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Journal

International Journal of Housing Policy, 13(3)

ISSN

1949-1247

Author

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Publication Date

2013-09-01

DOI

10.1080/14616718.2013.793518

Peer reviewed

International Journal of Housing Policy
Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/reuj20

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Published online: 09 May 2013.

International Journal of Housing Policy, 2013
http://dx.doi.org/10.1080/14616718.2013.793518

Housing deficits as a frame for housing policy: demographic change, economic crisis and household formation in Indonesia

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The idea of housing deficit is a common, seemingly objective frame for housing policies that promote increased supply. This paper critically examines the concept through a case study of Indonesia, where different sources report a deficit of between 3 and 14 million dwelling units estimated without a transparent methodology. The wide range of estimates demonstrates the multiple interpretations of the term's meaning. In the paper, changes in household formation trends in urban Indonesia from 1990 to 2007 are used to estimate a quantitative housing deficit. I find the decreasing rate of household formation that is being interpreted as a housing deficit. However, this interpretation is complicated by the country's demographic transition and the high urbanization rate. Further, the abrupt change in household formation occurred around the year 2000, suggesting that the economic and political upheavals following the Asian financial crisis played an important role. Comparison of household formation rates across socioeconomic groups and urban areas shows housing markets also matter, illustrating the complexity of the issue.

Keywords: housing deficit; household formation; economic crisis; demographic transition; Indonesia

Introduction

The idea of a housing deficit or housing shortage is a common frame[1] for housing policies throughout the world. A search of international newspapers for the month of August 2011, finds articles referencing the idea from Ghana, Nigeria, Argentina, Brazil, Australia, and Britain (Adegboye, 2011; Howker, 2011; MacDonald, 2011; Mander, 2011; Modern Ghana, 2011; Valente, 2011). The term is prevalent but problematic. It is ambiguous, relies heavily on often-unstated assumptions, and carries with it an implied policy response. The ambiguity derives from the fact that there are generally two components to a housing deficit; housing considered to be of substandard quality and needing improvement and an insufficient number of housing

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units. Making the distinction between the qualitative and quantitative deficit is an essential first step in clarifying the term, yet both these components also depend on normative assumptions such as an ideal standard of housing quality or an ideal household size or composition. Finally, the term deficit, or shortage, implies that building more housing is the appropriate response. However, as will be demonstrated in this paper, apparent housing deficits can be caused by a number of factors beyond inelastic supply.

This paper examines the concept of a housing deficit using the case study of Indonesia, where the government and the Asian Development Bank reported a housing deficit that varied between 3 and 8 million units in 2010 (Asian Development Bank, 2010; Kemenpara, 2010). The wide range of estimates of the housing deficit in Indonesia makes it an ideal case to discuss the common lack of clarity not only in the methods used to estimate the housing need, but also in the meaning of the concept itself. The focus is on the quantitative component of the deficit as it turns out that the qualitative component is actually less problematic a concept. Once a normative decision about minimum housing quality is made, it is simply a matter of estimating how many houses are below this standard.

The quantitative housing deficit is more difficult to calculate because it depends on either a normative decision about how many should live in one household or, more commonly, on assumptions about the relationship between rates of past and present household formation. In general, a housing unit deficit can be estimated by calculating how many households formed at given ages in the past and applying these rates of household formation to the present demographic structure. The complication arises because housing deficits are generally used to make policy related to housing supply, but changing household formation rates can be caused by a multitude of factors, such as demographic trends, economic conditions, or changing cultural preferences. Moreover, household formation has a two-way relationship with housing markets. Young adults tend to form new households more readily when it is affordable, but the aggregate demand to form new households is one driver of housing prices.

A further complication is that housing deficits tend to be of greater concern in countries that are experiencing rapid urbanization. Rural migration into cities means access to housing becomes more difficult. New urban residents can either crowd into existing units or resort to self-help housing, which is often of low standards (Obeng-Odoom, 2010). Yet it is in these rapidly changing countries where the assumptions behind the concept of a quantitative housing deficit are most problematic, as household formation rates are changing for a wide variety of reasons. The connection between the housing sector and changes in demographics and family structure must be considered in order to ascertain the drivers of changing household formation rates. It is empirically difficult to identify the causes of family co-residence – how much it is due to cultural norms and how much to a limited supply of housing units.

Indonesia is a rapidly urbanizing country with an underdeveloped formal housing production system. An analysis of the housing sector at the end of the 1980s concluded that although the majority of houses were built through an informal, incremental process, supply was sufficiently elastic so as to meet the needs of the population (Struyk, Hoffman, & Katsura, 1990). This assertion is supported by the relatively young age of household formation, the continuous decline in household size, which fell from 4.55 people to 3.84 between 1988 and 2001, and the decrease in the share of married couples living with one of their parents (Badan Pusat Statistik, 2001; Struyk et al., 1990).

