneity and stuffiness (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 33).

This compilation of sprawl outcomes is not intended to be exhaustive. It is just a brief overview of the main issues of sprawl and can be elaborated on, whatever the focus may be. However, it illustrates the enormous complexity and scope of urban sprawl.

Apart from all these negative impacts which are dominating the discussion of sprawl, some positive aspects should at least be mentioned. Proponents of sprawl often refer to consumer demand and the freedom of choice to move one’s home wherever they want to. This argument is backed by nearly inexhaustible land. The amount of developed land accounts for only 4-5% of the American land mass (cf. TEAFORD 2008, p. 194). To stop access to this land would mean to stop this freedom. Another argument refers to the affordability of housing. Considering continuing population growth rates and consistent demand the prevention of expanding single-family subdivisions would lead to a cut in housing supply and increased housing prices which would make housing less affordable and more exclusive.

As illustrated above, urban sprawl contradicts the original motivation of moving to suburbs. By emphasizing the positive effects of living in a suburban setting, namely to feel relatively safe in a green environment, most proponents forget to mention the other side of the coin. Long and expensive commutes, endless traffic jams, increasing energy expenses and monotonous neighborhoods are only some of the negative outcomes of urban sprawl.

Using the example of suburban-city disparities, being reasons as well as consequences of urban sprawl, it becomes clear that sprawl has become a self-sustaining cycle of inner-city
deterioration, outmigration of affluent residents and declining inner-city tax bases needed to maintain public and social services. Thus, it seems difficult to find the right starting point to reverse this process and to achieve a more sustainable urban growth pattern.

2.4 Growth management

The importance of urban growth management has been implicitly dealt with in the remarks above. Strong movements have come into existence to counteract the incessant consumption of rural land for urban use. Approaches like “New urbanism” and “Smart growth” are more than simple slogans, but are taken seriously both by academics and in public discussion. Some strategies, which are suggested by these movements, are presented below.

2.4.1 Growth management approaches

One possible strategy to limit urban growth is the definition of “urban growth boundaries”. These are certain redline boundaries within which urban development might occur, while it is restricted outside of these areas. The goal is to limit growth to existing urban areas in order to create compactness instead of low-density development at the urban fringe. Furthermore, planners want to concentrate urban functions. Another positive impact is the retention of exurban land for agricultural use and recreation. Eugene and Portland in Oregon were the first American cities to adopt this approach (cf. DOWNS 1994, p. 196). Opponents of this approach complain about the declining affordability of housing and increasing real estate prices due to limitations of land for development. Housing in these areas would become exclusive and low and middle-income families would be discriminated.

Another important contribution to the containment of urban growth is the usage of infill development (cf. NELSON ET. AL 1995, p. 16). Lots that have not been developed yet, but have been leapfrogged, should be given preference before establishing new units on undeveloped land beyond the urban fringes. While the intention of this strategy is similar to the urban growth boundary approach by encouraging compactness and high-density development, the goals should be achieved by tax incentives instead of development restrictions.

Zoning regulations should be reconsidered as well. People are forced to use their car due to widespread daily needs. By encouraging mixed-use zoning, all urban functions can be
settled in the same area (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 52). As a positive consequence, people are less dependent on their cars and daily driving distances could be decreased. This would have a positive impact on air quality, less congestion and thus less time people have to spend in their cars.

In addition, development impact fees could contribute to less development outside existing urban areas. Vital public services (such as roads, water supply, sewers and schools) in newly developed areas should be financed with these fees. New development should pay for itself instead of tapping public financial means. This additional financial burden could keep developers from constructing new units in the countryside. HEIM, however, points to the fact that impact fees could cause just the opposite. Instead of paying the impact fees, developers move to jurisdictions which do not levy these fees, have less strict land-use regulations and are located even more remotely. Furthermore, these fees would be passed on to the residents. Hence, housing would become even more expensive and less affordable (cf. HEIM 2001, p. 257, 262).

Attention should be paid to inner-city revitalization in general. The goal is to attract citizens, especially high-income families, to move to the urban core and to avoid costly and land consuming single-family housing on huge lots in outlying areas. Apart from achieving urban compactness, this would counteract social and ethnic segregation and increase the tax base of urban jurisdictions.

All these different means and strategies, applied to encourage a new style of urban planning, can be summarized under the paradigm of “Smart Growth”. This approach encourages town-centered, transit- and pedestrian-oriented development which preserves open space. It is important to highlight that the goal is not to slow down or even avoid growth, but to oppose unplanned or poorly planned urban development at the urban fringes (cf. BECK, KOLANKIEWICZ & CAMAROTA 2003, pp. 51-55).

2.4.2 Factors limiting the implementation of growth management

Each metropolitan area in the United States consists of an extreme variety of political jurisdiction (cf. ROTHBLATT 1994, pp. 506-509).
Chicago: over 1250 governments, which makes it the most intensely governed region in the U.S.

Boston: over 100 cities and towns, 5 counties and dozens of school and special districts

San Francisco Bay Area: 602 units of government, 100 cities, 10 counties, and hundreds of special districts

Houston: 151 local governments, 13 counties, 110 cities, 18 school districts, 10 soil and water conservation districts

It is obvious that political fragmentation compounds decision making. As long as no regional government is established, consensus-building gets impracticable. This regional body would have to be equipped with authority and executive political power. This seems to be, however, a very hot topic. Local officials fear changes towards regional planning that would weaken their control or take away their office entirely (cf. GALE 1992, p. 431; DOWNS 1994 p. 189). In particular, suburban regulators fear loss of control over land use and tax revenues. Thus, they are not willing to give political power to regional bodies. They do not want to pay for problems in urban core areas. For suburbanites, deterioration and decay of inner-city areas are remote issues. Apart from that, suburban residents often fear that undesirable people could move into their neighborhoods and harm their property values. Due to rejection of high-density living by suburban residents, politicians feel compelled to refrain from growth management approaches.

The necessity of well-conceived urban planning is obvious. The interconnection of causes and consequences of urban sprawl is a challenging task for urban planners and officials. Political fragmentation combined with competition among jurisdictions burdens negotiations and effective planning becomes difficult. Although the process of urban sprawl is not entirely new, cities still endeavor to find solutions and incentives encouraging new ways of urban planning.

Different means of planning can be established to address different urban issues. But they all pursue the same overall goal: the creation of an effective way of urban growth management by containing excessive and poorly planned urban growth, but encouraging compact inner-
city development. The impact of effective urban planning goes beyond mere aesthetics or the preservation of undeveloped land. More important is finding a solution to the economic and social issues of core districts.

Urban planning and growth management are long-term tasks. People have to accept short-term setbacks as a price for long-run gains. One of the main tasks of metropolitan growth management will be to convince people of the benefits of growth management approaches. If people have a strong sense of solidarity with the entire system, they will be far more willing to support regional plans (cf. DOWNS 1994, pp. 183-185, p. 202).

A second necessity is the cooperation of all jurisdictions lying in a metropolitan area. Although local governments have a better sense for the needs of their citizens, urban growth management will not be successful and effective without regional planning bodies coordinating the requirements of the whole metropolitan area.

2.5 The single-family home

No other item captures the idea of the American Dream better than the detached single-family house. For most Americans, owning a single-family home represents pride, privatism and hard and busy work and constitutes one of their main goals in life (cf. SCHEMIONEK 2006, p. 31). As early as in the 18th century the single-family unit became the incarnation of middle-class housing. JACKSON describes it as "the most visible symbol of having arrived at a fixed place in society, the goal to which every decent family aspired" and as "a kind of anchor in the heavy seas of urban life" (JACKSON 2005, p. 207).

Its mere psychological importance for American citizens becomes even clearer when we consider presidential involvement. In 2002, former U.S. president George W. Bush addressed the topic of homeownership: "Homeownership is an important part of the American Dream. As President, I am committed to helping many more Americans achieve that dream. A home provides shelter and a safe place where families can prosper and children can thrive. For many Americans, their home is an important financial investment, and it can be a source of great personal pride and an important part of community stability (...). I call upon the people of the United States to join me in recognizing the importance of providing all our citizens a chance to achieve the American Dream" (BUSH 2002).
Even if BUSH addressed homeownership in general, he implicitly touched upon the American desire for single-family living, since multi-family housing or apartment buildings are not nearly as important for residential construction as the single-family house (see Fig. 2). While single-family construction in 1980 accounted for 56% of total building construction, it grew to 65% in 1990 and even 78% in 2005. Hence, the number of constructed single-family homes was on an all time peak in 2005 (cf. SCHWARTZ 2010, p. 14; WHEATON & NECHAYEV 2008, p. 6).

It is not just the mere number of new constructed homes, but the value of new units that has increased during the last few decades. The average value of a single-family home increased from $30,600 in 1940 to $119,600 in 2000, a growth rate of almost 400%. The relevance for a positive macroeconomic development is, thus, determined by both the number and the rising value of single-family units. Apart from its impact on the nation’s economy, the single-family home is of major importance for personal wealth, since the wealth of the average U.S. household consists of equity in residential property. The lowest 95% of the wealth distribution possess two thirds of their equity in homes (cf. CONGLETON 2009, pp. 287-288).

Apart from fulfilling living desires and its contribution to economic growth, the single-family detached house on a green lawn plays a major role in urban development. Not only that it has
become the symbol of white middle-class living in general, it is an essential feature of American suburban development in particular (cf. CLAPSON 2003, p. 52; TEAFORD 2008, p. 159). Hence, it determines urban growth more than any other type of housing.

A broad academic as well as public discussion addresses the impact of single-family living on the process of urban sprawl. Hardly any scientific literature dealing with the topic of sprawling urban growth fails to discuss the single-family home as one of the main catalysts for excessive suburban development. Even if this feature is not included in a specific sprawl definition, it can be found in every enumeration of sprawl causing factors (cf. NELSON ET AL 1995, p.1; BHATTA 2010, p. 25; BECK, KOLANKIEWICZ & CAMAROTA 2003, p. 42).

While nationwide annual housing starts fell during World War II from one million to less than 100,000 and reduced homeownership rate during the 1940s to below the level of 1900, post-war housing construction increased homeownership tremendously. From 1965 to 1995 it fluctuated between 62% and 64% and peaked at almost 69% in 2005. From 1998 to 2005 almost 500,000 renters switched to owning every year. The share of homeowners was 76.4% in suburban areas as compared to 54.2% in the city center (cf. WHEATON & NECHAYEV 2008, p. 11; TEAFORD 2008, p. 159; HALBERSTAM 1993, p. 134).

Furthermore, single-family living has become more extensive over the last few decades. While a unit had a ground plan of 1,535 square feet in 1973, the average single-family home accounted for 2,277 square feet in 2007. Three garage units are the rule rather than the exception in most suburban communities (see Fig. 3). In addition, energy consumption of each unit has increased since the percentage of air conditioned units has nearly doubled from 1973 through 2007 (see Tab. 2). Hence, suburban living can be blamed for negative environmental impacts.
In summary, the single-family house has a high significance for American society and economy. As a main symbol of the American Dream and American living it has a huge psychological relevance for U.S. citizens. It accounts for the biggest share of constructed units and thus is of major importance for the whole real estate industry. It is positively perceived by residents, builders and developers. In contrast, it is negatively connoted by academics and planners with regard to sprawling development and unsustainable excessive urban growth patterns.

The single-family house is a suitable item to measure excessive urban growth. In particular, the development throughout the last decade, with its tremendous increase in single-family
conclusion, but also an enormous fluctuation in housing prices and vast numbers of single-family foreclosures, raises the question of how urban growth has developed lately.

Before answering this question, a general overview on the housing bubble and its subsequent crash will be given, addressing reasons, consequences and regional differences in extent and scope.

3 Housing bubble and its subsequent crisis

Ownership of a single-family home is not only of psychological relevance to its residents but of major importance to the backing industries. Apart from value-adding industries like construction, furniture and other supplies, one of the most important actors on one’s way to homeownership is the housing finance system. In 2009, the amount of residential mortgages exceeded $11 trillion (cf. SCHWARTZ 2010, p. 51). Thus, it seems adequate to illustrate this system, since it was crucial for the occurrence of the housing bubble and its burst in the middle of the 2000s.

Following a short historical background of the housing finance system of the United States, the reasons and the extent of the recent housing price fluctuations, particularly throughout the last decade, are discussed.

When considering the causes of the housing bubble and its subsequent burst, public opinion tends to exclusively put the blame on lenders and developers for their greediness. It is not intended to play their contribution down, but to point to the fact that the roots of the real estate bubble can be traced back to decisions made subsequent to the Great Depression. Hence, the basis for the recent housing price development had been laid almost 80 years ago.

3.1 The U.S. housing finance system after 1930

The Great Depression posed quite a similar threat to homeowners as the recent housing crisis. Foreclosures occurred on massive scale. In 1933 more than 50% of the mortgages were default and about 1,000 properties were foreclosed every day (cf. JACKSON 1985, p. 193). In
1932, the Federal Loan Bank Act (FLBA) established a network of regional loan banks securing mortgages. By means of a $3 billion bailout package, the federal government refinanced a million default home mortgages. The mortgage lending system could be rescued and thousands of homeowners had been saved from foreclosure.

