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Divorce and the cost of housing: evidence from Iran

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Abstract   Divorce trend in Iran has become a serious social concern that is suspected of being influenced by rising housing costs in an oil-based economy. Iran has the highest growth rate of divorce among Islamic countries in the Middle East and North Africa region. Using data from 30 provinces of Iran from 2002 to 2010, this paper examines the relationship between housing costs (house prices and rents) and divorce rate, controlling for other macroeconomic variables such as unemployment, inflation, and education in addition to regional, cultural, traditional, and conventional attitudes toward divorce. By applying panel fixed-effects and dynamic generalized methods of moments methods, our results suggest that increases in housing costs erode marital stability in Iran. Our main results are also supported when we focus on the *shocks* in housing costs, using the Vector autoregressive based impulse response and variance decomposition analyses of divorce rates at the national level from 1982 to 2010.

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1 Introduction

Divorce crisis in Iran has now attracted even international attention. The New York Times (December 6, 2010) talks about "Iran's Divorce Rate Stirs Fears of Society in Crisis" while the Seattle Times reports on "Skyrocketing divorce rate in Iran worries officials". These media coverage reflects the ever-increasing family crisis in the Islamic and post-revolutionary society of Iran.

During the last two decades, one of the major socio-demographic trends taking place in Iran has been a strong growth in divorce rate. As can be seen from Fig. 1, the crude divorce rate (per 1,000 population) in Iran has increased significantly since early 1990s. It shows steady growth from 0.50 in 1993 to almost 2 in 2010. In addition, the ratio of divorce to marriage, which was 6.9 % in 1980, has reached to 8.24 % in 2000 and 12.29 % in 2012 (Euromonitor International 2013). A recent statistics provided by the Iran's National Organization for Civil Registration show that on average 16 divorce cases are registered every hour in Iran in 2013.[1]

This socio-economic problem is happening in a decade that Iran is facing a decline in marriage rate, low fertility, and low population growth. According to Statistical Center of Iran, the annual average growth rate of population from 1996 to 2006 was 1.62 % while the rate declined to 1.29 % for the period of 2006–2011. High level of divorce among young couples who have been married for a short period and do not have children may worsen the problem of population growth.

A recent statistic provided by Iran's National Organization for Civil Registration indicates that in 2012, 35 % of divorces in Iran occurred among couples who were married for 3 years and less. It is noteworthy that about 60 % of women who were granted a divorce in 2011 and 2012 were under 30 years old, which are the best years for fertility.

The housing boom in Iran has been blamed for various socio-economic problems such as low level of household formation and fertility rate as well as high incidences of land grabbing crimes (e.g., Gholipour 2012[2]). Over the last decade, home prices

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[1] http://www.mehrnews.com/detail/News/2010874. See also BBC Persian report entitled "13 % increases in divorce in Iran at the first 6 months of the year", 28 October 2013, Available at http://www.bbc.co.uk/persian/iran/2013/10/131028_nm_divorce_marriage_statistic.shtml [Accessed 20 December 2013] [In Persian]. And also a report of the New York Times about skyrocketing rates of divorce in Iran: http://www.nytimes.com/2010/12/07/world/middleeast/07divorce.html?pagewanted=all&_r=0.