However, trends in household formation changed at the turn of the twenty-first century. People of household-forming ages became less likely to head their own households, and the share that remained in their parents' homes increased. Using data from the Indonesian statistical office from 2001 and 2007 (Badan Pusat Statistik), I create a simple household formation model based on household formation rates from 2001, and estimate a shortage of urban housing units in Indonesia in 2007 to be as high as 1.6 million units. The drop in household formation rates can be interpreted as a quantitative housing deficit. The number of people per household had been declining for several decades in urban areas, but this ceased after 2001, and the ratio held constant between 2001 and 2007 (Badan Pusat Statistik, 2001; Struyk et al*.,* 1990).

In this paper, I show that much of this apparent housing deficit can be explained by changes in the country's demographic trends and the dramatic economic and political crisis of 1998. This explanation calls into question the usefulness of the term housing deficit in policy discussions, as the correct policy response to changing demographic trends or economic crises are not building more housing. Nevertheless, it is also acknowledged through disaggregate analysis of household formation trends between 2001 and 2007 across different types of individuals and cities that housing markets also have a significant impact on household formation. Thus, housing policy responses should not be excluded completely. Constraints on housing production in Indonesia such as cumbersome regulations, inefficient public agencies, and a dearth of finance are well documented (Ferguson & Hoffman, 1993; Firman, 2004; Hoek-Smit, 2006).

Economic development and housing deficits

Although the term housing deficit or housing shortage is common in rich countries, deficits tend to be of greater concern in countries that are experiencing rapid urbanization. Rural migration into cities means access to housing becomes more difficult and leads to overcrowding in existing units and self-help housing solutions, often of very low standards (Obeng-Odoom, 2010). Yet the trend of rapid urbanization is associated with economic development and demographic trends, two areas that

have large effects on family structure and household formation. These three areas of social change generally reduce the rate of headship at young ages, as people wait longer to form families for economic and cultural reasons (Bonvalet & Lelievre, 1997).

The concept of household formation and its determinants are essential components of understanding housing deficits. Scholars generally emphasize one of two broad categories of determinants of household formation. The first looks at the decision to form a new household as a rational one made by individuals together with choices about work and consumption (Ermisch, 1999; McDonald, Kippen, & Temple, 2006; McElroy, 1985). The second category focuses on sociocultural influences on decisions regarding household formation and co-residence with parents (Buttenheim & Nobles, 2009). Without entering into a debate over the relative importance of either of these two perspectives, I assume that cultural norms have a fundamental influence on family structure, yet that individual decisions ultimately must be made and are subject to housing market and general economic conditions.

Along with the recognition of the importance of cultural norms, it is important to recognize an error in the early academic study of the changes in household structure that occur as countries grow economically and urbanize. In an overly simplified model of 'modernization,' theories of changing family structures were closely linked to the idea of the demographic transition (Thompson, 1929). The understanding of family structure was bimodal, and developing countries were seen as being in a transition stage that would eventually evolve into a place where households would be based on a nuclear family structure of parents and children, between three and four people (Burch, 1967; Levy, 1965).

Contemporary understanding of the effects of urbanization and economic development on social change recognizes that the diversity of cultural norms in place before a country urbanizes and grows economically matters a great deal and that a convergence to some sort of modern family structure is not inevitable (Thornton & Fricke, 1987). The central example presented by Thornton and Fricke (1987) compared the lasting influence of different customs regarding household formation in the West with those in China and the upper class in South-East Asia. They argue that the Western emphasis on the nuclear family meant that young people could not marry until they could support themselves in a new household, whereas co-residence with parents after marriage was not uncommon in Asia.

Moreover, even a seemingly straightforward idea like the co-residence of adult children and parents can vary widely across cultures. In some places parents live with their children who are supporting them; in many cases they co-reside because the children cannot find suitable accommodation (Frankenberg, Chan, & Ofsteda, 2002). This has become an important topic in many East Asian countries as the population ages and some must accommodate increasing dependence through family support systems (Chan, 2005).

Housing markets: a missing piece of the puzzle

Much of the literature on changing family structure, especially in developing countries, fails to consider the important role of housing markets in family structure (Buttenheim & Nobles, 2009; Mulder, 2007; Thornton & Fricke, 1987). The relative cost of housing changes as cities grow and housing quality improves, and regulatory frameworks can determine the way production responds to demand. Housing costs and the elasticity of supply will affect household structures. One clear example is the difference between household size and composition in urban and rural areas. Although urban families are generally smaller, higher housing costs can lead to sharing and larger household sizes. This was the case in the Philippines in the 1970s and 1980s, urban households were larger, contained more extended family members and non-relatives than in rural areas (Stinner, 1977).

Micro studies have shown that the decision to leave the parental home and form a new household influenced by labor market conditions and access to housing. McElroy (1985), one of the first authors to examine the economic determinants of household formation, used a utility comparison framework to examine the household formation patterns of young adults. He emphasizes that the decision about household membership and employment is a joint one, though labor market conditions at a given moment are more easily analyzed (McElroy, 1985). For example, Card and Lemieux (1997) found that poor labor market conditions in Canada led to a delay in the age at which children left their parental home.