The salvation of the lending system was only one part of the consideration. The essential issue was to recover trust in the entire housing industry of the U.S., since new construction and mortgage lending went into a deep decline following the huge number of foreclosures. Hence, the whole housing finance system underwent a tremendous reorganization. The most important incentive was the creation of the Federal Housing Administration (FHA) in 1934 as part of the new housing program, called New Deal. The objective of the FHA was to restructure the way people could borrow money and to make loans more affordable and less risky. Therefore the FHA insured lending companies against mortgage defaults, as long as borrowers were able to satisfy the FHA’s loan criteria. However, the FHA did not insure the borrower (cf. KLEINBERG 1995, p. 104, pp. 111-113).

Prior to the Great Depression it had been very expensive to finance a house. Mortgages became due after two to eleven years, depending to the lender. The amount covered by the lender was hardly higher than 60% of the purchase price. Thus, most of the borrowers required a second or even a third mortgage to finance their home. After the downturn such environment had not been encouraging for people to spend their money on a new home. The FHA invented longer payback periods for mortgages of up to 25-30 years, higher loans that covered up to 93% of the property value and reduced required down payments to less than 10%. By insuring the lenders against mortgage default, interest rates decreased and made housing less expensive. Furthermore, the FHA adopted minimum standards for housing. The main purpose was to make sure that the properties were free of major damages that could diminish their value and thus could harm borrowers and lenders financial means (cf. SCHWARTZ 2010, pp. 53-54).

These incentives led to a massive suburban expansion. KLEINBERG concluded that “… the suburbs could not have expanded as they did during the postwar years without FHA” (KLEINBERG 1995, p.115). From 1937 until 1941 the number of housing starts increased by 81%. In 1940, FHA loans accounted for 40% of all issued loans (see Fig. 4) (cf. JACKSON 1985, p. 205). This housing boom was not disrupted by World War II and the postwar years.
From 1940 until 1960 the homeownership rate grew from 44% to 62%. Beginning in 1947, all through the 1950s, new construction exceeded 1.2 million housing starts each year, having its peak in 1950 with 1,952,000 newly build houses – more than twice the pre-war peak of 1925. One of these building boom role models were the Levittowns. These huge housing subdivisions were first established in northeastern states like New York, Pennsylvania and New Jersey in the late 1940s. A new home was finished every 15 minutes. The result, mass-produced single-family units on 60-by-100 feet lots, sold for $6,990 per unit. Residents had to pay $58 per month without down payment to finance a house, and thus made a better deal than to rent an apartment (cf. TEAFORD 2008, pp. 30-31).

Fig. 4: Advertisement for a single-family house in 1930

Source: GAMMAGE 2003
This example illustrates the impact of the decisions made by the FHA after the Great Depression. All these new regulations did not just help to survive the housing-related consequences of the Great Depression but encouraged future housing development, made single-family units more affordable to borrowers and contributed to a booming housing industry in particular and to a macro-economic and political stability in general by ensuring safety for the working middle-class. Until the 1980s, the housing finance system was quite stable and did not reveal much interaction with other financial markets. Most owners financed their home either by FHA insured mortgages or by local savings and loans (cf. SCHWARTZ 2010, p. 86).

The next passage addresses the period from the early 1990 until 2006 and illustrates fundamental changes in the housing finance system that triggered the housing bubble.

3.2 The U.S. housing bubble

Even if the resolutions passed after the Great Depression facilitated homeownership and secured mortgage lending against defaults and thus fuelled the entire home financing system, it would certainly fall short to trace the recent housing bubble back only to the decisions made 80 years ago. The dynamics between the early 1990s and the burst of the housing bubble were rather the result of deregulation and competition. The early 1990s brought a new era of housing finance. Henceforth, the secondary mortgage market extended its importance beyond governmental programs and its relevance for FHA loans dominated the system so much that mortgages were primarily issued by mortgage banks and other non-depository institutions that sold them to the secondary market for securitization. New and more “exotic” loans were invented to make loans more readily available for prospective home buyers. These new loans were a lot riskier then “classic” products since they did not meet government-sponsored enterprise (GSE) underwriting standards. In particular, subprime loans established a new generation of mortgage products. Originally, they had been used for refinancing existing loans but developed rapidly into loans for home purchases. While 80% of subprime loans issued from 1993-1999 went into refinancing, 40% were used for home purchases in 2005. Almost one fourth of all loans was originated as subprime and the subprime stock reached 8% of the total U.S. mortgage debt in 2005. Subprime and Alt-A mortgages accounted for $98 billion in 2001 but increased their value to $666 billion in 2004 (cf. WHEATON & NECHAYEV 2008, p. 13; IMMERGLUCK 2009, p. 408).
Three major reasons can be named for the occurrence and rapid increase of this new loan generation: first, FHA insured loans had strict standards for approval. Borrowers whose mortgages would exceed a percentage of their income were unlikely to be approved for loan. Further reasons for refusal were an irregular income or an unreliable credit history. Lenders of subprime loans loosened these underwriting standards to allow borrowers to spend a bigger share of their income for loans or to enable people to borrow larger amounts of money to buy more expensive homes. The new strategy behind these new loans was risk-based pricing. While single types of mortgages had been issued before, more undemanding standards were applied for the approval of subprime mortgages. The increasing risk of mortgage default was compensated with higher interest rates. The second reason for the advent of these new loans resulted from these strict standards. Due to these regulations FHA loans were highly socially discriminatory. The lower 40% of the income scale received only about 10% of the FHA loans (cf. KLEINBERG 1995, p. 126). Consequently, this social discrimination had impacts on loan availability for ethnic minorities. Lenders realized this issue and started to address these needs. By 1998, subprime lenders issued 51% of refinance loans in predominantly black census tracts compared to only 9% in predominantly white tracts (cf. IMMERGLUCK 2009, p. 407, 410).

The third reason was created by these new loan policies itself and thus is cause and consequence at the same time. The lowered standards and the simplified availability enabled residents with less or no equity to access loans and provided an increasing demand for single-family housing. A tremendous price appreciation of single-family units occurred and housing affordability declined. Consequently, housing become less available and motivated lenders to respond to this issue by inventing even more affordable loan products. Lenders competed for borrowers by offering inflated loans. These dynamics led to a cycle of increasing demand and home values, decreased affordability and facilitated loan availability. Hence, the term “housing bubble” was applied, since less equity capital was used to finance housing. Instead, the entire system was based on borrowed money.

The concept of a housing bubble was initiated in 2002. CASE & SHILLER define a housing bubble as “...situation in which public expectations of future price increases cause prices to be temporarily elevated” (CASE & SHILLER 2003, p. 299). While inflation adjusted housing prices rose 18% from 1975-1998, they increased by 50% from 1998-2005.
The availability of loans did not only fuel home purchases of first-time buyers but caused investors and second home buyers to acquire additional property (cf. WHEATON & NECHAYEV 2008, p. 15). This added more demand to the housing market and contributed to the illustrated cycle which accelerated the growth of the bubble.

IMMERGLUCK points to another reason for the occurrence of the bubble: as the “dot-com bubble” burst in 2000, more people started to invest in real estate, since they expected it to be a more sustainable good (cf. IMMERGLUCK 2009, p. 408).

### 3.3 The burst of the real estate bubble

The rise of the U.S. housing market and the arising bubble was sustained by the presumption of eternally increasing housing prices. Foreclosures would not be an issue, since borrowers getting in trouble with their mortgage payback could easily refinance their mortgages or, if worst come to the worst, could sell their house and pay their loans back without loss. Due to the rising demand of housing and the rising real estate prices, lenders were willing to refinance loans and buyers were in place to purchase pre-owned houses when the owners were not able to retain it.

Against this backdrop mortgage lending got too loose and thousands of borrowers were able to underwrite loans which they obviously could not afford. Due to the fact that risks for all actors were low, no actor was motivated to disrupt the system. The down payments were low or non-existent so that borrowers had almost nothing to lose and thus were motivated to underwrite inflated loans for oversized houses. The risk for lenders was low as well since they sold off the loans which they originated to the secondary mortgage market. As soon as the mortgages were offloaded and not longer in the lenders’ portfolio they were of no concern. Thus, SCHWARTZ considers the housing bubble as a principal-agency problem: “None of the actors had economic reason to act responsibly; the risks were born by others” (SCHWARTZ 2010, p. 75). In particular, those high-risk lenders with the biggest market power were almost under no supervision. Furthermore, the pace of the housing appreciation was too fast to have historical records to learn from. Nobody knew how to deal with this situation. However, some analysts predicted already in 2003 that the current situation on the housing market was unstable and that subprime foreclosures would accumulate to 2.2 million in the entire United States and that 19% of subprime loans would end in foreclosure (cf. CONGLETON 2009, p. 298; IMMERGLUCK 2009, p. 411).
As housing prices started to decrease in the second half of 2006, the entire situation got out of control and troubled borrowers were not able to refinance their mortgages or to resell their houses. The decline of housing prices blew off the willingness of lenders to refinance and the demand for housing became non-existent immediately. As these expedients were not longer possible, owners were not able to retain their houses. The consequence of this collapse was an unprecedented series of foreclosures. From 2006 to 2008, housing prices fell by 18% and reduced homeowner equity by $3.4 trillion. 25% of all subprime loans were delinquent or under foreclosure in early 2008, twice as much as 2007. The amount of outstanding mortgages on one-to four-family homes accounted for $10.4 trillion. The reduction in personal wealth caused consumers to spent less money which lead to reduced cash flows for companies and their suppliers. Consequently, the unemployment rate rose from 4.7% (2007) to 7.2% (2008), the highest unemployment rate since January 1993 (cf. CONGLETON 2009, p. 289, pp. 299-301).

To this day, there is no consensus as to when and why the bubble burst precisely, since various metropolitan areas all over the United States answered differently to the crisis and initial delinquencies and foreclosures occurred between autumn 2006 and summer 2007. BERNDT mentions the spring of 2007, as mortgage markets noticed a steep incline in mortgage defaults (cf. BERNDT 2011, p. 40). IMMERGLUCK supports this by pointing to the bankruptcy of New Century Financial, one of the largest subprime lenders in the United States. Smaller lenders filed bankruptcy well before 2007, but the case of New Century Financial revealed the extent of this meltdown. The intensified discussion by federal government in spring 2007 is another indicator for the starting point of the housing breakdown. Even mass media addressed housing policy and the meltdown became part of presidential election campaigns (cf. IMMERGLUCK 2009, pp. 411-416).

U.S. homeownership dropped dramatically. While 69.2% owned a property in the fourth quarter of 2004, the percentage declined to 67.5% in the fourth quarter of 2008 and continued to decline to 66.4 in the first quarter of 2011. This is the same level as the fourth quarter of 1998 (see Fig. 5).
3.4 Regional differences

As implied above, the housing bubble as well as the subsequent crash affected regions all over the United States differently. The Case-Shiller Index\(^7\) can be used to give an overview of the regional differences in home price development (see Fig. 6).

\(^7\)The Case-Shiller Index is one of the most important indicators for housing price development. For composition and methodology see STANDARD & POORS 2011b.
There is a clear distinction between southern and northern metropolitan areas. In particular, markets in California and Florida, but also Arizona and Las Vegas in particular have been labeled as “hot markets” with regard to their tremendous increase of home values (cf. Armesto & Garriga 2009, p. 1). While prices in San Diego increased at an annual rate of more than 20% and in late 2003 by more than 30% prior to the crash, Cleveland’s housing market was more stable, hardly exceeding 5% annual price increase during the bubble (cf. Schwartz 2010, pp. 17-18). One major reason for this classification is the time of the price peak.

While prices in these booming markets peaked in the winter of 2006/2007, the bubble in northeastern markets burst already one year before. Consequently, the temporal occurrence of foreclosures differed. Immergluck classified two categories of metropolitan areas: MSAs with relatively high foreclosure rates in late 2006 prior to the time when the national housing crisis got severe. In the first quarter of 2006, the subprime delinquency rate already exceeded 12% in states like Pennsylvania, Michigan, Ohio and Indiana. The second group comprises those MSAs with low foreclosure levels in late 2006 but a large increase in foreclosure activities in 2007 and 2008. These markets were the booming areas like Arizona, Florida, California and Nevada which experienced delinquencies below 6% prior to 2007. Due to a longer lasting demand borrowers in these regions could avoid foreclosures by refinancing or selling their homes (cf. Immergluck 2010, pp. 6-8).

However, this first assessment has to be differentiated. While real home prices rose by 74% in Boston, 10% in Los Angeles, 11% in Chicago and -21% Dallas from 1979 until 1998, they increased by 83% in Boston, 123% Los Angeles, 42% Chicago and 12% Dallas (cf. Wheaton & Nechayev 2008, pp. 3-4). Thus, it would fall short to restrict the distinction to a mere north-south gradient.