[2] Also see "Endless appetite in land grabbing in Mazandaran" available at the http://alef.ir/vdccoiqi42bqx08.ala2.html?202498 [Accessed 3 January 2013] [In Persian] and Hamshahri-Online report on "incidence of 35,000 land grabbing cases in (Iran)". Available at http://hamshahrionline.ir/details/240701 [Accessed 3 January 2014] [In Persian].
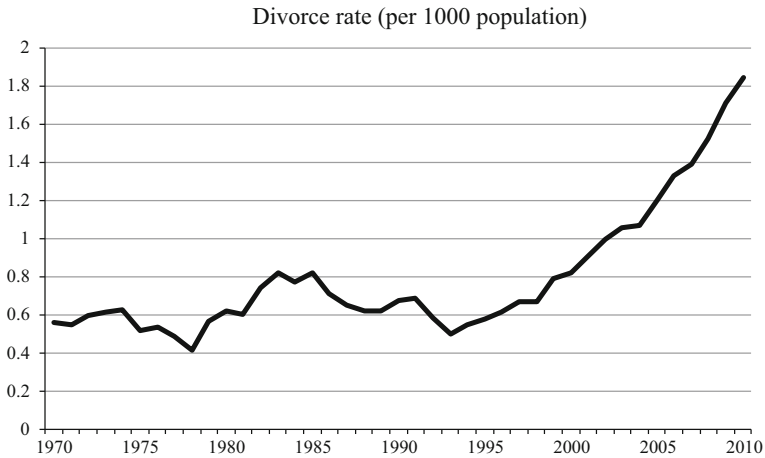
Divorce rate (per 1000 population)

Fig. 1 Total number of divorces in Iran (per 1,000 population), 1970–2010. *Source*: National Organization for Civil Registration (http://www.sabteahval.ir/en/default-789.aspx)

and rents have risen across the country.[3] Figure 2 illustrates the house rents per square meter in selected major cities in Iran.

Recently, divorce has become another social issue[4] that is suspected of being influenced by rising housing costs. It is because a rapid increase in house prices and rents went hand-in-hand with continuous increases in divorce rate. This led some observers to suggest that the high level of divorces in Iran was spurred by the high and persistent increases in house prices and rents[5] (Roshanfekr et al. 2012; Saeidi 2013). In fact, shortage of housing supply, housing costs as well as low depth of housing finance (2.8 % of GDP)[6] have been mentioned along with other

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[3] Economists and observers have mentioned several factors that pushed house prices and rents up in Iran in last decade such as: excess demand in housing market (particularly investment demands); speculation of real estate agents; high level of inflation; Dutch disease; increases in costs of construction due to reduction of subsidies from goods and services during Ahmadinejad presidency as well as sanctions imposed on the economy of Iran by the United Nations (UN), the United States (U.S.) and European Union; increases in land prices; and currency crisis (e.g., Hadavandi et al. 2011; Abbasinezhad and Yari 2009; Farzanegan 2013a). Also see BBC report "Economic sanctions and currency crisis increased house prices", Available at: http://www.bbc.co.uk/persian/business/2013/04/130414_l57_iran_housing_increased_price.shtml [accessed 29 September 2013] [In Persian].

[4] Researches in Iran have found that children whose parents have divorced experience many short-term negative effects such as aggression, anxiety, shock, depression and incompatibility. They will also grow up to have less education, more anti-social behavior, higher rate of crimes and misdemeanor as well as higher rate of drug addiction (e.g., Akhondi 2007; Kameli 2007; Shahmiveh and Amiri 2013). Moreover, studies conducted in Iran have shown that divorced Iranian women have drastic reduction in their financial situation and experience several physical and mental illnesses (e.g., Aghajanian and Moghadas 1998; Zarei et al. 2013).

[5] See for example Deutsche Welle report entitled "Increases in divorce is not necessarily bad". Available at: http://dw.de/p/15m0Q [accessed 28 January 2014] [In Persian].