The relationship between household formation and housing prices is more complicated because it is endogenous. New households are more likely to form when access to housing is easier, but the demand to form a separate household impacts prices (Borsch-Supan, 1986). It should be made clear that housing unit demand and the demand for housing in economics terms are different. The former does not specify any quality or size characteristics, merely a dwelling unit, while the latter refers to the quality of housing as measured by price. It is possible for housing prices to increase without a change in demand for housing units, if the demand for better housing services increases. An infamous paper on demographics and housing markets (Mankiw & Weil, 1989) demonstrated the danger of conflating housing unit demand with demand for housing services and housing prices. Mankiw and Weil modeled the change in housing prices with demographic trends and used a population projection to predict a decrease in housing prices from 1989 onward in the United States, when, in fact, the opposite occurred due to changes in demand for housing services.

The impact of housing prices on household formation is greater in the short run, as over time people adapt to market conditions. Research from the United States (Haurin, Hendershott, & Kim, 1993) and the United Kingdom (Ermisch, 1999; Levin, Montagnoli, & Wright, 2009) has shown that young people are less likely to leave the parental home or form independent households during times of high housing prices or when they live in metropolitan areas where housing is more expensive. There can

be long-run ramifications, however. In the Netherlands, for example, Mulder (2003) found that housing market conditions at the time when a cohort of young adults leaves the parental home has an influence on their housing situation decades later.

Demographic change and household formation in Indonesia

Despite the significant improvements in education, economic growth, and the rapid urbanization in the country during the second half of the twentieth century, Indonesian women still marry at an early age compared to similar neighboring countries (Buttenheim & Nobles, 2009; Jones, 2001). Only about 3% of Indonesian women from age 35 to 39 were never married in 2000, compared with 10% in the Philippines and 12% in Thailand. In the same year, the mean age of marriage in Malaysia was 25 and in Indonesia 23 (Jones, 2010). Yet, Indonesia is currently in the middle of a demographic transition, a concept that refers to declines in both mortality and fertility rates and the consequent change in age structure (Thompson, 1929). During the demographic transition, mortality rates drop first, followed by declines in fertility rates. The demographic transition has profound implications for countries' economies, cultures, and cities, and is both a cause and consequence of economic growth and urbanization. For example, the growth of the proportion of the working age population to elderly and children can be a great boon for development. (Birdsall, Kelley, & Sinding, 2001).

The demographic transition also has important and often unrecognized implications for housing, as it exerts pressure to build an increasing number of units for a given population size. The increase in working-age people relative to older and younger people leads to an increase in the number of families relative to the overall population, and the lag between the drop in fertility rates and the drop in mortality means that people occupy their houses longer. Thus, either the rate of housing production must increase to keep up with the growth in household formation rates or young people must wait longer to form households and live with their parents longer. The concurrent increase in incomes magnifies this effect, leading to smaller household sizes and increasing upward pressure on the house-to-population ratio.

The surge in demand for housing units will also tend to be increasingly concentrated in cities, as rural-to-urban migration is generally concurrent with the demographic transition. In Indonesia, for example, the share of the population living in cities grew from 26% in 1985 to roughly 45% in 2007. In the same year, almost half of the roughly 100 million people living in cities in Indonesia were under 25 years of age – a growing pool of potential new households.

The demographic structure of Indonesia has been changing rapidly for several decades. Child mortality began to decline in the mid-1960s and fertility rates in the early 1970s, and both continue to fall to this day (McNicoll, 2006). A common measure of the demographic transition is the dependency ratio, which is the ratio of

working-age people to elderly and children. The dependency ratio has been growing steadily in Indonesia since the 1970s, when there were 1.2 working-age people for every dependent. The ratio had reached two by 2007 and it shows no sign of leveling off, suggesting that the country is still in the middle of the transition and fertility and mortality will continue to decline (Lewis, 2010). The changes have also been cultural. Hull (2003) describes the sociodemographic changes that occurred throughout the early and middle of the twentieth century; a gradual shift from arranged marriages to couple-negotiated ones, an increase in women's age at marriage, and a concurrent change in women's expectations about their roles in life.

These demographic and cultural changes have occurred during an extended period of economic growth. Lewis (2010) shows that, as in many countries, growth and fertility declines are endogenously and positively related. It has been estimated that 41% of Indonesia's economic growth from 1960 to 2005 can be explained by changes in the demographic structure of the country, more than neighboring countries such as the Philippines or Malaysia (Bloom & Finlay, 2009). However, the change is not equally spread across the country. The population in all cities is not growing at the same rate or for the same reasons. A stronger decline in fertility and mortality rates and the rural–urban migration of young adults seeking opportunity means that the dependency ratio is generally higher in larger, wealthier cities.

Figure 1 shows the age distribution of Indonesia's urban population in cities of different sizes,[2] demonstrating two trends. First, individuals from age 6 to 24 are the largest demographic group in the country. This has important implications for future housing demand, as these are the people who will seek to form new households during the next 20 years. Secondly, the relationship between working-age people and city size is clear. Larger cities have a much greater share of people in their 20s and 30s, likely due to rural–urban migration. This will impact household formation rates because housing is generally more expensive and less easy to access in larger cities.