Figure 7 illustrates the insufficiency of this approach. A comparison of the price development of Miami and Tampa, both in Florida, with Atlanta, Georgia, reveals the regional difference in two adjacent states. Chicago, Illinois and Detroit, Michigan reveal a different price development as well, although they are both located in the Great Lakes region. The northeastern part of the United States revealed a moderate price development in general.
Nevertheless, different price developments can be noticed. While markets like Cleveland and Detroit hardly displayed any price amplitudes and Indianapolis, Indiana, was classified as the most affordable major housing markets during the last two quarters of 2005 and the first quarter of 2006 (cf. TEAFORD 2008, p. 165), metropolitan regions like New York and Washington D.C, exhibited a slightly similar development as some of the booming southern metro areas, even if their price curves were less steep.

Even on state level, a similarity can be found only at a first glance. Figure 7 reveals a similar character of metropolitan areas in these “hot” states. However, California as one of these
states does not show a uniform price development. San Diego, Los Angeles and San Francisco reveal different developments with regard to the steepness of their price curve and the time of their price peak. The same can be noticed when Miami and Tampa are compared.

This chapter illustrated that the reasons for the occurrence of the housing bubble went beyond mere profit mongering of loan companies but were deeply rooted in the housing finance system of the United States. Since the Great Depression the federal housing policy had favored single-family development by making loans easily available. Thus, federal policy has contributed its share to the current situation. The current housing recession brought the U.S. real estate industry back down to earth: Declining housing prices and massive foreclosures hit all involved parts of the industry. Millions of consumers were unable to retain their houses. Particularly the “hot markets”, which boomed most during the bubble, suffered most during the breakdown.

4 The Phoenix metropolitan area

One example for these booming areas is the Phoenix MSA. Hence, the following chapter has the focus on the introduction of the study area. Particularly the rapid growth after World War II with its suburban growth pattern and the affectedness by housing bubble and housing crisis is emphasized. The goal of this chapter is to establish the basis for the empirical study which examines the impact of the recent housing price fluctuations on Phoenix’s sprawling growth pattern. Prior to this, a brief historic overview of the region’s development should be given.

4.1 Historical development

The City of Phoenix is the capital of Arizona, which became the 48th state of the United States in 1912, and at the same time the core city of the Phoenix metropolitan area (see Fig. 8 & Fig. 9). It is located in the northern part of the Sonoran Desert and thus is characterized by a warm a dry climate that contributed to its prosperous development. The metro area is located in a valley surrounded by mountain chains on its northwest and west as well as to its north east an east. The metropolitan area consists of two counties: Maricopa County constitutes the core of the metropolitan area with more than 9000 square miles, and the
other one being the less densely populated Pinal County\(^8\) which occupies more than 5000 square miles (cf. REX 2000, p. 2; LUCK & WU 2002, p. 328).

The area of today’s Phoenix was first occupied by the Hohokam natives around 700 B.C. They constructed a network of more than 1000 miles of irrigation and represented the first successful settlement in the southwest. The population was flourishing around 1000 A.D. with 4,000 residents cultivating 111,000 acres. After their sudden disappearance in 1450 A.D., caused by climate fluctuations, the region remained scarcely populated until the late 19th century when the first white settlers arrived from the East and Midwest looking for a

\(^8\) Pinal County became part of the Phoenix metropolitan area not until the 1990 U.S. census.

By 1868, Phoenix counted 50 residents farming 1000 acres. The population increased throughout the late 19th century. Fuelled by seasonal visitors and health seekers with lung diseases who came to the valley to enjoy the warm and dry weather, the area began to flourish and the development of tourism brought the construction of hotels and other resorts within the downtown and outlying areas like Scottsdale (cf. GAMMAGE 2003, p. 9; LARSEN & ALAMEDDIN 2007, pp. 95-96).

In 1880 the city totaled 1,708 residents. Despite the increase in population, the area remained a mere agricultural community. The construction of the Arizona Canal in 1885 enabled the region to establish an agricultural industry in the late 19th and early 20th centuries. The population rose from 3,153 residents in 1890 to 48,000 in 1930. Phoenix passed Tucson in 1920 as the biggest city in Arizona and was the second largest city in the southwest after El Paso (102,000), but still remained a small regional service center. This population growth
made housing an important issue and as early as 1927 the first typical single-family subdivision appeared in the region (cf. Gammage 2003, p. 9, 14, 16). Housing became even more important when the region was chosen for military operations and defense industries. 85% sunny days per year on average, less than eight inches of precipitation, light wind all year round and its safe inland location made Phoenix a perfect place for flight training. In 1941 the Luke and Williams Airfileds were established. More facilities in Glendale and Scottsdale followed and even army bases like Camp Horn and Camp Hyder settled in the region. The Luke Air Base was the world’s largest flight school with 14,000 trainees, and Camp Hyder saw more than 30,000 troops when war production reached its peak in 1943. This massive increase in people and housing led to a shortage in housing supply during the war years (cf. ibid, p. 32; Gober 2006, pp. 30-31).

4.2 The post-war boom of metropolitan Phoenix

As an urbanized region Phoenix represents the second wave of U.S. urbanization. Even though Phoenix started to thrive prior to World War II, the lion’s share of its development occurred afterwards. The war initiated the transformation of Phoenix. Induced by the settlement of military air bases and the associated industries in the early 40s, Phoenix started to attract an enormous amount of workers in defense-related industries and was able to attract Motorola as one of its main employers. Motorola became the main driver of Phoenix’s economic growth and air conditioning (AC) became a second important growth sector. By the end of the 1940s the City of Phoenix led the nation in installed AC units. During World War II the share of industrial production was less than 40% but soon reached the national average and surpassed it during the 1960s. Phoenix’s economy changed from agricultural to industrial production in a sustainable way and the availability of jobs attracted more workers. While the industrial sector was able to accommodate 17,000 workers in 1950, the number of industrial workers reached 50,000 in 1960. This rise in population was enforced by the return of GIs who decided to stay with their families in the region and worked in the emerging industries. The baby boom generation put further pressure on the emerging metropolis. During the 1950s the population of the City of Phoenix increased by 311%, which was the biggest increase among the nation’s 50 largest cities. In 1959, more single-family homes were constructed than from 1914 until 1946: more than 5,000 units were built in this single year. In 1960 Phoenix became the largest city in the southwest with a population of 439,000 (cf. Rex 2000, pp. 8-9; Gammage 2003, pp. 33-36, p. 49). This growth was not unprecedented since Chicago grew
from nearly 30,000 inhabitants in 1850 to more than one million in 1890. It was the
developing growth pattern that made the difference. Southwestern growth was
accommodated in a low-density pattern. The preferred housing type was the single-family
unit, accounting for almost 75% of all Phoenix’s residential construction in 1959, indicating
that the FHA-insured mortgages contributed to the postwar boom with first-mortgage loans
growing from $2.9 million (1946) to $92 million (1960) (cf. PIERSO DOTI & SCHWEIKART
1989, p. 180). Apart from population and economic growth, the third driving force of this
housing boom was the advent of mass-production. Phoenix’s answer to the Levittowns in
the northeastern U.S. was John F. Long who built his first mass production subdivision in
1949 and his first master-planned community in 1954 on an area of 2000 acres. He was able
to increase his annual output to 1000 single-family units, while the normal homebuilder
constructed five to ten houses annually. By the end of the 1950s Long’s company sold more
than 2,500 homes in a single year, building more than 30,000 homes from 1947 to 1975. His
first homes with three bedrooms and two bathrooms sold for $7,950 and for $9,800, houses
included a swimming pool. Even in the mid-1970s, no house cost more than $30,000. To
accommodate this growth Phoenix applied a very aggressive annexation policy. In 1960,
75% of the city’s residents were residents of annexed areas and the land area increased from
17 square miles (1950) to 190 square miles (1960) and reached 300 square miles in 1980.
Despite this excessive growth, 40% of the land within the City of Phoenix was vacant in
1980. During this period of growth leapfrog development as one typical feature of
sprawling development began to spread to remoter parts of the east and the West Valley (cf.
HEIM 2001, pp. 246-250; GAMMAGE 2003, pp. 39-44). The population increased by more
than sevenfold from 106,818 (1950) to 789,704 (1980).

The enormous growth was slowed down by the housing downturn in 1988/89. The number of
single-family building permits issued in the entire metropolitan areas fell from 21,432 in 1988
to 12,950 in 1990. This breakdown was nothing but a little slow-down. In 1996, 39,646
permits were issued, 80% more than in 1988 (cf. GAMMAGE 2003, p. 59). In the 1990s the
Phoenix MSA was one of the fastest growing metropolitan areas in the US. With an annual
population growth rate of 2.9% from 1992-1998, the Phoenix MSA ranked fourth among the
nation’s metropolitan areas with more than 750,000 residents. In terms of employment growth
the region ranked even higher. With an annual growth rate of 6% from 1993-1998 the
In 1997, the City of Phoenix surpassed Los Angeles in land area. This was a consequence of the ongoing aggressive annexation policy. At the same time the MSA was the number one in issued single-family permits. From 1980 until 2000, 720,858 new single-family units were built, most of them at the urban fringes. During the 1990s, Scottsdale, Mesa, Glendale and Chandler were the fastest growing cities of the nation at various times. Most jurisdictions in the metropolitan area surpassed Phoenix’s relative population growth easily. In 2000, 54 “boomburbs” existed in the United States. The Phoenix MSA had by far the biggest population living in these booming cities. With 1.37 million residents living in the seven boomburbs in 2000, led by Mesa with more than 400,000 inhabitants, they exceeded the population of the City of Phoenix at the time. This trend persists today. Two jurisdictions in the region, Gilbert and Peoria, grew by even 5000% and 2000%, respectively, in terms of population between 1970 and 2000. Cities like Mesa have surpassed traditional cities like Miami in terms of population and even smaller cities like Chandler exhibit a bigger population than older mid-size cities like Knoxville, Tennessee (cf. KNOX 2008, pp. 46-47). It is not surprising that Maricopa County had the biggest net increase in population of all American counties between 1990 and 1997 (cf. HEIM, 2001, p. 248).

Today, the Phoenix MSA is inhabited by almost 4.2 million residents (12th biggest MSA in the U.S.) with ca. 1.5 million inhabitants living in the City of Phoenix (6th largest city in the U.S.). Hence, smaller cities and suburbs account for the lion’s share of the MSA.

4.3 The Phoenix MSA as a perfect example for urban sprawl

Throughout its development, the Phoenix MSA emerged as a “superb example of low-density and sprawling development” (GUHATHAKURTA & WICHERT 1998, p. 817). Phoenix reveals most of the problems sprawling metro areas have.

The City of Phoenix has the lowest population density among the 20 biggest cities in the nation (see Tab. 3). The urbanized region of Phoenix (800 square miles) is roughly half the size of urbanized Los Angeles (1,700 square miles), but L.A.’s population (12 million) is four times bigger than that of Phoenix (3 million). Urbanized Phoenix stretches about 50 miles from Apache Junction in the east to Buckeye in the outer west and is a mere patchwork of

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9 Boomburbs are defined as suburban jurisdictions of more than 100,000 inhabitants and double-digit growth rates between 1970 and 2000 (cf. KNOX 2008, pp. 46-47).
cities. In this patchwork, the City of Phoenix cannot claim to be the center of the region and to differentiate itself from other surrounding cities. Thus, the Phoenix region has been regularly said to be a super suburb rather than an urban place. However, the region’s population density varies from high density patterns with 20-30 units per acre down to one unit per acre developments in Paradise Valley (cf. Gammage 2003, p. 69; Gober 2006, pp. 3-4, p. 35). On the metropolitan area scale this low density declines even more, since the population density of Pinal County in 2000 (33.5 residents per square mile) was much lower than the density of Maricopa County (333.8 residents per square mile) which almost comprises the entire urbanized area.

Tab. 3: Population densities of the ten biggest U.S. cities
Source: Own table based on data of U.S. Census Bureau 2011a

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>New York</td>
<td>8,175,133</td>
<td>26,821.3</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>3,792,621</td>
<td>8,092.3</td>
</tr>
<tr>
<td>Chicago</td>
<td>2,695,598</td>
<td>11,841.8</td>
</tr>
<tr>
<td>Houston</td>
<td>2,099,451</td>
<td>3,501.5</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>1,526,006</td>
<td>11,379.5</td>
</tr>
<tr>
<td>Phoenix</td>
<td>1,445,632</td>
<td>2,797.8</td>
</tr>
<tr>
<td>San Antonio</td>
<td>1,327,407</td>
<td>2,879.8</td>
</tr>
<tr>
<td>San Diego</td>
<td>1,307,402</td>
<td>4,020.4</td>
</tr>
<tr>
<td>Dallas</td>
<td>1,197,816</td>
<td>3,517.6</td>
</tr>
<tr>
<td>San Jose</td>
<td>945,942</td>
<td>5,358.6</td>
</tr>
</tbody>
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Between 1980 and 2000, 720,858 new housing units were built in Greater Phoenix. Most of them were single-family homes built at the urban fringe. Figure 10 illustrates the process of decentralization in the Phoenix metropolitan area. In 1970, the highest intensity of residential property use was between 20-25 kilometers\textsuperscript{10} away from the urban core and the maximum distance was 49 kilometers\textsuperscript{11}. In 2000, the peak of residential use was about 30 kilometers\textsuperscript{12} away from the center with a maximum of 56 kilometers\textsuperscript{13}. The declining steepness of the graphs, with the simultaneously increasing variance, indicates a drop in high-density areas substituted by remote low-density settlements. Between 1950

\textsuperscript{10} Equals ca. 12.5-15.5 miles
\textsuperscript{11} Equals ca. 30.5 miles
\textsuperscript{12} Equals ca. 18.6 miles
\textsuperscript{13} Equals ca. 34.8 miles
and 1990 the area of Phoenix grew by an average rate of 8.3% annually. During the same time the population grew by “only” 5.7% each year, resulting in a 63% decline in average density. Every week the built-up perimeter of the region extends by another 60 yards (cf. GUHATHAKURTA & WICHERT 1998, p. 817; KNOX 2008, p. 42).