[6] See Warnock and Warnock (2008). "Housing finance is what allows for the production and consumption of housing. It refers to the money we use to build and maintain the nation's housing stock. But it also refers to the money we need to pay for it, in the form of rents, mortgage loans and repayments" (King 2009, pp. 3).
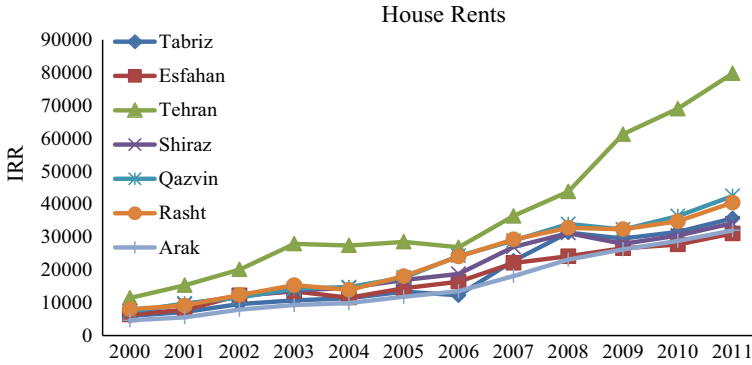
Fig. 2 Trend in rents per square meter in selected major cities of Iran (IRR), 2000–2011. *Source*: Statistical Center of Iran, available at: http://www.amar.org.ir/Default.aspx?tabid=96&agentType= ViewType&PropertyTypeID=46&currentpage=2
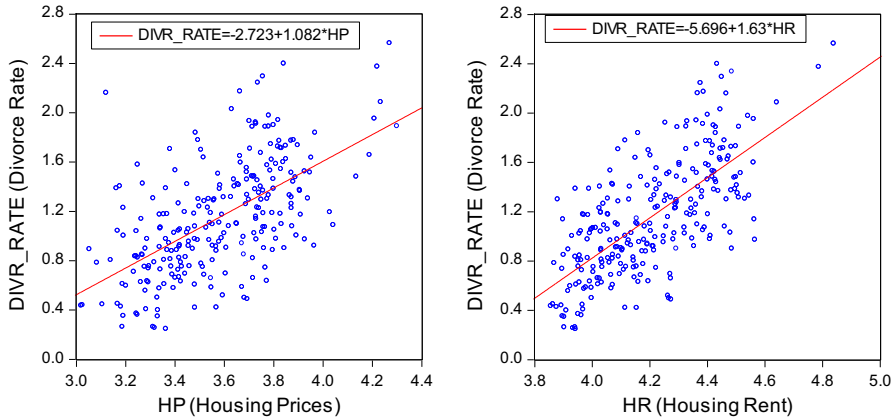

Fig. 3 Bivariate correlation between housing costs and divorce rates in a panel of Iranian provinces (2002–2010)

unfavorable economic factors (high unemployment and inflation) as drivers of family dissolutions, particularly among young couples, in Iran. It remains, however, to test these stylized facts using objective data.

Are increasing housing costs pushing divorce rate upward in Iran? Bivariate correlation shows a positive association between these two variables within our sample (see Fig. 3). However, in order to judge about causality from housing costs to divorce rate, we need to control for other time varying economic variables in addition to time constant, regional specific factors such as tradition, norms, conventions and attitudes toward divorce (see Hiller and Recoules 2013 for the role of culture in development of divorce). Also correlation may not be the causation. Effect can be also from divorce to housing prices and other macroeconomic indicators such as unemployment rate.

We study the relationship between housing costs and divorce rate using data from provinces of Iran over the period of 2002–2010. Our main findings from fixed effects and dynamic generalized methods of moments (GMM) panel regressions show a positive and statistically significant effect of housing prices and rents on divorce rates, controlling for other time varying, province and year fixed effects. Furthermore, we provide new evidences on the divorce effects of "shocks" in housing costs at the national level from 1982 to 2010 by using the Vector autoregressive based impulse response and variance decomposition analyses. Response of divorce to increasing shocks in housing rental prices, controlling for other variables, is positive and statistically significant over 5 years following initial shock. The results of this study enhance our understanding about the economic determinants of marital breakdown in an Islamic developing country.