Estimating changes in household formation

Changes in household size and structure are important outcomes of the demographic transition, the result of fewer children and living longer. Recognizing that headship is a disputed term,[3] I nevertheless use the concept to analyze household formation. The age-specific headship rate is defined as the share of the population of a given age that is either the household head or the head's spouse. Higher headship rates thus indicate more household formation. This is a less complicated measure than household size for analyzing household formation rates and allows for the use of a propensity model of household formation (McDonald et al., 2006).

Data come from the National Indonesian Socioeconomic Survey, known as SUSENAS for initials in Bahasa Indonesia. All surveyed individuals are classified by their relation to the household head. Household positions other than household head and

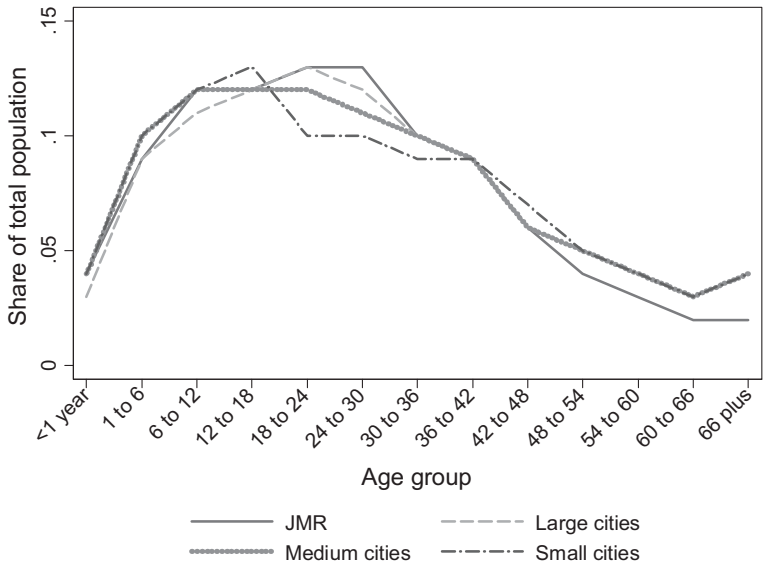

Figure 1. Share of urban population by age in different categories of cities, 2007. Source: Badan Pusat Statistik 2007.

spouse are: child, child-in-law, grandchild, parent, maid, or other. Figure 2 presents age-specific headship rates for the urban population of Indonesia in 1995, 2001, and 2007. Roughly half of the population is a household head or spouse by age 30 and more than 90% by age 40.

Headship rates did not change significantly between 1995 and 2001 though there was a decline in co-residence among the elderly and their adult children in Indonesia during the 1990s (Frankenberg et al., 2002). But a dramatic change after 2001 is evident. Headship rates for those from age 18 to the mid-40s decreased sharply. The drop was consistent and large for cities of different sizes, a decrease of as much as 10% in some cases. The change was not simply due to an increase in migration of young adults to urban areas, which could influence the headship rate of young people. During the same time period, the share of 30-year-olds in urban areas that lived with parents increased from 18 to 24% and the share of 30-year-olds that lived as married couples with one set of parents increased from 3 to 5%.

As headship rates dropped, household size, which for decades had been decreasing, changed trends and remained flat. Figure 3 shows the average household size for the urban population of Indonesia from 1993 to 2007, and an abrupt change in the steep downward trend is evident, beginning around 2001.

The change in headship and household size in Indonesia appears to be quite dramatic, and a comparison to neighboring South-East Asian countries confirms this

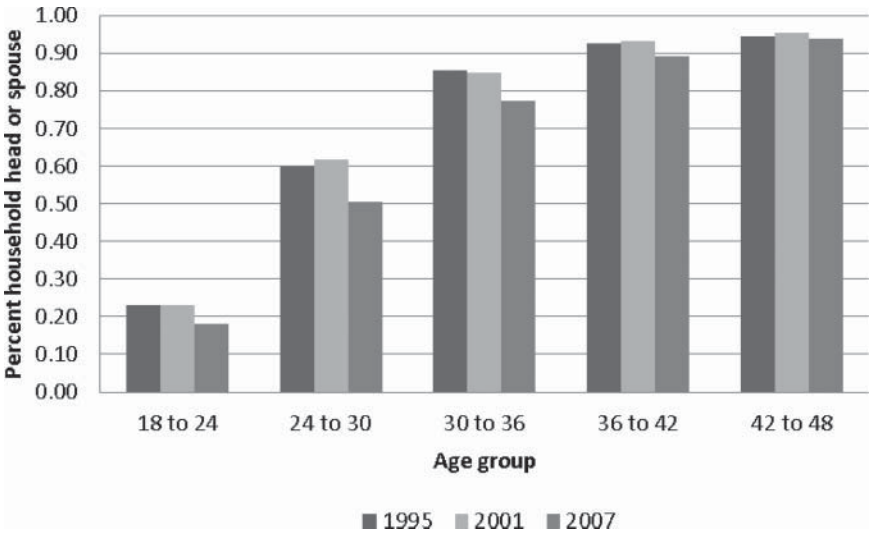

Figure 2. Age-specific headship rates; 1995, 2001 and 2007. Source: Author's calculation with Badan Pusat Statistik 1995, 2001 and 2007.