**Fig. 10: Share of residential land use in Phoenix**
Source: KEYS, WENTZ & REDMAN 2007

Another important argument for sprawl opponents is the change of land cover. Phoenix presents typical changes of sprawling cities (see Fig. 11).

**Fig. 11: Land-use change in the Central Arizona-Phoenix-Long Term Ecological Research (CAP-LTER)**
Source: Own chart based on data of REX 2000
In the Central Arizona-Phoenix-Long Term Ecological Research (CAP-LTER) the land-use change was examined. While urban land cover grew from 0.2% in 1912 to 18% in 1995, the desert land cover declined by 24.5% in the same time span. The four top categories of land use in 1970 were active cropland, vacant, fallow cropland and small lot residential. This order changed remarkably in 2000 with small lot residential as the number one use followed by active cropland, medium lot residential and commercial (cf. KEYS, WENTZ & REDMAN 2007, p. 142).

But land-use change as such is nothing bad. More important is how this change in land cover is accommodated. The catchphrase associated with Phoenix’s outward growth is leapfrog development. The 1995 planned master community of Anthem, which was built 35 miles north of Phoenix downtown and 12 miles beyond existing developments, is certainly the best example of leapfrogging vacant land. HEIM describes this development as “leapfrog Olympics” (HEIM 2001, p. 250).

The consequences of this undesirable growth pattern are evident. One household in Phoenix has 1.6 cars on average, one of the highest averages in the world. In 1994, a resident of the Phoenix MSA travelled 21.5 miles and as far back as 1966 the average speed driven in peak hours dropped to 26 miles per hour (more than 30 miles per hour in 1958). This issue is nothing new and is supposed to get even worse. A trip from Chandler to north Scottsdale during the peak travel time, which takes 60 minutes today, would not be made in less than 120 minutes in 2040, with an average speed falling from 35 to 16 miles per hour during rush hours on freeways and from 24 to 12 miles per hour on arterial roads. Consequently, Phoenix has attracted national attention for its “brown cloud”. It has been rated by the EPA as having serious air quality deficiencies and, hence, has to dread financial cutbacks by the federal government (cf. GOBER 2006, p. 110; GAMMAGE 2003, pp. 121-121; HEIM 2001, p. 270).

But the region has to face economic burdens as well. GUHATHAKURTA & WICHERT refer in one of their studies to the unequal tax burden of inner-city residents and suburbanites. Phoenix encompasses a significant diversity in levels of public expenditures and taxation within its jurisdictions. 35% of the households in the suburban areas are benefitting more than the other 65% in the older inner areas. New development around the fringes is subsidized by $14,000-15,000 per unit and thus creates incentives for new suburbanization (cf. GUHATHAKURTA & WICHERT 1998, pp. 832-833).
Downtown Phoenix has shown to have economic problems for a long time. It had a retail share of 38% in 1954. This share went down to mere 3% in 1972. As early as in the early 1960s, buildings were taken over by marginal short supply businesses and the tax base declined. Today, governmental functions as well as banks and some headquarters dominate the skyline and employees leave at five p.m. for their suburban homes. According to GOBER, Phoenix has the least developed downtown among the large American cities. Downtown development is just limited to the construction of impressive buildings, like a convention center, a city hall and a major league baseball stadium, lacking functional connections between this new buildings and the rest of the inner city (cf. GOBER 2006, pp. 169-170, p. 175).

Since single-family housing has always been an important factor for the development of the city and the entire region, outward development is a generic feature of the region. Phoenix never experienced high-rise and high-density development. Thus, one can hardly blame the region for something which is deeply rooted in its history and compare it with cities like Detroit or Philadelphia which developed from a dense inner-city core to suburban metropolitan areas. Phoenix has always had a distinct low-density development approach. **“No one moves to Arizona to live in a twenty-story apartment building”** (HEIM 2001, p. 268). GRADY GAMMAGE JR. points to the fact that **“Phoenix is a low-density city, but it has low density from its core throughout all the way to its edge”** (GAMMAGE 2011). And JOHN MEUNIER adds: **“This sprawl is very hard to resist, because it’s actually built right into the logic of the growth of Phoenix”** (MEUNIER 2011). Furthermore, the tremendous growth of the region became more than a mere process, but a reason to be. Growth has become an industry and a vital part of the region’s economy. About one-fifth of the jobs in the City of Phoenix depend on some form of land development, including workers, planners, architects and others. One out of every three dollars is supposed to be related to the housing industry. This growth-based economy seems to be an obvious strategy, since land for development seems to be limitless. In addition, the desert itself has little economic value and since the region has developed beyond agricultural production, the emergence of development industries seems to be a prosperous feature.

Existing conditions tend to facilitate future development: a typical southwestern atmosphere of less regulation and the power of free market forces and thus a high importance of private developers and opponents of growth management approaches as well as a high commitment to individual property rights. The balkanization of the region plays into the hands of
developers who can build in those communities with the least requirements. When Mesa and Gilbert started to implement impact fees to limit growth at the urban fringes, development focused on the West Valley where regulations were not as stringent and favored outward growth. In anticipation of future growth Buckeye has annexed so much land that it is now the largest municipality in terms of land area in the Phoenix MSA.

Predictions are not encouraging. According to GOBER, the Phoenix MSA is expected to have an afflux of another 3.3 million people between 2000 and 2040. Assuming that 2.67 people occupy an average home, 1.2 million additional housing units will be needed. If 60% are built as single family homes with four on one acre, and 40% built as condominiums and apartments, with 10 on one acre, 235,000 new acres of urban land, almost 367 square miles, will be needed to accommodate this growth, not including land for infrastructure and services. By 2040, places like Queen Creek, Laveen, Tolleson, Avondale and Buckeye, currently jurisdictions with a semirural character, will be absorbed into the urbanized area with pockets of development reaching up to Tonopah and Wickenburg (cf. GOBER 2006, p. 105).

With regard to the recent development on the Phoenix’s housing market, these forecasts have to be scrutinized. This development is characterized in the next paragraph.

4.4 Phoenix’s housing market during the recent price fluctuations

During the last decade the real estate market of the Phoenix metropolitan area has represented the typical features of a booming southwestern metro area (see Fig. 7): a tremendous home price appreciation, in particular from 2004 until mid-2006 and a steep price decline following the burst of this housing bubble. However, Phoenix “cannot compete with California in housing prices” (GAMMAGE 2011). Metropolitan areas like San Diego and Los Angeles experienced a much steeper price fluctuation. “Phoenix has always been the more affordable alternative to southern California” (MEUNIER 2001).

Nevertheless, the average quarterly price increase of single-family units rose from 1.30% between 1995 and 2003 to 5.70% between the first quarter of 2004 and the second quarter of 2006. As Figure 12 illustrates, the price development of new units and resale units paralleled each other until 2004 but developed differently during the boom and bust period. New units experienced a steeper quarterly increase (6.09%) as resale homes (5.52%) and declined
immediately after the price peak in the second quarter of 2006, while resale prices remained quite stable for another year, but decreased more rapidly afterwards.

**Fig. 12:** Quarterly price developments of single-family homes in the Phoenix MSA

**Fig. 13:** Quarterly number of sold single-family homes in the Phoenix MSA
Despite lower prices, the importance of resale homes is much higher for regional markets. According to Bogart, new homes account for only 2% of the entire housing stock of the United States and more than 80% of all single-family houses are older than 10 years (cf. Bogart 2006, p. 1). The Phoenix metropolitan area reveals similar characteristics (see Fig. 13). In the third quarter of 2005, when the number of sold homes reached its peak, resale homes accounted for more than 73% of all single-family home sales. The fluctuation of resale units was much higher. While the number of quarterly sold resale homes increased by 311% from 1995 until the third quarter of 2005, new units were up to 171% between 1995 and their peak in the fourth quarter of 2005. Another difference between resale units and new homes allows a first assumption as to the construction of new single-family units. While the number of sold resale homes increased even during the downturn, the number of new home sales has continued to decline until today. It seems as if new single-family construction declined during the housing crisis. The housing affordability index\(^\text{14}\) as another important indicator for demand and supply has increased for newly build units since the second quarter of 2006 (see Fig. 14). Two major reasons can be assumed: the tremendous price depreciation after the burst of the bubble and declining demand. Consequently, builders are not motivated to build new single-family homes. Due to this declining supply, the affordability index of new homes increased at a slower pace than of resale homes.

\[\text{Fig. 14: Quarterly affordability of single-family units in the Phoenix MSA}\]

\(^{14}\) The affordability index measures a family's ability to buy a house. A value of 100 means the median-income family can afford the median-priced home. A higher index indicates that this family has more money than necessary to afford a median-prices home. For further explanations see National Association of Realtors 2011.
One of the main reasons for the tremendous housing demand was the availability of loans with low interests. The interest rate dropped by almost 50% between 1989 and 2003 (see Fig. 15). Notable is the correlation between the decrease of interest rates and the increase in monthly household payments to pay mortgages back. The lower the interest rate the higher the monthly payments which peaked in 2006 both for resale homes and for new homes. The tremendous increase of housing expenditures can be explained by the already mentioned cycle of home value appreciation, easily available loans and exaggerated aspirations. The Phoenix MSA was no exception. The housing bubble was “exacerbated by the fact that cheap money became very available. It was very easy to borrow money to buy a house” (MEUNIER 2011). People were able to pay more, since inflated loans enabled them to do so. Another reason for increased housing expenditures is the single-family home as investment. MEUNIER further points to the fact that housing became the most valuable form of investment: “Houses became very valuable and for many people it was the best investment. You would buy a house today for $200,000 and you would be able to sell it a year later for $300,000. That’s better than any other investment you could possibly think of. And so houses became not just places to live, but places to generate money”.

The homeownership rate, like in many other regions of the United States, rose tremendously throughout the bubble. Since 1996, when homeownership was on its low after the recession in the early 1990s, the number of homeowners grew rapidly and peaked in the first quarter of
2005 at 74.4%. One of the consequences of the breakdown was the exorbitant decline of homeownership (see Fig. 16). In the first quarter of 2011 the homeownership rate fell to 64.6% and was on its lowest level since 1988.

![Homeownership Rate Graph](image)

*Fig. 16: Quarterly homeownership rate in the Phoenix MSA*

As illustrated in the previous chapters, the Phoenix MSA is a perfect example for excessive outward growth and low-density development. This development approach, focused on single-family housing, has certainly contributed to its boom until 2007. In addition, the housing crash ruined owners and the housing industry alike.

The questions that arises, refers to the spatial impact of the housing bubble and its subsequent meltdown. Which areas boomed most? Which jurisdictions were most affected by foreclosures and which consequences did, does and will this all have for the current and future process of suburban growth?

These questions shall be answered in the following chapter by examining the recent home price fluctuations and their effect on suburban development in the Phoenix metropolitan area.
5 The study: The connection between the housing bubble/crisis and urban sprawl in the Phoenix MSA

As indicated above, the main objective of this study is to explore the impact of the recent housing price fluctuations on the process of excessive suburban growth in the Phoenix MSA. The housing bubble prior to 2007 and the subsequent housing crisis have been taken into account. This leads to the major question of this study.

*How has the housing bubble and crisis affected the process of urban sprawl in the Phoenix metropolitan statistical area?*

This chapter will discuss the outcomes and findings of the study. Before doing so, the methodological approach is illustrated.