The present study makes four contributions to the literature on divorce. First, although there have been some studies on the effect of house prices on divorce (or marital stability, partnership dissolution) in developed countries (Rainer and Smith 2010; Farnham et al. 2011; Harknett and Schneider 2012; Milosch 2014), to our knowledge, no empirical study has analyzed this link in a developing economy, especially in the Middle East Muslim dominated region. In contrast to developed countries, which have been experiencing a stable or decreasing growth in divorce rate, Iran (similar to many other developing economies) is experiencing an uprising trend (Euromonitor International 2013). Therefore, our result would provide some new evidences from a developing country where divorce is growing fast. The second contribution of this study is introducing the concept of *Mehrieh*[7] to the literature on economic determinants of divorce, explaining how changes in prices of real estate and gold coins may affect the divorce decision in an Islamic society. Third, while previous studies in this area have used micro or individual-level data, very few empirical papers have used aggregate level data to study these variables. Finally, although there has been a series of survey (cross-sectional) and conceptual papers about divorce phenomenon in Iran, such as Aghajanian and Moghadas (1998), Ghotbi et al. (2004), Zargar and Neshat-Doost (2008), Ghiaci et al. (2010) and Aghajanian and Thompson (2013), no empirical study has been conducted to investigate the effect of economic determinants of divorce across provinces of Iran over recent years. In fact, the existing studies often focus on one city of Iran in a short period. Our panel data approach will address the main shortage of omitted variable bias due to unobservable effects in studying a multi-aspect phenomenon such as divorce.

The paper proceeds as follows: Sect. 2 provides a brief background on cultural and religious attitudes of Iranian society toward divorce; in Sect. 3 we present theoretical framework for the relationship between housing costs and divorce and also reviews some of the relevant empirical studies; Sect. 4 explains the data and methodology; in Sect. 5 we present and discuss the empirical results; and Sect. 6 concludes this paper.

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[7] *Mehrieh* is a dowry agreement where the wife receives some assets such as real estate or gold coins if the marriage ends in divorce.

2 Cultural, religious, and legal attitudes toward divorce in Iran

The literature has emphasized on the importance of sociocultural (ethnic, regional, religious) variations in divorce pattern in the economic analysis (see Hirschman and Teerawichitchainan 2003 for the case of South East Asian countries). Iran is considered a collectivistic society. Therefore similar to other collectivistic societies a close and long term commitment and loyalty to the member 'group' is highly valued. These groups can include a family, extended family, or even extended relationships (Hofstede 2013).Traditionally, Iranian families have always been considered as the core unit of the society, which control and manage all social activities for its members. It gives the senior members of family, usually parents, an absolute power on life activities such as production, consumption, education, socialization, reproduction, leisure, and living arrangements. Moreover, establishing and maintaining 'idealized' family unit is highly encouraged by the Persian pre-Islamic religion (Zoroastrian) and Islamic values. Thus, the negative impression of Iranian society toward divorce is understandable. Any inclination toward divorce and marital dissolution is considered as a taboo among many Iranian families and even some parents reiterate the stigma of divorce by repeatedly telling their daughters, "a woman will go to her husband's house with her veil and come out with her *kafan* (shroud)" (Aghajanian and Thompson 2013, pp. 113).

From the legal perspective, there is national divorce legislation, which is applicable to all Iranian provinces. According to the Article 1169 of the Civil Code (reformed in 2002), "For the custody of children whose parents are separated, the mother has priority until the age of seven; and then, custody will devolve upon the father.[8] Note that after reaching 7 years of age, in the case of dispute, considering the best interest of the child, the court will decide who receives custody of the child." However, according to Article 1170 of Civil Code, "If the mother becomes insane or marries another man during her period of custody, the custody shall devolve upon the father." Nevertheless, there is no such restriction for the father (for more details see Nayyeri 2013).

With regard to division of property after divorce, the wife is entitled to half of her husband's assets if the court finds the divorce is initiated by the husband and is not caused by any fault on the wife's part (Nayyeri 2013). In this context, we are also examining the "*Mehrieh* (bride price)" where we present the related literature and explain our empirical findings in following sections.