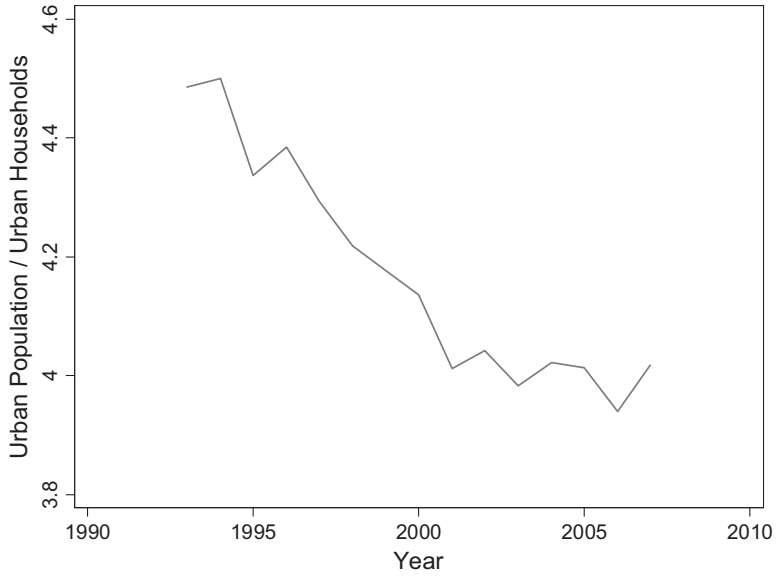

Figure 3. Average household size in urban Indonesia, 1993–2007. Source: Author's calculation with Badan Pusat Statistik 1993–2007.

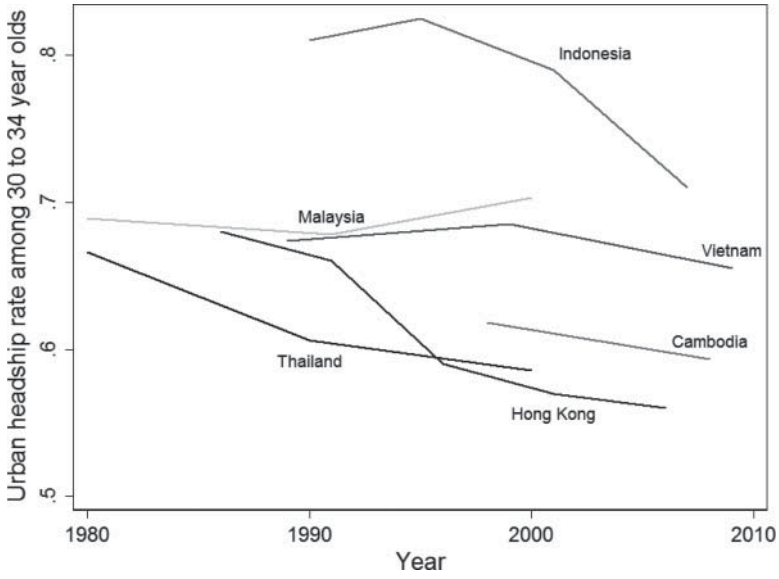

Figure 4. Urban headship rates, 30- to 34-year-olds in South-East Asia, 1980–2009. Source: Author's calculation with Hong Kong Census and Statistics Department (1986–2006); Badan Pusat Statistik (1990–2007); and National Institute of Statistics Cambodia, Department of Statistics Malaysia, National Statistical Office Thailand, and Vietnam General Statistics Office (Minnesota Population Center, 2011).

to be the case. Figure 4 shows headship rates among 30- to 34-year-olds residing in cities in four South-East Asian countries and Hong Kong. Not only are headship rates in these countries significantly lower than those in Indonesia, they also changed much less. It is noteworthy that for all the countries for which data are available, headship rates dropped after the Asian financial crisis. No change was as large as in Indonesia, which was also one of the places where the economy crashed the most.

Estimating a quantitative housing deficit

In order to estimate the housing deficit based on household formation trends, we use a 'potential' household formation rate (DiPasquale & Wheaton, 1996). This is a demographically-based estimate of the number of people in the household-forming age range, which is determined by birth rates and child mortality and is exogenous to housing prices. This potential number of households is also referred to as a demographically-induced household formation to contrast it with actual household formation. The relationship between the number of potential households and those

that actually form depends on many factors, as described previously, and is a useful way to estimate a housing deficit.

Thus, we apply age specific headship rates in 2001 to the population distribution in 2007 for each city. This gives a number of potential households based on changes in the age structure that can be compared with actual household formation to determine the number of households that could have formed. Table 1 reports these calculations, with results grouped by city size. There were roughly two million more urban households in Indonesia in 2007 than there were in 2001. However, if people had formed households at the same rate in 2007 as they had in 2001, there would be 3.6 million more – an almost 75% difference!