5.1 Methodology

The chosen temporal approach is based on the assumption that housing bubble and crisis have had contrary impacts on the process of extensive urban growth in the Phoenix MSA. It is believed that, while the housing bubble enforced the process of urban sprawl by massive single-family demand and construction at the urban fringes, the housing crisis slowed down this process or even stopped it entirely due to declining housing prices and decreasing demand for single-family homes. The assumption that the process of urban sprawl might have been reversed is unsustainable, because it is unlikely that foreclosed homes are demolished rather than just left vacant. These assumptions call for a separate treatment of housing bubble and crisis. As mentioned before, the exact temporal borderline is not consistent. Thus, the approach of Immergluck has been chosen to set a point in time for the beginning of the housing crisis for the Phoenix MSA. He has done essential research on the topic of intrametropolitan patterns of foreclosed properties by examining metropolitan areas all over the United States (cf. Immergluck 2009; Immergluck 2010). He was able to classify three types of metropolitan areas with different temporal patterns of real estate-owned properties (REOs). Most eminent is the distinction between “Type II” and “Type III”-MSAs: Type II, comprising cities like Minneapolis, Atlanta, Detroit, Indianapolis and Memphis, is characterized by high initial REO densities prior to the summer of 2007 and accounts for 19%
of all MSAs, but 23% of all mortgageable properties in all MSAs. Type III-MSAs, California, Florida, Las Vegas and Arizona, had few foreclosures prior to the summer of 2007, but massive foreclosures afterwards. ERIC J. ANDERSON of the Maricopa Association of Governments supports this: “We are three plus years in the downturn now. We started in summer 2007, the closest we can tell in this market” (ANDERSON 2011). In these “hot markets” borrowers could avoid foreclosures for a long period by refinancing or selling their homes. This type accounts for 18% of all MSAs, but 28% of all REO properties in all MSAs. The Phoenix MSA was classified as Type III-MSA (cf. IMMERGLUCK 2010, p. 11). Thus, the year 2007 marks the advent of the housing crisis in the Phoenix MSA. Even though the crisis did not start right in the beginning of 2007, an annual analysis has to be chosen due to the fact that data are not readily available on a quarterly basis. The annual approach is sufficient since the main question of this study focuses on the general impact of bubble and crisis on suburban growth. The temporal distinction is necessary to treat the two phenomena differently but not essential to answer the main question. In addition, the year 2007 in the Phoenix MSA is characterized by large-scale home depreciation and foreclosures and thus qualifies for the starting point of the crisis.

Hence, four sub questions have been chosen which may lead answering the major question.

1. *Did the bubble enhance the process of suburban growth?*
2. *Which jurisdictions have suffered most from the housing crisis?*
3. *Where has single-family construction declined most after the breakdown?*
4. *How is suburban growth expected to develop in the future?*

Each of these four questions is discussed in detail in a single chapter. The outcomes of these questions are synthesized to arrive at a final conclusion in response to the main issue.

To answer each of the four sub questions the major effort had to be made to analyze real estate data. The analysis of foreclosure figures and single-family construction data is supposed to be the key element of this study. Arizona State University maintains its own real estate division in the W.P. Carey School of Business which provides all data required (cf. ARIZONA STATE UNIVERSITY 2011). These data have been available as Excel raw data. In addition, the study of population data provided by the U.S. Census Bureau is important, since population
development is a major indicator for suburban growth. Furthermore, these population data are used to standardize the results of the analysis.

Counties and cities are the spatial entities that were analyzed. Depending on the accessibility of data, different indicators are analyzed on different spatial scales (see Tab. 4). This issue is addressed in each chapter separately.

Tab. 4: Data availability for selected indicators

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Available for counties in Arizona?</th>
<th>Available for cities in Maricopa and Pinal County?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population growth</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Single-family construction</td>
<td>Yes</td>
<td>Only Maricopa County</td>
</tr>
<tr>
<td>Foreclosed units</td>
<td>Only Pinal and Maricopa County</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The data analysis was accompanied by interviews with experts of the local real estate market and urban development in the region. These interviews did not follow a structured survey but were qualitative to provide a deeper understanding of the analyzed data, the region and the scope of the real estate bubble and crisis. In total, eight interviews were conducted. The objective was to obtain a variety of different viewpoints. Thus, interviewees were academics, officials, developers and urban sprawl opponents. The results are used to support the data analysis and are essential for the fourth question, since future expectations are dependent on personal assessments.

Another issue that has to be discussed prior to the analysis is the lack of a distinct concept to measure the impact of bubble and crisis on the process of urban sprawl. Although recent price fluctuations caused a lot of research and academic publications, little of this literature has dealt with the spatial extent of recent housing price fluctuations and even less with suburban growth during this time. The approach of IMMERGLUCK that has been mentioned provides a first idea, since he distinguished metropolitan areas not only by the temporal occurrence of foreclosures but analyzed the suburban share of all foreclosed properties in a MSA. He found out that “Type III”-MSAs (like Phoenix) tend to have a general higher suburban REO share than “Type II”-MSAs (cf. IMMERGLUCK 2010, p 28). Though IMMERGLUCK touches upon the spatial and direct consequences of the housing crisis, few and, if any, only implicit conclusions can be drawn in the field of suburban growth.
throughout the housing bubble and crisis. One may accept that metropolitan areas with a higher suburban REO share exhibit stagnating suburban growth. But that is but a faint presumption and further research has to been done in this field. Furthermore, the question of suburban growth during the bubble still remains unanswered.

In view of this insufficient conceptual background it is necessary to create such concept to make the impact of bubble and crisis on suburban growth measurable. Since the single-family home is broadly discussed as the most significant feature and the main driver of urban sprawl, particularly in the Phoenix MSA, it is perfectly suitable to act as mediator. From 2000 until 2010, 81% of all newly constructed homes were single-family houses. Even if this share differed with time and space, its importance is obvious. Thus, the methodology applied here takes advantage of this discussion and its importance for the Phoenix real estate market and focuses on the consequences of housing bubble and crisis on single-family home development. The analysis of the development of single-family home construction as well as the examination of foreclosure data give an idea of how the process of urban growth has developed and changed during the last decade and allows to draw conclusions as to how bubble and crisis have affected the process of excessive suburban growth.

5.2 The concept of the metropolitan statistical area (MSA)

Before discussing the results of the analysis, it is necessary to briefly introduce the concept of metropolitan statistical areas, since it is of major relevance to the analysis.

According to US Bureau of Census a metropolitan statistical area (MSA) is a “... geographic entity defined by the U.S. Office of Management and Budget (OMB) for use by Federal statistical agencies in collecting, tabulating, and publishing Federal statistics (...). A metro area contains a core urban area of 50,000 or more population (...). Each metro area (...) consists of one or more counties and includes the counties containing the core urban area, as well as any adjacent counties that have a high degree of social and economic integration (as measured by commuting to work) with the urban core” (U.S. CENSUS BUREAU 2011e). Compared to the concept of “urbanized areas”15, the MSA concept does not include population density, but integration and interaction between counties. Thus, this concept has

15 An urbanized area has at least 50,000 inhabitants and a population density of 1000 per square mile (cf. U.S. CENSUS BUREAU 2011h).
one major advantage: the data is often easily available, since counties are an important spatial scale in terms of regional development. As the concept of urbanized areas refers to density patterns and hence divides cities, an analysis of data is neither possible with regard to a city nor with regard to county scale.

![Map of metropolitan statistical areas (MSAs)](image)

*Fig. 17: Expansion of metropolitan statistical areas (MSAs)*  
*Source: SCHEMIONEK 2006*

The number of metropolitan statistical areas increased tremendously from 1950 to 2000 (see *Fig. 17*). New MSAs or MSA expansions came up especially in the southern states from the Pacific to the Atlantic Ocean, while only a few new MSAs sprang up in the northeast.

In the case of Phoenix, the Phoenix-Mesa-Glendale metropolitan statistical area comprises Maricopa County and Pinal County. While Maricopa County includes the entire urbanized area of Phoenix and thus is composed of urban, suburban and rural areas, Pinal County reveals no urban character at all, but has a rural and suburban appearance.

The difference between these two counties has a major impact on the methodology applied. Since major interest lies on suburban growth, the two counties have to be treated in a different
way. Pinal County can be analyzed as an entire entity because growth is suburban in any case. Growth in Maricopa County, however, has to be analyzed on city scale to distinguish between suburban and urban jurisdictions and to determine the differences in development during housing bubble and crisis.

5.3 Results of the study

Following, the result of the portrayed study are presented. The formulated four subquestions are discussed separately in single chapters. The discussion, final conclusions and possible implication of these results can be found in the sixth chapter.

5.3.1 Impact of the housing bubble on the process of urban sprawl in the Phoenix MSA

Firstly, the time span from 2000 until 2006 is analyzed to explore the impact of the bubble on urban sprawl. Population growth and single-family construction are taken as indicators to provide an understanding of how much the bubble aggravated excessive suburban growth in the Phoenix MSA. To illustrate this, population growth is first analyzed at the more general county scale, with particular interest in Maricopa County and Pinal County. While Maricopa County grew by 21.91% during the seven years from 2000-2006, Pinal County gained an additional 49.19% in the same time (see Fig 18). This equals an annual population growth of 7.33% (3.37% in Maricopa County). Pinal County, which is rural and suburban shaped, experienced a relative population growth, more than twice as big as Maricopa County.

Seen from a historical perspective, this growth rates have never been experienced before. In Pinal County, the population rose by 28% between 1980 and 1990 and another 55.77% until 2000. A comparison of these growth rates with the population growth of 88.08% between 2000 and 2009 reveals the enormous boom that this county experienced. However, the relative growth of Maricopa County slowed down as compared with previous decades: 40.62% (1980-1990) and 45.96% (1990-2000) as compared with 29.89% (2000-2009). Thus, the last decade and particularly the time between 2000 and 2006 brought a shift in population distribution between these two counties (cf. U.S. CENSUS BUREAU 2011b, 2011c).
Looking at the city scale to analyze Maricopa County in particular, we find a similar picture in terms of population growth (see Fig. 19).

While more central jurisdictions like the City of Phoenix, Tempe or Glendale experienced moderate growth rates, suburban entities acquired population in great numbers. Buckeye, the most westerly city in the Phoenix Valley gained more than 200% in population. Shifting to the outer south east of the Valley, Queen Creek gained even more than 470% and Maricopa City, located in Pinal County but sharing a border with the County of Maricopa exhibits an unprecedented population growth with more than 1600% between 2000 and 2006. Analyzing
population growth is a feasible first step to get closer to the boom period of certain jurisdictions during the bubble. However, this approach has flaws for two reasons: firstly, growth rates are relative so that the percentage of jurisdictions with a small population in 2000 increases much faster even if they gain less total population as compared with cities with a bigger population. Thus, the analysis might present a distorted picture. The second issue is connected with the type of housing. Mere growth rates do not give an idea of how this new population is accommodated and hence do not allow conclusions as to their impact on urban sprawl. Even if a jurisdiction has tremendous growth rates, this is not necessarily an indicator for suburban growth since this population might be accommodated in high-rise buildings in inner-city districts. Thus, an analysis of single-family construction data has to be added.

Fig. 19: Population growth in the Phoenix MSA from 2000 to 2006

To analyze single-family home construction, the year 2005 has been chosen because it stands for an enormous building activity, which took place in the Valley. There are two main reasons for choosing this particular year: firstly, building construction peaked in 2005 before it declined rapidly, and thus is perfectly suitable to illustrate the extent of the building boom.
The second reason is motivated by different quantities built in different entities when looking at counties in Arizona or analyzing cities in Maricopa County. In some peripheral counties of Arizona hardly 50 units were built in a single year. When analyzing these counties, even small year-to-year variations, like an increase from 20 to 40 units, would have a great impact on the analysis of growth rates. Comparing growth rates of these sparsely populated counties with booming counties like Maricopa or Pinal County would be misleading. If growth rates are compared with each other, only Pinal and Maricopa County are taken into account, since these two counties are crucial for this study.

Fig. 20: New single-family home construction in Arizona in 2005
To solve this problem, population data have been used to standardize construction activity. An indicator “Inhabitants per new unit” has been created, dividing the number of built single-family units by the number of existing residents living in an entity, both in 2005, in order to find out how many units were built per resident. This indicator allows comparability among all entities both on county and on city level. Subsequently, the indicator “Inhabitants per new unit” was divided by the current household size (2000) of each entity in order to create the indicator “Households per new unit”. This step seems useful, since “households” is an important parameter when we speak of urban growth and housing development.

Turning to the results (see Fig. 20) Pinal County revealed a vast construction activity in 2005. While in Maricopa County there were “only” 77.98 residents per one newly built single-family unit, the building boom in Pinal County brought one new unit per almost 20 residents. This equals one new single-family unit, or one new household, per 6.88 existing households (27.85 in Maricopa County), which is an increase of almost 15%, in 2005 alone. Hence, Pinal County was the most booming county in Arizona in terms of single-family home construction, with an 466.85% increase in construction activity from 2000-2005 or an annual increase by 40.18% (41.27% and 8.23%, respectively, in Maricopa County).

![Fig. 21: Share of single-family units as part of total residential construction](image)

By the way, the amount of single-family homes taken as a share of total residential construction is amazing (see Fig. 21). Over this six-year period, single-family homes
accounted for 92.4% in Pinal County, going up from 82.4% (2000) to 96.2% (2005). However, the share in Maricopa County was lower and accounted for 81.6%, with an incline from 75.4% (2000) to 85.9% (2003). While the single-family homes share in Pinal County rose steadily over the entire period, Maricopa’s share started to decline slightly in 2003. The share of both counties was higher than the average of Arizona.