Iran is a Muslim dominated country where 99.4 % of people are Muslim. Although Islamic values discourage divorce (Aghajanian and Moghadas 1998; Muslim Women's League 1999), Iran scores as a country that has a highest growth rate of divorce among Islamic countries in the Middle East and North Africa (MENA) region. As it can be observed from Table 1, while annual average growth of divorce rate for Iran is 3.33 over the period of 1980–2012, the rate is much lower or even negative for other Islamic countries in the region. Although the religion and tradition discourage divorce, but it has been increasing significantly in Iran.

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[8] For more comparative figures within Islamic countries, see Hadjian (2013).

Table 1 Annual average growth of divorce rate (per '000 population) in the MENA, 1980–2012

Countries	Rate
Bahrain	−1.13
Egypt	0.96
Iran	3.33
Jordan	2.95
Kuwait	1.68
Lebanon	1.94
Libya	0.39
Qatar	−2.65
Saudi Arabia	1.45
Syria	1.94
Tunisia	0.08
UAE	−2.32

Source: Euromonitor International (2013)

3 Theoretical framework and empirical literature

Macroeconomic factors affect both the gains of a marriage and the perception of couples on the costs of a divorce (Fischer and Liefbroer 2006; Milosch 2014). Generally, the economic literature on divorce provides two opposite predictions about the association between economic conditions and divorce risks: (1) *relational stress or psychosocial stress perspective* and (2) *relative cost or the cost of divorce perspective* (Fischer and Liefbroer 2006; Amato and Beattie 2011).

The *relational stress* proposition argues that unfavorable macroeconomic conditions (e.g., high unemployment or inflation) increases the risk that a family suffers from financial stress (e.g., higher cost of living and reduction in purchasing power of households) and puts a couple relationship under pressure. The financial stress and economic uncertainty has several negative psychological impacts such as stress, setbacks, and disappointments, which are usually associated with a higher risk of marital instability. In other words, economic hardship increases spouses' psychological distress, decreases spouses' expressions of warmth, emotional support, and satisfaction, and exacerbates discord between spouses, which may be ended with divorce (Fischer and Liefbroer 2006; Amato and Beattie 2011; Jensen and Smith 1990; Conger et al. 1990).

According to *relative cost* argument, unfavorable macroeconomic conditions may lead to lower divorce rates. Because troubled spouses may be reluctant to incur the costs of divorce such as lawyers' fee, court costs and the costs of moving to a new residence for at least one and often both spouses, purchasing new furniture and dividing marital property (Fischer and Liefbroer 2006; Amato and Beattie 2011). That is, divorce is unaffordable or at least perceived to be too costly during a time of widespread economic hardship (Harknett and Schneider 2012).

A large number of studies have analyzed the impact of aggregate macroeconomic factors (e.g., unemployment and inflation) on divorce (e.g., Amato and Beattie 2011; Harknett and Schneider 2012; Chowdhury 2013; Fischer and Liefbroer 2006; Nunley 2010; Schaller 2013; Nunley and Seals 2010; Weiss and Willis 1997).

Recent studies such as Hellerstein and Morrill (2011), Amato and Beattie (2011) and Schaller (2013) all find that an increase in unemployment rates is associated with a decrease in divorce, which is consistent with *the cost of divorce perspective*.[9]

Fischer and Liefbroer (2006) suggest that consumer confidence (as a proxy for macroeconomic conditions) and divorce rate are negatively associated. Nunley (2010) reports that inflation has a positive and persistent impact on divorce rate in the U.S. because inflation gradually diminishes the purchasing power of money, which can place significant stress on marriages by reducing household consumption and leisure.