The number of recently built housing units corroborates the above calculations. Using data from the housing module of the 2007 SUSENAS, recent movers (households that moved within the last five years) are identified, as is the share that bought or built a new house versus those who moved into or rented an existing house. Thus, we estimate that just under two million houses were built between 2002 and 2007, roughly matching the estimates of new households.

Is a drop in household formation a housing deficit?

Rates of household formation change over the long term for multiple reasons. A constrained supply of housing or a housing deficit is one of several possible causes of the change documented above in Indonesia; others include urbanization, demographic changes, and, due to the timing, the economic shock of the late 1990s. The Asian financial crisis of 1997 impacted Indonesia severely and contributed in part to political crisis and the shift to democracy in 1999. This period, known as *Krismon*, which is an abbreviation for *Krisis Moneter* or monetary crisis, affected the population of Indonesia profoundly and more so in urban areas due to the collapse of the currency (Stalker, 2001).

Firman (1999) documents how urban economies received a major negative shock in 1997 with a sharp drop in manufacturing employment and currency devaluation. This led to changes in rural–urban migration patterns with some new rural poor moving to the cities but also urban migrants returning to their rural homes due to lack of work. In addition to immediate effects on consumption and household strategies for survival, it is possible that the crisis led to an increased wariness toward forming a new household at an early age and a desire to save more beforehand (Hoek-Smit, 2006). World Development Indicator data show that GDP per capita did not recover from pre-crisis levels until almost 2005 (World Bank, 2009). Unemployment and the rate of informal employment have also remained relatively stable and high during the early to mid-2000s.

One previously documented adjustment at the household level after *Krismon* was an increase in household size, with family members moving in together to economize (Thomas & Frankenberg, 2007). This explains why household size stopped decreasing

Table 1. Actual and potential household formation, 2001 to 2007.

City category	New households, 2001–2007	Potential new households, 2001–2007	Housing unit deficit	Deficit as a percent of all households
JMR	305,236	723,402	418,166	7.9
Large	719,933	1,401,400	681,467	7.2
Medium	259,849	523,984	264,135	7.0
Small	280,779	416,861	136,082	3.9
Towns	453,448	624,839	171,391	6.9
All urban	2,019,245	3,690,486	1,671,241	6.8

Source: Badan Pusat Statistik 2001 and 2007.
Note: JMR refers to the greater Jakarta Metropolitan Area, which includes the administrative areas of Bogor, Depok, Tangerang, Bekasi, and Cianjur.

afterwards. Two further observations – that incomes declined much more dramatically than did expenditures during the crisis and that the value of assets collapsed are especially salient – help explain a lagged impact on household formation. The housing system in Indonesia is known for lacking sufficient financing and relies on savings for acquiring land and expanding houses (Hoek-Smit, 2006).

Disaggregating household formation rates across individuals and cities

In order to better understand the change in household formation, headship rates were calculated for different socioeconomic groups[4] and for different cities. A consistent pattern of change in headship across income groups would indicate the importance of economic factors. Similarly, if headship rates changed more in cities with tighter housing markets or in cities with faster population growth rates, then the housing sector can be assigned more responsibility for the decline. In order to assess household formation rates for different income groups, households are grouped into per capita expenditure quintiles. The per capita measure is used because household expenditures are affected by household size much more than income is; households with more members spend more money on food, clothing, transport, and housing. The population is divided into expenditure quintiles for each metropolitan area separately.

Overall household formation rates among 25- to 29-year-olds declined from 59% to 48% between 2001 and 2007. However, an examination of this decrease across expenditure groups shows it was not correlated to resources. The change was the largest in the lowest expenditure quintile, at 12%, but was 11% in the highest expenditure quintile. This was much higher than the middle groups, where headship dropped only by 9%. Headship rates in 2001 and 2007 for different expenditure quintiles are reported in Table 2.

Headship rates in Table 2 are also disaggregated across cities of different sizes due to differences in housing markets associated with city size. The relationship between household formation and resources clearly differs by city size, though there is no consistent pattern. In large cities the headship rate has a quadratic relationship with income; middle-income groups have a significantly higher headship rate than either low- or upper-income households. In medium and small cities, the trend toward higher headship rates among those households with more resources is clear.

Table 2 also reports the change in headship between 2001 and 2007. Large cities, including Jakarta, experienced a greater drop in headship overall. Declines in headship are not consistently correlated with expenditures in any of the city size categories. In large cities other than Jakarta, for example, the drop was much greater in low- and middle-expenditure households, whereas in medium cities it was far larger in the fourth quintile. Small cities saw the least variation in change in headship rates among different expenditure quintiles.

One explanation for the drop in headship among households with higher expenditure levels is their greater dependence on the cash economy, especially in regard to

Table 2. Headship rates by expenditure quintiles and city size, 2001 and 2007.