Another important fact that illustrates the building boom beyond the urban fringes is the construction of new single-family units in unincorporated areas. These areas are located beyond the city limits or even in rural areas. Due to the availability of data, these unincorporated areas cannot be analyzed separately from each other but as one group. In 2005, 25% of all new built homes in the Phoenix MSA were built beyond city limits, with a very dissimilar share among the two counties. While more than 77% of all single-family homes built in Pinal County were erected in these areas, only 10% were built in unincorporated areas in Maricopa County. The number of new units in unincorporated areas in Pinal County was more than twice as high as in Maricopa County. These differences in relative construction number and its preferred locations confirm the enormous excessive growth of Pinal County during the housing boom. “Pinal County should not have grown as much as it did, as quickly as it did (...). People would go to where the houses are cheap The artificiality of the number of houses that was build, pushed demand farther out than it should have been” (GAMMAGE JR 2011). ROGER SCHWIERJOHN, CEO of the developer “Habitat for Humanity” confirmed this, pointing to the fact that “… much of the growth that you see in Pinal County in the housing market came about, because people were moving further and further out, to find land that was cheaper and cheaper” (SCHWIERJOHN 2011).

Fig. 22: Share of metropolitan population (left) and metropolitan single-family construction (right)
Figure 22 compares the metropolitan share of population and single-family home construction between the two counties. Interestingly, Pinal County’s share in construction rose much faster than its share in population, which is another evidence of the vast increase in construction activity and the low-density development pattern in this county.

![Inhabitants per new unit](image)

*Fig. 23: New single-family home construction in the Phoenix MSA in 2005*

In Maricopa County the jurisdictions in the West Valley had the greatest share in newly constructed single-family units, again standardized by population numbers (see Fig. 23). Buckeye revealed the lowest “Inhabitants per new unit”-ratio. One single family home was built per 5.05 residents, equaling one new unit/household per 1.8 already existing households, which was an increase of almost 56%. Other cities in the West Valley, which show a similarly high construction activity, even if not as high as Buckeye, are Surprise (11.27 or 4.03 respectively, an increase by almost 25%) and Goodyear (15.41 or 5.5 respectively, almost 20% increase). Throughout Maricopa County just one jurisdiction reveals similar rates like cities in the West Valley: Queen Creek, relatively most growing in Maricopa County in terms of population from 2000-2006, built one new single-family home per almost every 12th resident (about every 4th household), which is a growth of almost 25%. Furthermore, the fact
that Queen Creek spreads into the area of Pinal County is an indicator for enforced growth of the city and the whole area. However, central cities underwent modest growth as compared with the areas portrayed above. While the City of Phoenix, Paradise Valley and Scottsdale built one unit per more than 100 residents, Glendale, Mesa and Tempe constructed one new home per more than 200 residents. Tempe in particular had an “inhabitants per new unit”-ratio of just 1134:1 (405:1 households per new unit), caused by its landlocked location.

Finally, the impact of the housing bubble can be summarized as an unprecedented enhancement of excessive suburban growth in the West Valley, the outer southeast of Maricopa County and Pinal County. While more centralized jurisdictions experienced only moderate rates of population growth as well as in terms of single-family home construction, suburban jurisdictions boomed tremendously prior to the burst of the housing bubble. Land for construction and home prices were cheap and thus more affordable. Even throughout the boom period housing remained more affordable in suburban jurisdictions, particularly in the West Valley. The answer to the increasing demand was even more construction.

5.3.2 Distribution of foreclosures over the Phoenix MSA

After illustrating the scope of the boom period and its impact on the distribution of single-family home construction over the Phoenix MSA, the following part seeks to explore which areas in the Phoenix MSA were affected most by foreclosures and tries to verify IMMERGLUCK’s thesis that foreclosure densities are higher in suburban areas, in particular in his “Type III”-MSAs like Phoenix.

The approach chosen to determine the foreclosure affectedness is similar to the one used in the previous section, namely using population data to create an index of affectedness. The reason is the following: analyzing just absolute foreclosure numbers would have no additional value for answering the question, since population and total single-family units are unevenly distributed throughout the whole area. There should be no doubt that the City of Phoenix, with nearly 1.6 million inhabitants in 2009, has a higher number of foreclosures (13,280 foreclosed properties in 2009) than Cave Creek or Litchfield Park (220 and 435, respectively) with slightly more than 5,000 inhabitants. But does this reveal the affectedness of this jurisdiction? The City of Phoenix shows even three times more foreclosures than Pinal County. Since it is inappropriate to compare such different entities without
standardizing, such approach would fall short. Hence, an indicator “Households per foreclosed unit” has been composed, similar to the previous chapter, for the year 2009. That year was chosen because of its highest numbers of foreclosed properties since the burst of the housing bubble, both in Maricopa and in Pinal County. Furthermore, the Census in 2010 has not been properly published yet, so that population data on a city scale have not been available for 2010 in order to be able to standardize foreclosure numbers.

The analysis provides results which have not been expected in the first place. Figure 24 illustrates the distribution of foreclosure densities over the Phoenix MSA. In particular, the West Valley reveals the highest concentration of foreclosures in the Phoenix Valley. Here, in six entities more than every 20th household has been affected by foreclosure. In two cities, Tolleson and Litchfield Park, even more than every 5th was affected, with a “Household per foreclosed unit-ratio” of 2.89:1 and 4.25:1, respectively. Furthermore, suburban areas in Pinal County (Maricopa City and Coolidge in particular) as well as in the East Valley (Queen Creek and Apache Junction) and Cave Creek have been hit hard by foreclosure.

![Fig. 24: Foreclosure density in the Phoenix MSA in 2009](image-url)
Although central areas have not been spared by foreclosure, the concentration in these cities was not as high as in suburban areas. More established areas like Mesa, Phoenix, Paradise Valley, Chandler, Gilbert and Scottsdale all have ratios higher than 20:1 or even 50:1, while Tempe even reveals a ratio of 135.65:1.

Steven Betts, former CEO of “SunCor Development” and present chairman of the “Urban Land Institute” in Arizona, affirms these results pointing out that most affected are “… the areas that were built up in that boom period, so a lot of northern Pinal County (...) and the far West Valley, Buckeye and Surprise. Those new expansion areas got hurt the most in the popping of the bubble” (BETTS 2011).

Some areas look like ghost towns because of their high foreclosure rates (see Fig. 25). “It is primarily entry level houses on the fringe, because there are entire neighborhoods now that have been hollowed out or foreclosed on, or places were just nobody lives. And there are neighborhoods and subdivisions further out were no people living there to be making homeowner association payments to keep the landscaping maintained” (GAMMAGE 2011).

Fig. 25: Foreclosed properties in San Tan Valley, Pinal County
These results are surprising, since the most affected jurisdictions are the same that boomed most during the housing bubble.

The explanation for this disparate affectedness has to be seen in biased loan policies during the housing bubble. IMMERGLUCK points out that the allocation of subprime loans was strongly biased, being given particularly to socially disadvantaged people (cf. IMMERGLUCK 2009, p. 407). These people, who could not afford a house in affluent areas, used their loans to move further out to the urban fringes where land and housing prices remained more affordable, despite real estate price appreciation all over the area. When the bubble burst, these people, with less or no equity, were the first to get into trouble and had to pay back their loans, and subsequently their houses went into foreclosure. In more centrally located affluent regions like Paradise Valley and Scottsdale, however, people were not that dependent on loans as compared with most suburban areas and thus were not so much affected by foreclosures.

This assessment becomes clearer when we compare different home-price tiers (see Fig. 26). The low-home price tier, i.e. units under $99,786, reveals the highest price increase prior to the breakdown as well as the steepest and deepest crash of home values.

![Fig. 26: Case-Shiller U.S. home price index for different home-price tiers in the Phoenix MSA](image)

Source: Own chart based on data of STANDARD &POORS 2011a
Even though it is not an explicit indicator for the social dimension of foreclosed properties, it allows the appraisal of home-price tiers and supports the impression of a greater affectedness of low-income homeowners, since the increased supply, triggered by massive foreclosures, contributed to the tremendous price decline.

In addition, the thesis of IMMERGLUCK, namely that foreclosed properties would be more concentrated in suburban areas, can be confirmed. The Phoenix MSA, classified by IMMERGLUCK as “Type III”-MSA, revealed higher foreclosure densities among suburban jurisdictions and thus supports his results.

The analysis of foreclosure data in the Phoenix MSA showed that the most seriously affected areas were those which boomed most during the housing bubble. Using “exotic” loans, lenders used the myth of the American Dream to lure less affluent people to the urban fringes. The subsequent burst of the bubble turned the world of these people, who have had almost no financial means, upside down and caused massive numbers of foreclosed properties.

5.3.3 Housing construction and urban growth after the burst of the bubble

The illustrated large-scale foreclosure wave hit not only the buyers who lost their homes, as they were not able to retain them anymore, but also the entire building industry. Particularly the Phoenix market, where real estate contributed enormously to the economic development, has been inverted. When home prices started to decline, the demand for single-family homes decreased tremendously. Nobody wanted either to buy homes or to invest in real estate. The stock of vacant houses grew from week to week and prices seemed to decline endlessly.

Although the housing crisis in Phoenix and other markets of the southern United States started in summer of 2007 and led to more and more foreclosed properties and tremendously declining real estate prices, housing construction began to decline massively already in 2006. Thus, the data analyses examine the time period from 2006-2010 in order to explore the impact of the crisis on suburban growth. Again, data both on county and on city level are analyzed.
Starting with the comparison between Pinal County and Maricopa County, results reveal a steeper annual decline in single-family home construction in Pinal County (see Fig. 27).

![Map of Arizona with counties marked]

**Fig. 27: Annual development of new single-family home construction in Arizona from 2006 to 2010**

An annual decrease of 35.4% has been recorded here, while Maricopa County revealed an annual decline of 29.67%. With regard to the entire period 2006-2010, the scope of the housing crisis becomes more evident. Pinal County (~85.19%) as well as Maricopa County (~81.68%) lost more than four fifth of their single-family home construction activity in just five years. Even though the numbers of Pinal County are slightly worse, the difference between both counties is not as big as during the housing bubble, when relative construction growth of Pinal
County was ten times higher than in Maricopa County. Hence, there seems to be no clear evidence of a correlation between construction boom and construction decline on county level.

With regard to the single-family home construction as share of total residential construction, the two counties reveal different developments (see Fig. 28). While the share of Pinal County hardly changed, the portion of Maricopa County fluctuated heavily after 2005. Reaching its low at almost 55% in 2008 and rising more than 30% in the following year, the share fell to 77% in 2010. It seems as if single-family home construction in Maricopa County was affected more seriously than other types of construction.

![Fig. 28: Development of new single-family units as share of total construction (left) and share of selected construction types in Maricopa County (right)](image)

Particularly the share of multi-family houses with five or more units developed diametrically to the single-family share. From 2005 to 2008, this type increased its share from 12% to 38%. Until 2008, when single-family homes prices decreased immensely, investors tried to shift to the condominium market. “We were starting finally to build condos. And that market is so damaged. Particularly the high-rise condo market, which I think was hugely overbuild in terms of the real demand. Because there was money available people were building 20-story high-rises and now there is nobody living in them all” (GAMMAGE 2011). When single-family home prices started to rise in 2008 and most developers assumed that the end of the crisis had come, single-family home construction increased its share in 2009 and high-rise development was brought back down to earth again. Another reason for this temporary peak of apartment complex building was the assumption that demand would increase, since thousands of single-family homes were foreclosed and people were expected to move to apartment houses. This assumption was entirely wrong, which is illustrated by the development of condominium
prices and its share in total construction. When builders changed back to single-family homes, multi-family homes lost its share in 2009 and dropped to a lower share than in 2005.

Even if new single-family housing could obtain a relatively substantial share in 2009, its total numbers have declined over the entire period from the end of 2005 until now.

The analysis of single-family home construction on the city scale in Maricopa County shows similar results (see Fig. 29). In less centralized areas like El Mirage, Carefree, Fountain Hills and Avondale (-99.61, -96.67%, -95.00 and -93.64, respectively), single-family home construction from 2006 until 2010 collapsed almost entirely. Since these cities are distributed over the entire Phoenix metro area, it can be concluded that the decline in construction activity did not have a geographical concentration, but affected various suburban areas all over the Phoenix MSA. But even in more centralized cities like Phoenix, Glendale and Scottsdale (-87.86, -88.33 and -78.74, respectively) single-family home construction came
largely to a standstill in the same period. Mesa, Chandler and Gilbert, entities of the more established East Valley, recorded a less steep decrease, with values between -40% and -60%.

The housing construction crisis, which started in 2006 and is still going on, affected the entire Phoenix metropolitan area and paralyzed the single-family home market almost entirely, without a decisive distinction between central and suburban areas. Only more established inner areas southeast of the City of Phoenix have not been hit as hard, although even here construction declined by half. The intermediate peak of multi-family home construction turned out to be a flash in the pan.

5.3.4 The impact on shopping mall dispersal

Although it is the main objective of this thesis to explore the impact of housing bubble and crisis on residential properties, particularly single-family units, a brief digression should examine the impact on retail properties, since they are tightly connected with the development of residential areas.

“Vestar Development” is one of the most important developers and property managers of outdoor shopping malls in the Phoenix MSA. Until April 2011 “Vestar Development” developed 16 of these shopping malls in metropolitan Phoenix, all of them located in Maricopa County. Like other retail developers, Vestar followed residential growth in the region and has paid attention on single-family home development throughout the bubble and crisis. “Our development over the last 25 plus years has really followed that growth. We are not actively involved in the single-family housing market; we pay a lot of attention to it (…). We pay attention to what direction its heading in (...) Retail fallows rooftops!” (DESMOND 2011).