In recent years, the relationship between house prices and divorce (or marital stability, partnership dissolution) has received research attention in the contemporary divorce literature due to the boom and burst of housing markets in developed economies (Rainer and Smith 2010; Farnham et al. 2011; Harknett and Schneider 2012; Milosch 2014). For example, using individual household data over the 14-year period (1991–2004), Rainer and Smith (2010) find that negative house price changes significantly increase the risk of partnership dissolution, whereas positive house price changes do not have a significant impact in the UK economy. Correspondingly, using individual-level data by metropolitan area from 1991 to 2010, Farnham et al. (2011) show that it is only negative house price changes that matter for divorce risk in the U.S. Taken together, both studies confirm that rising house prices do not significantly protect partnerships whereas falling house prices can destabilize them. Contrary to findings of Rainer and Smith (2010) and Farnham et al. (2011), Milosch (2014) shows that positive house price changes decreases the divorce risk; however there is no significant effect of negative house price changes in the U.S. Finally, Harknett and Schneider (2012) find that greater housing market distress (measured by higher mortgage delinquency rates) in a state of the U.S. is significantly associated with greater marital stability. These studies are commonly based on the economic models proposed by Becker et al. (1977) and Weiss and Willis (1997) who argued that the risk of marital dissolution is mainly determined by unexpected changes in anticipated utilities from marriage. In other words, couples separate when the utility that is expected from divorcing and possibly remarrying or being single exceeds the utility that is expected from remaining married (Rainer and Smith 2010; Schaller 2013).

The literature on the effect of house price changes on divorce rate provides almost same explanations as previous researchers have used to justify for other macroeconomic factors. First, when house prices are falling, ceteris paribus, the costs of divorce will prevent a couple from divorcing irrespective of the quality of their marriage. In other words, reductions in the value of houses can force couples to remain together, in spite of marital difficulties (Harknett and Schneider 2012; Chowdhury 2013). It is because, for homeowners, a decrease in the value of housing means that it must be sold for less money but the amount owed on the home through the mortgage stays constant. Through this channel, an (unexpected) decrease in

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[9] In their analysis of Canada case study, Ariizumi et al. (2013) show that unlike the US studies, there is no significant relationship between unemployment rates and aggregate flows into divorce. They do, however, find evidence on negative and significant impact of unemployment rate on marriage rate, clarifying that such decline is mainly due to drop of re-marriage.

housing prices can decrease the divorce risk since the costs of divorce are higher (Milosch 2014). This argument is in line with *the cost of divorce perspective* hypothesis. Second, increases in housing costs (higher house prices and rents) increase the *economies of scale*[10] within a household, which increase the value of staying married. It is because with higher housing costs, a couple would lose out on larger economies of scale if they were to divorce and live apart (Milosch 2014; Rainer and Smith 2010). Table 2 presents a summary of related literature on divorce, macroeconomic conditions and housing costs.

In addition to the above theoretical channels, there is a particular fact in Iranian context, which can affect the probability of divorce.[11] Observations in Iran show a positive association between the value of assets such as real estate and gold coins with divorce rate. Parallel to increasing divorce rate in association with increasing in housing values, the media reports indicate an increasing in temporary marriage[12] in Iran. What makes Iranian case interesting and different from studies of divorce-macroeconomics in developed countries is the mechanism of *Mehrieh* or bride gift.

Mehrieh is one of the most important conditions before marriage in Iran. It acts as an insurance policy for women in the case of divorce in a conservative Islamic society. The process of determining the value of "bride price or gift" can be affected by bilateral negotiation between families of man and woman, social and income class of families, religiosity of families, education level of woman, and average *Mehrieh* in relatives and society in general. By agreeing on the amount of *Mehrieh*, the future husband commits himself to pay it to future wife upon signing of marriage contract or at any time which wife demands it. The value of *Mehrieh* in most cases is linked to the number of gold coins which may be the number of wife's birth year or her weight and/or any additional assets such as real estate. Increasing monetary values of real estate and gold coins has increased motivation of women, on average, to demand their *Mehrieh* sooner than later.[13] Most husbands who cannot meet their financial commitments should go to jail until they clear their financial debt to their wives (Nayyeri 2013). In such cases, divorce will be most likely.[14]

We expect, based on *relational stress perspective*, increases in housing costs increase marital tension and erode marital stability in Iran. This argument is in line with an article in *TIME* magazine which noted that economic hardship as well as real estate boom in Iran caused partnership dissolution, particularly for middle-income Iranians (Moaveni 2009).