	Expenditure quintiles[a]				
Variable	1	2	3	4	5
JMR					
Headship 25- to 29-year-olds, 2001	56	63	64	60	54
Headship 25- to 29-year-olds, 2007	46	50	54	47	42
Percent change, 2001–2007	19	21	15	21	22
Large cities					
Headship 25- to 29-year-olds, 2001	52	58	62	58	56
Headship 25- to 29-year-olds, 2007	38	45	46	46	48
Percent change, 2001–2007	27	23	25	21	15
Medium cities					
Headship 25- to 29-year-olds, 2001	50	58	61	69	65
Headship 25- to 29-year-olds, 2007	46	50	51	51	58
Percent change, 2001–2007	9	13	15	27	11
Small cities					
Headship 25- to 29-year-olds, 2001	51	55	56	58	61
Headship 25- to 29-year-olds, 2007	43	45	49	49	54
Percent change, 2001–2007	15	18	12	16	12

Source: Badan Pusat Statistik 2007.
Notes: JMR refers to the greater Jakarta Metropolitan Area, which includes the administrative areas of Bogor, Depok, Tangerang, Bekasi, and Cianjur. [a]Quintiles calculated based on household expenditures per capita, calculated separately for each city.

housing. As Stalker (2001) argues, the impact of the economic crisis was felt heavily among middle- and upper-income households as the value of their savings was cut dramatically due to devaluation. Middle- and high-income groups rely more heavily on savings for housing acquisition because of limited access to credit, whereas lower income households rely more on sweat equity (Struyk et al., 1990).

Variation in headship across cities

Age-specific headship rates vary substantially across urban areas. In the 93 cities with more than 75,000 residents in 2007, headship rates for people aged 25 to 29 varied from 32 to 85%, while headship rates for 30- to 34-year-olds ranged between 52 and 90%. Much of this variation is probably explained by intra-urban differences in population characteristics and housing markets. The decision to form a new household reflects conditions in the labor and housing markets in addition to individual characteristics (Ermisch, 1999; McElroy, 1985). However, it is not clear whether cities with higher incomes or higher housing costs will have lower overall headship rates; rather, it is affordability or the elasticity of housing supply that is important.

A good measure of affordability or housing market efficiency in the context of Indonesia is elusive. A measure of housing expenditures is available in the SUSENAS data, but it is a self-reported estimate of the rental costs of a housing unit were rent to be paid. Moreover, the majority of houses in Indonesia are owner-occupied and self-built, thus their acquisition does not depend on the cash economy. For this reason, other measures of urban housing market efficiency are used in the analysis, such as average house size, which is a proxy for density, or the share of housing that is owner-occupied.

In order to assess the importance of housing market dynamics for household formation, the correlation between a series of city characteristics and headship rates for all 30-34 year-olds in 2001 and 2007 and the change in headship rates in that city is measured. Table 3 reports the results. Simple bivariate correlations are used rather than a regression model due to the small number of observations and multicollinearity between the different variables used to measure housing market conditions and urbanization. The age range of 30–34 year-olds is used because the majority of people are household heads by that point and variation is less sensitive to short-term market conditions. General city characteristics such as city size, population growth rates, and median household expenditures are included as well as housing market-specific indicators such as the share of households in an unaffordable housing situation, which means they pay more than 30% of their income on rent, average house size, the share of housing that is owner-occupied, and the share of housing without legal title to the land.

Average house size and the share of housing that is owner-occupied are strongly and significantly associated with headship rates in 2001 and 2007. The negative

Table 3. Associations between headship rates and city characteristics, 2001–2007.

City characteristic	Headship, 2001	Headship, 2007	Percent decrease, 2001–2007
Ln (Population)	0.02	−0.19	0.26
	[0.85]	[0.07]*	[0.01]**
Population growth[a]	0.44	0.41	0.03
	[0.00]***	[0.00]***	[0.76]
Ln (Median household expenditures)	0.18	0.15	0.02
	[0.06]*	[0.16]	[0.87]
Percent unaffordable[c]	0.12	−0.04	0.20
	[0.26]	[0.70]	[0.06]*
Mean house size (sq. meters)	−0.45	−0.57	0.12
	[0.00]***	[0.00]***	[0.25]
Owner-occupier (%)	−0.24	−0.29	0.12
	[0.02]**	[0.01]**	[0.27]
No legal land title (%)	0.25	0.42	−0.15
	[0.02]**	[0.00]***	[0.15]

Notes: Spearman correlation coefficients for 90 cities. Probability levels in brackets. ***, ** and * indicate significance at the 0.01, 0.05 and 0.10 levels. [a]Compound annual growth rate. [b]Households are considered to be in an unaffordable housing situation if more than 30% of expenditures are dedicated to housing.

correlation with headship reflects that fewer young adults have formed a new household in cities where it is more difficult to access housing as reflected by the density of development and the lack of a rental market. Similarly, the share of housing without legal title to the land is positively correlated to headship, indicating the importance of informal housing for facilitating household formation. Given the importance of informal housing in Indonesia, these three variables are better measures of access to housing in a city than affordability, which is not significantly correlated with headship.

There is a positive association between population growth and headship, which is contrary to the common idea of growing cities in developing countries not being able to 'keep up' with housing production for new migrants. On the contrary, cities with larger rates of population growth seem to be supplying housing at a higher rate than less dynamic cities, or, perhaps more likely, migrants move to cities where it is easier to find accommodation.