Thus, it is interesting to see, whether residential foreclosures and declined single-family home construction have burdened retail development.

A good example to illustrate the recent situation of shopping centers is the “Queen Creek Marketplace”. Building started right during the housing crisis and it opened in March 2008. The results of this unfavorably timed development were lower sales volumes than expected. The expected residential growth, which had been the essential precondition for the development of this property, did not materialize.
As illustrates above, other areas in the Valley were affected in the same way as Queen Creek with regard to foreclosures and single-family home development. Subsequently, a number of properties that had already been planned were not implemented (see Fig. 30). The locations of these unfinished shopping centers highly correlate with the occurrence of high foreclosure densities. The West Valley, particularly Buckeye, and the southeast, Queen Creek and Maricopa City, reveal a number of these planned but unimplemented shopping centers. These jurisdictions exhibited, among others, the highest rates of foreclosures per household throughout the entire Phoenix MSA.

The main driver for the withdrawal of properties was the unwillingness of the anchor stores to stay, since they expected declining sales volumes caused by a decreasing residential base. DESMOND added: “We don’t build a center unless the retailers want to be there and so the retailers make the decisions that “no we don’t want to be there”. The “Maricopa Towne Center” is a perfect example for this behavior of anchor stores. The center was planned in late 2006 and early 2007, right at the peak of the bubble. During this period the future tenants confirmed that it would make sense to start their business there in one year. But when the bubble burst, the interest in settling there was backtracked and thus the shopping center was not built.

Vestar does not own the land until they break ground on it, but have only agreements to control the land by partnering with the land owners. Thus, they have the luxury to stop planned projects. If the situation stabilizes and a building start would make sense, they could start immediately, since the land is still reserved for them.

Nevertheless new solutions had to be found, since it was, and still is, not likely to realize these huge shopping centers in the near future: “There’s not going to be any reasons to built a 500,000 or 700,000 square foot retail projects anytime in the next five years”. Thus, Vestar was responsive to these changes and started to focus on property management, the company’s second pillar.
Fig. 30: Cancelled shopping malls after the burst of the bubble in the Phoenix MSA

Source: DESMOND 2011, modified
At present, Vestar manages 18 shopping centers with a total square footage of 11,246,426 in Maricopa County. Three of these managed centers (783,717 square feet) were not developed by Vestar. “We think that from now for the next couple of three years, at a minimum, a bulk of our growth will be through acquisition of existing retail centers that are either distressed in some way (...). It could be any number of scenarios in which it makes sense for us to buy, and we are actively doing it today (...). Property management is thankfully a more stable business than property development and so our property management subdivision manages not only our portfolio (...) but third party projects as well. That’s a great stabilizer for us”.

Even if this little digression is based only on one developer, is it appropriate to illustrate the scope of the housing crisis. Not only residential properties have been affected and distressed but retail properties, in this case huge outdoor shopping malls. Their developers feel the negative results of exaggerated population projections and a declining residential base. Due to the fact that it would not be profitable to implement retail properties as long as the housing crisis persists, many properties already planned have been postponed or even cancelled entirely and assessments of future developments are as somber as those for the residential market.

5.3.5 The future of housing market and urban growth in the Phoenix MSA

The analysis of foreclosure data and construction numbers after the burst of the bubble revealed one fact very clearly: the housing market in the Phoenix metropolitan region finds itself in a deep recession. The question arises, how the real estate market is expected to develop in a short and mid-term way.

Due to the fact that such forecasts cannot be more than a preliminary assessment based on personal experience and subjective perceptions, all interviewees were pleased to give a short preliminary estimate of how they expect the Phoenix real estate market to develop. Some of the interviewees have been active in the Phoenix market for more than 30 years and have seen other downturns before.

ERIC J. ANDERSON emphasized that the recent housing crisis was different from the last housing recession in the late 80s, “… which was more on the development speculation side (...). But when the real estate market crashed here in the late 80s it hurt the developers, because those were the guys holding the land parcels. This time the downturn had hit the
consumer, because of the tremendous collapse in housing values”. One of the main tasks to invigorate the housing market is to take the pressure off the homeowners.

This is more easily done than said, since other developments have put additional pressure on homeowners lately. Rising gas prices are currently the biggest concern among homeowners. “As we look forward in the future than we see fuel prices here in the U.S. drifting back up to sorely high levels. I think that certainly $3 a gallon gas is here to stay. And I think that especially when you’re talking about these household units that have been attracted to these outline developments like Maricopa (Maricopa City; author’s note) and Queen Creek. There on a very tight budget, that’s why there looking for housing out there and the increase in fuel prices could have a very drastic effect on their ability to effort anything on the fringe” (ANDERSON 2011). Figure 31 illustrates this tremendous rise of fuel prices. Even if the Arizona fuel prices have been slightly lower than the national average, does this price increase burden particularly families with more than one car who have do drive long commutes every day. They often cannot reconcile these rising fuel costs with monthly mortgage payments and have to decide between either of them. Either they have to resale their home, which is certainly not the best solution these times, or they have to sell one of their cars.

Fig. 31: Development of Arizona’s gas price
Source: ARIZONAGASPRICES.COM 2011
The second serious threat for homeownership and a possible catalyst for further foreclosures is unemployment (see Fig. 32). In December 2010, unemployment in Arizona was at 9.4%, the highest level since August 1983 (cf. ARIZONA DEPARTMENT OF ADMINISTRATION 2011). The unemployment rate of the Phoenix MSA for the last decade shows a high correlation with developments in the housing sector. Since summer 2002 the unemployment has declined continuously. When the bubble burst in summer 2007 the unemployment rate started to go through the roof and went up as quickly as homes lost their value.

![Unemployment rate in the Phoenix MSA](image)

*Fig. 32: Unemployment rate in the Phoenix MSA*

Source: Own chart based on data of ARIZONA DEPARTMENT OF ADMINISTRATION 2011

The direct consequence is the inability of unemployed homeowners to serve their outstanding debts. Furthermore, unemployment creates uncertainty among prospective homeowners. “People aren’t as interested in investing in a house or buying a house, if they are not as confident in their job, either confident in their present job or confident in finding in a job”. Thus, BETTS concludes that rising fuel prices and unemployment will reverse the pattern of housing and job search, as it was applied by a lot of prospective homeowners during the bubble: “I think there were a lot of people moving to Arizona, selected there house first and then looked for a job and ended up driving long distances, because gas prices weren’t that expensive and we had good transportation. I think the opposite will happen in the future: people will rent for a while, find a job and then will find a house close to their job. We have now so many different job centers around the Valley (…). In Arizona we have multiple job centers, we have multiple urban cores. And then we have lots of different housing options around those job centers” (BETTS 2011).
ANDERSON goes one step further and derives possible consequences for the future building pattern of the region: “I think there is going to be a reduction in the number of developments out in the fringe areas on the market (...). The green field developments that are far away from the urban fringe, I think, are going to get a lot more scrutiny. I think the consumers, because of the higher fuel prices, are a lot more sensitive to location. And I think they are going to look more carefully to existing housing or high-density housing, because of the transportation costs (...). But I think also the development community needs to develop better products for the urban market, for the infill market that is more attractive for the consumer.” This positive conclusion, which at the same time is optimism for a changing urban growth pattern, finds broad consensus and is widely shared. With regard to a more sustainable development, BETTS even finds something positive in the housing crisis: “For the first time back in the 2000s, in the past decade, Arizona’s community got somewhat serious about starting to deal with the impact of growth. I believe that recessionary periods are a good time to take a deep breath and look back, think about how you have grown and think about how you want to grow, coming out of a recessionary period. This recession is a great recession and so it’s a great opportunity to take a deep breath”. Pointing to the lack of money he adds: “When you look forward to the next market cycle, or two or three (...) money for infrastructure is going to be difficult to come by at the federal, state, local or private sector level. Because of that, I think Arizona is going to have to rely on the infrastructure we have and we going to have to fill that and infill (...). We’ve done an incredible system of infrastructure that we have the ability now to go in and infill around. And we have available land at incredibly affordable prices”.

According to BETTS, particularly infill development is an essential feature of future urban growth in the region: “It is almost a necessity with the Phoenix marketplace. Because I don’t think we are going to have the resources to continue to grow in our historic growth pattern. I think we are almost by necessity forced to look at the reality of infill (...). We have amazing potential for mixed-use parcels (...). We have 100-acre parcels and 200-acre parcels to develop that are infill (...). We have the ability to essentially do small master-planned communities within our infill” He is confident that the real estate industry will take the recent developments and future necessities into account: “I think the development industry has looked to infill (...). They’re looking at parcels within our urban core. They’re looking at smaller lots, and townhomes and multi-family parcels in the inner-city areas, knowing that the coming generational markets are looking for walkable urban experiences. There is a new
exploration of that market (...). But builders are looking also at single-family product that is
closer in (...). But they’re also looking at value preposition homes. Homes that are a little bit
smaller but a little bit affordable, that are on smaller lots, and easier to maintain for a family,
realizing that we are probably in a new economy today and that new economy means that
families are taking into account transportation costs (...). And so families can afford less and
so they need to make their homes more affordable” (BETTS 2011).

ELIZABETH A. WENTZ, Associate Professor and Associate Director for Geography at the School
of Geographical Sciences and Urban Planning at the Arizona State University, notices the
opportunity for sustainable urban development as well, but is skeptical what concerns its
implementation: “I think that there are pockets available (...). But I still think that there is still a
very strong automobile culture here. (...). People have to be pushed into it (...). Around here,
taking a car is actually very convenient and so, when the car becomes really inconvenient then
these alternatives become more attractive”. And with a hint to developers’ behavior, she adds:
“People are greedy and now just start building again with the same plan. I don’t think anybody
has learned anything from this (...). I think that they just want to go back to the way it was
before, because they made money really fast. It’s the same people who are there”.

The Sierra Club, one of the nation’s major sprawl opponents, shares this skepticism
considering the implementation of new urban growth approaches: “Unfortunately the
people, who need to learn, are not learning it. I think the people who have the power to
change things have not gotten that message (...). There are unfortunately still a lot of
people in leadership positions that think that we need to subsidize more sprawl development
(...). The same people who make all their money of housing and who control the legislator
and actually control a lot of city councils as well, are out there with their so called
economists saying: ‘Oh, well because we have going down so low, what we need is to do
even more to boost housing’(...). If you talk to the homebuilder groups, they got the same
mentality. And the leadership is in the same mentality”. However, the Sierra Club admits
that the region has a potential for new development patterns: “One of the things I always
say to people is: ’Look it has so much potential’” (BAHR 2011).

Even if it might be stereotyped and simplified to blame only developers and officials, does
it support an essential feature of the housing crisis. The case of “Habitat for Humanity”, a
non-profit home builder, illustrates the opposite of the typical development behavior and is
an exception to the rule. “When you look at the world of “Habitat” and some of the other non-for-profit builders, they haven’t been impacted as badly. And why is that? Well, we can’t make a profit for every home we build, so we don’t build homes if there is no need to build the home. We don’t build it to build up a profit stream. We build it, because there is a need (...). From 1985 till today we have foreclosed less than 1%.” But also Habitat as a non-profit developer adjusted their strategies during the housing crisis: “We had an opportunity to acquire properties at a very reduced price (...). It’s tough to build new and to do it cheaper than it is to buy and renovate it. And the other thing, we want to be responsible. If the community housing market is not doing too well, because there is an oversupply of vacant homes, then it would behoove us instead of building new and adding to the inventory to buy exiting stock and renovate”. And with regard to infill ROGER SCHWIERJOHN, Habitat’s CEO highlights: “The reason we do infill is that it is a lot less capital up front (...). Infill allows us to build homes, to acquire land rather, one lot at a time, which is a lot quicker and a lot less expensive” (SCHWIERJOHN 2011).

However, apart from rising unemployment and increasing fuel prices which have sharpened the consumers’ perception of their own situation and their possible future expenditures, there is another factor that might contribute to a more sustainable growth pattern. “The changing demographics are very interesting, because they really are changing (...). One is, people are having children much later. There is a long period between the time everybody leaves college and the time they have to start a family and they don’t need a suburban house at that time. And you are talking anything from 10 to 15 years (...). On the other hand, people are not having as many children and they may need a house for 10 to 15 years but then they begin think of something else (...). Then, the issue of people not getting married and being married for a short time and going in and out of relationships instead of staying in a relationship. That has an impact to” (MEUNIER 2011). GAMMAGE supports this assessment: “I think most of the people who are in the Gen-x/Gen-y-range are comfortable living in higher densities and like more urban lifestyle. I think baby boomers (...) are more interested (...) to retire in an urban context than out in Sun City. And I think all of those trends may push towards higher density” (GAMMAGE 2011).