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[10] It means that individuals will choose to consume more housing when they live together than when separated (Rainer and Smith 2010).

[11] For a survey of the Iranian family law see ZarRokh (2011).

[12] For more information regarding temporary marriage and its Islamic roots, especially in Shia see http://www.payvand.com/news/12/jun/1029.html.

[13] The BBC data is from the Iranian authorities which show the total number of 20,000 men went to jail in 2 years (2010 and 2011) due to their inability of paying Mehrieh (Farsi version of news: http://www.asriran.com/fa/print/202069). Another source of information in an Iranian news agency (Tabnak) in July 2014 shows that from total number of 210,672 prisoners in Iran, 8,000 prisoners are due to financial reasons. From this latter group, 2000 persons are in jail for Mehrieh related reasons (http://www.tabnak.ir/fa/print/413408).

[14] See BBC report at http://www.bbc.co.uk/news/world-middle-east-17147842.

Table 2 Review of the recent literature on economic drivers of divorce

Study	Subject of investigation	Approach (data/method)	Main finding
Macroeconomic condition and divorce			
Fischer and Liefbroer (2006)	Consumer confidence and union dissolution rate	Pooled data from three waves of the Dutch Fertility and Family Survey (1988, 1993, 1998) Semi-parametric Cox model	Negative relationship
Nunley (2010)	Macro variables and divorce rate	U.S. data from 1955 to 2004 Structural time-series	Positive relationship between inflation, women's educational attainment, economic growth, unemployment rate and divorce rate
Hellerstein and Morrill (2011)	Unemployment rate and divorce rate	States of the U.S. from 1976 to 2009 Panel fixed-effect regressions	Negative relationship
Amato and Beattie (2011)	Unemployment rate and divorce rate	States of the U.S. from 1960 to 2005 Panel fixed-effect regressions	Negative relationship
Schaller (2013)	Unemployment rate, marriage and divorce rates	States of the U.S. from 1978 to 2009 Panel fixed-effect regressions and Impulse response functions	Negative relationships
Chowdhury (2013)	Permanent, transitory income and divorce rate	States of the U.S. from 1978 to 2009 Panel OLS, 2SLS and GMM regressions	Negative relationship between permanent income and divorce rate, positive relationship between transitory income and divorce rate
Housing market and divorce			
Rainer and Smith (2010)	House price shocks and marital dissolution	Individual household data from the UK Panel fixed effect regressions	Positive and negative house price shocks have asymmetric effects on partnership dissolution
Farnham et al. (2011)	House prices and marital stability	Individual-level data from metropolitan areas of the U.S Panel fixed-effect regressions	Negative house price changes matter for divorce risk
Harknett and Schneider (2012)	Unemployment rate, mortgage delinquency rate and marital stability	Couples with children in the U.S Cox proportional hazard models	Negative relationships between unemployment rate, mortgage delinquency rate and marital dissolution, especially for less educated and racial minorities
Milosch (2014)	House price shocks and individual divorce risk	Household-level data from metropolitan areas of the U.S Probit model and Cox proportional hazards model	Positive house price shocks decrease the divorce risk

4 Data and methodology

4.1 Data

The purpose of this study is to examine the relationship between housing costs and divorce rate in Iran. Iran is subdivided into 31 provinces in 2012. We employ data for the period of 2002–2010 for 30 provinces. Alborz province was established in 2010 so data for this province is not available. The choice of the data period for the analysis is based on the availability of data.

We calculate the divorce rate as the number of divorces per 1,000 individuals in a province. The data for number of divorces in each province were obtained from Iran's National Organization for Civil Registration.[15] The highest divorce rate over the period of this study (2002–2010) are for Tehran (0.1899), Kurdestan (0.1750) and Kermanshah (0.1725) whereas Sistan-Baluchestan (0.0403), Ilam (0.0509) and Charmohal-Bakhatyari (0.0627) scored the lowest divorce rate (see "Appendix").