Only two of the variables are significantly associated with the change in headship between 2001 and 2007; population size and the share of households that pay more than 30% of their income on rent. The strongest correlation is with population size; larger cities experienced a much greater drop in household formation rates. These two associations suggest that limited or unresponsive housing supply in these cities' has affected the change in the household formation. Although demographic changes and the economic crisis might provide much of the impetus, the effect is larger in these less affordable places.

An assessment of the causes of housing affordability problems in some markets is beyond the scope of this paper, though a recent study argues that housing markets in Indonesia are hampered by cumbersome regulations, a lack of infrastructure provision, and a lack of housing finance (Hoek-Smit, 2006). Many of the regulatory constraints mentioned previously are national laws, but surveys show that the time and cost of obtaining a construction permit or registering land varies substantially across cities (World Bank, 2010). At present there are not enough data to test whether more strictly regulated cities have lower household formation rates.

Conclusion and policy implications

This paper has demonstrated the challenges of using the concept of a housing deficit for policy-making through a case study. More importantly, the analysis shows how a sharp decline in household formation at the end of the twentieth century in Indonesia reflects processes of social and demographic change as well as the dramatic crises of the late 1990s. Thus, the facts can be interpreted as a housing deficit, implying a problem with the housing market, when in fact its causes are multiple. The share of young adults that were household heads or spouses, equivalent to the headship rate, fell dramatically between 2001 and 2007. Some of the decline can be attributed to housing market conditions, but much of it is unrelated to the elasticity of housing

supply. Thus, calling this a housing deficit is misleading, due to the term's implied solution – more housing. The proper response to changes in household formation is not necessarily increasing housing production.

Through examination of the problems of the idea of a housing deficit, the paper contributes several important lessons for housing policy in developing countries. First, it shows that understanding the way in which housing deficits are calculated is essential to a discussion of housing needs. The term's definition must be clearly stated; does it refer to a qualitative or quantitative deficit? Assumptions about normal housing needs must also be discussed. When interpreting household formation rates, naïve estimates without historical context can be misleading.

The difference in household formation rates and their change across socioeconomic groups implies that the government should focus on multiple paths to housing, to ensure the housing sector provides for all groups. It might assist the private sector develop smaller and less expensive housing options for lower income households by expanding access to finance for small and medium enterprises, streamlining development procedures, and improving land management systems. Perhaps more importantly, the government should study the situation of the informal housing system to determine why the supply of informal housing has diminished and how it might be supported.

Additionally, the wide variation in housing needs found across cities implies that directing the same type of housing assistance to one city over another can be dangerous, and if it is to be done, the rationale must be carefully considered. The flow of people between cities means that high housing prices generally reflect high wages, and because housing expenditures increase with income, residents of cities with high wages generally spend a greater share of income on housing. However, the residents of these cities are not necessarily worse off because of their higher housing expenditures, thus targeting interventions to different cities based on average measures of rent or housing price-to-income ratios is misguided.

A final benefit of understanding the connection between housing deficits and demographic changes is that it allows for the government to reframe the increasing demand for housing units as an opportunity rather than a challenge, and make policy accordingly. As Dhonte, Bhattacharya, and Yousef (2000) argue, the growth in the working-age population relative to the elderly and young that occurs with the demographic transition actually provides the labor pool needed to meet the increase in housing needs of the same age groups. Indonesia currently benefits from a low dependency ratio and the government must work to ensure that the correct policy frameworks are in place for productive employment and housing consumption.

Acknowledgements

I would like to express great gratitude to the following people, in no particular order, for either research assistance and/or comments and feedback on this work: Peter Ellis, Arish Dastur,

David Dowall, Delik Hudalah, Wilmar Salim, Arief Ramadhian, Renata Simatupang, Nathalia Marthaleta, Agustin Samosir, Isabelle Milbert, and Belinda Yuen. Any errors or omissions are my own.

Notes

1. The idea of a frame in public policy refers to normative and/or cognitive ideas in the foreground of policy debates. For more on ideas in public policy, see Campbell (2002).
2. Cities were identified using a definition similar to that used by the United States Census Bureau to define Metropolitan Statistical Areas – administrative regions that include an urban 'core' with a population of more than 50,000. The population of the urban 'core' was determined using a combination of data from *Badan Pusat Statistik* (2007) and the size of the urban footprint from GIS data (Schneider, Friedl, & Potere, 2010). The minimum population threshold was set at 75,000 to be consistent with previous research on housing in the country (Struyk et al., 1990). Cities were grouped in categories by population size; large cities have more than one million residents, medium cities between 500,000 and one million, and small have between 75,000 and 500,000. In 2007, there were 15 large cities, 20 medium cities, and 56 small cities.
3. In the United States, the census no longer uses the term 'household head', which implies a traditional patriarchal household structure. Instead they use the term 'householder' which is applied to whoever answers the census question and is not loaded with the meaning of household head. The traditional household head concept is more applicable in Indonesia.
4. Income data are not readily available for Indonesia so the present study uses expenditures as a proxy for income and socioeconomic status, terms that are used interchangeably.

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