The necessity for this new means of urban development is emphasized by the fact that it will take years for the single-family home market to recover. There is broad consensus that the housing crisis will persist for several years. “I think we have more to go on the
housing side. I think the worst is over but I think that in certain markets what is likely to happen here in another year or two, if we don’t see some recovering in housing values, that the investors who came in and bought some of these units at very low prices, counting on the market coming back, are going to find themselves not able to hold their properties and will have to dump the properties back on the market” (ANDERSON 2011). GAMMAGE and SCHWIERJOHN support this view: “I don’t think it’s going to get dramatically worse, but I don’t think it’s over. We are skating on the bottom for another two years” (GAMMAGE 2011). “The home values will probably continue to work their way down (...). You won’t see any notable increases in home values until probably the last six month of 2013 (...). There are more foreclosures to come. Unless you have really an able buyer these homes will sit vacant” (SCHWIERJOHN 2011).

In some areas where prices decreased dramatically, investors are beginning to buy homes again. They are speculating for the market to recover so they can realize huge profits. The base for this cheap housing is the vast vacant housing stock that has to be absorbed before new building is worth consideration. “Because there are so many of them on the market and because they are so cheap, I think there are a lot of investors back in the market, buying single-family homes and waiting for prices to rebound and then expecting to resale them“. This cheap and affordable housing motivates even first time buyers to enter the market again. “At the moment the housing crisis is most likely to tempt toward making developers and buyers to go back to the safety of a single-family detached home” (GAMMAGE 2011).

6 Discussion of the results

This last chapter summarizes the results obtained, discusses their implications and assesses the likelihood for a changing urban environment in the Phoenix metropolitan area in these tumultuous times. Furthermore, it tries to demonstrate opportunities to improve research itself by pointing to some, in some cases certainly unavoidable, flaws in its design.
6.1 Conclusion and outlook

This study illustrated the impact of the housing bubble and the subsequent breakdown of the housing market on the process of excessive suburban growth in the Phoenix metropolitan area. By analyzing boom and bust periods separately, it was possible to obtain distinctive results for each of the phenomena. Furthermore, it was possible to assess the impact of both time periods on the region’s suburban growth separately. In particular, single-family home construction during and after the boom was analyzed in order to link boom and breakdown with the process of urban sprawl. Moreover, population dynamics as well as foreclosure data were helpful to obtain more comprehensive results. All indicators were analyzed spatially in a comparison of suburban with central jurisdictions.

The results are quite decisive, since bubble and crisis had quite different effects on the suburban expansion of the region. The housing bubble caused excessive suburban growth in the Phoenix MSA. However, not all suburban areas grew in the same way. It was possible to determine certain directions of growth. In particular the West Valley, the outer southeast of Maricopa County and Pinal County grew immensely. This growth refers to population as well as to new single-family home construction. These jurisdictions revealed the highest figure of newly constructed units per resident. This growth was facilitated by easily available loans and the possibility of refinancing, enabled by the assumption of eternally rising home values and better affordability of housing as compared to the more desirable southern California.

The burst of the bubble in summer of 2007 affected mainly those areas that boomed most until the downturn. They revealed the highest foreclosure densities. The logic behind this result is evident: biased loans policies were applied by loan lenders during the bubble. Particularly less affluent people were provided with poor loans to satisfy their desire for a single-family home. The amazing building boom in certain areas at the urban fringes provided affordable housing despite a rising demand, while housing in more central areas got less affordable. Hence, less affluent people moved to the urban fringes and even beyond. As the bubble burst and housing values were depreciated at an unprecedented pace, these households had less or no equity to retain their houses. Lenders were not interested in refinancing homes and even the opportunity of reselling one’s home vanished, since no one was motivated to invest in housing anymore. Subsequently, new single-family construction collapsed almost entirely. A distinction between more booming and less booming suburban areas could not be
identified. Single-family home construction decreased all over the Valley to a similar extent; in some areas it broke down almost entirely. Even construction in more centralized areas declined tremendously, but not as rapidly as in the suburbs. While suburban areas grew far more powerfully than central jurisdictions during the construction boom, the same differences could not be established during the recession.

The case of the shopping mall developer “Vestar Development” helped to emphasize the scope of the housing crisis. Foreclosures and a cut in single-family home construction decreased the population base below expectations and caused termination of already planned properties.

Even if most results might not be surprising, they are helpful to answer the initial question. The process of urban sprawl was aggravated at a tremendous pace prior to the summer of 2007. The subsequent meltdown stopped this suburban expansion all of a sudden. A huge vacant housing stock began to unfold. As long as this housing stock has not been absorbed, it seems likely that suburban growth will not proceed noticeably. However, it is not entirely clear whether this halt to excessive sprawling development will last long, since this vacant housing stock is very affordable at present. Even though investors might take their chance to buy these houses on a large scale, it is doubtful if buyers will reoccupy these vacant houses soon. Furthermore, it is uncertain if developers, lenders, officials and homebuyers have learned from the recent experiences and if more sustainable growth patterns will have a chance to thrive in the future. Two recent trends threaten the recovery of the Phoenix single-family home market and might induce planners to push towards more sustainable growth approaches. Rising unemployment and increasing fuel prices are likely to cause more foreclosures in the next few months or even years. As unpleasant as these prospects might be, they could have positive long-term effects on Phoenix’s urban development, since lenders, banks and particularly buyers have become more cautious. Considering the recent economic development, home buyers have to rethink the logic of driving 50 miles or even more to get to work every day and thus have to spend an increasing share of their income for fuel. In particular, families with children and two cars have to trade off suburban living against increasing expenditures for commuting.

Not surprisingly, the single-family home is still the most important catalyst for urban sprawl. The single-family home construction boom has fuelled the discussion about the most essential
item of the American Dream. The bubble continued a long tradition of biased loan policy in favor of the suburban single-family home.

The implications of the results presented are manifold. With regard to the urban development of the Phoenix MSA, one can conclude that the region just had to pay the bill for its unsound sprawling growth pattern. Thus, this crisis, as bad as its outcomes have been, provides possibilities and chances for a reconsideration of Phoenix’s urban growth pattern. Since the single-family home market is down and unlikely to recover soon, there will be opportunities for a more dense growth pattern and the erection of more sustainable multi-family units, condominiums and apartment complexes. Due to lack of money on all government levels, this seems to be more than just an option but almost a necessity. Furthermore, the region has a high potential for infill development. Infill in Phoenix does not mean one or two acres, but 50, 100 or even more. Thus, whole subdivisions could be built as infill projects.

It is kind of sad that it was necessary to make the experience of the last decade in order to start a process of reconsidering the region’s growth pattern. However, the implementation of other urban growth approaches seems doubtful. Since the Phoenix MSA is a perfect example of western freedom and deregulation, this attitude is reflected in the housing market in several ways. Firstly, the single-family low-density pattern has always been an essential part of the region’s growth. Secondly, consumers are still pursuing the American Dream and appreciate the ownership of a single-family home as expression of their personal freedom and success. Furthermore, developers are hardly subject to any regulations and are set to fulfill the demand of the consumer. Since this deregulation paid off during the bubble, local politicians were not motivated to intervene. Hence, a process of profound rethinking has to be initiated in all stretches of society, before the region is able to embark on a fundamental change in their urban development. It must be highlighted that it is not supposed to be the major task to abolish single-family living, since it is an important part of Phoenix’s identity but to embed this housing type in a more sustainable urban context. The establishment of public transportation, the avoidance of leapfrog development and the implementation of infill properties are by no means contradicting the concept of single-family living.

In this context, the Phoenix MSA lacks one essential feature leading to a more sustainable urban development: a regional government body that unifies all jurisdictions and tries to implement a cohesive regional approach to planning. SANDY BAHR, Chapter Director of the
Sierra Club in Arizona argues the case for this metropolitan government: “I think Phoenix ultimately is in dire need of some kind of regional government (...). You have got this urbanized area were you have got the City of Phoenix as largest city but you have like 24 other entities, and not to mention the counties. I don’t think the current structure of governance works very well for promoting things like a real transportation system which would include a real transit system. It doesn’t work for cleaning up the air, it is doesn’t work for having an integrated open space plan” (BAHR 2011). This balkanized structure of the region enables developers to avoid restrictions in one jurisdiction by moving to the next. Particularly the western part of the Phoenix MSA has laxer regulations and allows developers to realize their unsound plans. As long as the region does not try to implement regulations compulsory for all jurisdictions, developers take the opportunity to play off the jurisdictions against each other and consistent urban planning recedes into distance.

Although Phoenix’s general growth pattern can be named as one reason for the housing bubble and crisis, there were other reasons which fuelled the developments on the housing market during the last decade. In particular, the loan policy of lenders fuelled the excessive outward growth of the region and can be blamed for the extensive occurrence of foreclosures in these fringe areas. It can only be speculated whether stricter lending regulations could have prevented the housing bubble and crisis at the urban fringes completely, but at least its intensity and impacts could have been mellowed. Again, warnings prior to the burst of the bubble had been ignored and the demand for stricter regulations was emphatically formulated once the downturn began. Currently, as the housing market is down, the need for such regulations is not as urgent, since banks and lenders are more cautious than before. As soon as housing prices start to increase, the market gets back on its feet and officials start to get lax again. Those lending regulations have to be set up in order to prevent a similar development as experienced lately.

Insecurity is just one issue when reconsidering the failure of loan policy. Furthermore, biased loan policy has to be taken into account. To facilitate the accessibility of loans for multi-family projects or even high-rise buildings would be an additional step to create incentives for developers to focus on inner-city development.

A last implication of the results presented addresses the general idea of suburban America. The image of suburbia as stronghold of high- and middle class residents has been asked into
question by the housing bubble. Less affluent people flocked into the suburban regions and beyond, provided with largely available loans, to realize their American Dream. The analysis revealed the housing bubble at the urban fringes beyond traditional suburban areas. It is likely that more affluent neighborhoods have been leapfrogged by less wealthy people, looking for more affordable housing further out. Hence, the circle of suburban areas surrounding the city center has been surrounded by an additional circle of less affluent people during the housing bubble (see Fig. 33).

![Circular city model with newly emerging suburbs](image)

The question arises whether this development can be taken as the occurrence of a new generation of suburbs with characteristics that differ from the common image of suburbia, particularly with regard to the wealth of its residents. Due to the fact that equity capital was no requirement anymore to own a house at the urban fringe, the social dimension of suburban living has become irrelevant. However, it is questionable if this new trend will persist. Due to massive numbers of foreclosures less affluent residents lost their suburban home. Here, it would be interesting to find out where these residents moved after their homes were
foreclosed. One may assume that this added circle of suburbs, at least its residents, has disappeared and that the inhabiting residents moved back to inner-city areas looking for rental housing. On the other hand, single-family homes are extremely affordable at this time, particularly at the urban fringes. Even if loans have become stricter, it still does not require much equity to afford a single-family home. It will be interesting to observe this development.

Finally, the recent development on the housing market in the Phoenix MSA has to be seen as a chance to learn from mistakes that were made in the past. It is likely that the region’s real estate industry has passed already through the worst and can start to prepare for the post-housing crisis era. It is important to analyze reasons for the crisis in order to emerge from the downturn strengthened and to use the recent experience as a reminder of what should be avoided. “My hope is that we all have learned a valuable lesson, we all will have learned that we need to do things more efficiently, we need to do things, because it makes sense to do it not because there is a profit to do it” (SCHWIERJOHN 2011).

6.2 Scope of this study and potential for optimization

This study tries to contribute to research on the spatial impact of the housing price fluctuations during the last decade. Compared to existing studies, which have focused mainly on the spatial dimension of foreclosed properties, this research considers the scope of suburban growth, measured by new single-family home construction during the last ten years. By using the single-family home to connect the housing bubble and crisis with the process of urban sprawl, this study enters in some way unknown territory, since a suitable approach has not been applied before. Other case studies have not been available to compare the results of this study or to integrate them into a broader discussion dealing with the impacts of housing bubble and crisis on suburban growth of single metropolitan areas. A spatial dimension has been examined only on national scale with regard to housing price development and foreclosure numbers.

Due to this lacking empirical examples, this study reveals some potential to optimize its design. The most important approach that might be criticized is the question of scale. Particularly the analysis of suburbanization in Maricopa County on city scale has its flaws. This approach might work very well for landlocked jurisdictions like Tempe which had not the chance to grow outwardly during the time period considered. However, it may be assumed that most cities in
Maricopa County, particular bigger cites like the City of Phoenix, consist of inner-city and suburban areas. Thus, an analysis on a smaller scale, for example on census tract level, would be valuable to get more distinctive results. A smaller scale reveals, however, more data that are often hardly available and it can be assumed that small-scaled data reveal data gaps which complicate the analysis and the interpretation. Furthermore, such approach would be much more time consuming and with regard to the extent of this study not feasible.

The study area itself reveals pros and cons for this study. Single-family data on the chosen spatial scale were properly available, since single-family units have always been the predominant building type the Phoenix MSA. Their dominance, however, has its flaws. Single-family homes are not only part of suburban areas but appear in some inner areas as well. This refers to the issue regarding the scope of this study.

Nevertheless this study is suitable to give a first impression on the spatial impact of tremendous real estate price swings and how such price fluctuations can affect the urban growth pattern of a single metropolitan area.
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