Information on average house prices per square meter (1,000 IRR) and average rents (including 3 % of deposits agreed in contracts concluded between property owner and leaseholder) per square meter (IRR) was collected from the Statistical Center of Iran.[16] The data shows that Tehran is ranked as the most expensive housing markets over the period of the present study (see "Appendix").

Besides the variable of interest (housing costs), the literature suggests that some macroeconomic variables show a robust influence on divorce. Thus, following existing studies on divorce and based on the current arguments by Iranian observers, unemployment rate, inflation rate, and women's education were selected as control variables in the model specification. We expect that the unemployment and inflation rates are positively associated with the divorce in Iran. In their study on recent divorce trend in Iran, Aghajanian and Thompson (2013) suggest that lack of compatibility between aspirations (attaining a high standard of living) and possibilities for attainment (due to high inflation and unemployment) create conditions that threaten marital happiness and stability among young Iranians. According to the Minister of Economic Affairs and Finance, the Iranian misery index[17] has often been above 50 which is much higher that international standard (about 11–15) in recent years.[18] The province-level data on unemployment rate and inflation rate are from the Statistical Center of Iran.

Finally, prior studies in Iran show that increases in the educational attainment of women are one of the major determinants of divorce (Aghajanian and Thompson 2013; Ghiaci et al. 2010; Aghajanian and Moghadas 1998). The justifications behind higher divorce among women with high level of education are their modern view

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[15] For data on the number of registered divorce in Iran see http://www.sabteahval.ir/en/default-789.aspx.

[16] This information is available at http://www.amar.org.ir/Default.aspx?tabid=96&agentType=ViewType&PropertyTypeID=46&currentpage=2.

[17] The misery index sums a country's unemployment and inflation rates to assess conditions on the ground (the higher the number, the worse off a country is).

[18] http://www.radiofarda.com/content/f9_iran_economy_minister_says_misery_index_50_percent/25195605.html [accessed 28 January 2014] [In Persian].

about women's right, their interest in work and career opportunities, and availability of wider social support and resources for them to live independently. Therefore, they are less likely concerned about the stigma of divorce and are better able to negotiate it with their family members (Aghajanian and Thompson 2013). Results of existing studies in other countries also support the view that the rising women's education increases the risk of divorce (Nunley 2010; Kalmijn et al. 2004). In the present study, we use total public and private higher education expenditures in each province as a proxy for women's education. It can be a good proxy for spending on women's education since they make up more than 60 % of all universities' student body in Iran (Sahraei 2012). The data on education expenditures (in millions of IRR) are from the Statistical Center of Iran.

4.2 Methodology

4.2.1 Baseline model

Based on the above discussion, the empirical model we use is as follows:

$$\mathrm{DIVR}_{it} = \alpha + \beta_1 \cdot \ln \mathrm{HC}_{it} + \beta_2 \cdot \mathrm{UNEMP}_{it} + \beta_3 \cdot \mathrm{INF}_{it} + \beta_4 \cdot \ln \mathrm{EDUEX}_{it} + v_i + \Omega_t + u_{it}$$

(1)

Equation (1) allows for province fixed-effects (v), year fixed-effects (Ω), error term (u), and where $i = 1,\ldots, N$ denotes the province, $t = 1,\ldots, T$ denotes the time period and ln is natural logarithm. DIVR is the divorce rate, HC is housing costs including house prices (HP) and rents (HR), UNEMP is unemployment rate, INF is inflation rate and EDUEX is total expenditures in higher education in public and private education institutions. To avoid multicollinearity, the HP and HR are added one by one to the model. This is because there is a high correlation between these two variables.

4.2.2 Estimation method

In order to control for the heterogeneity across different provinces we use province fixed effects which control for factors such as religiosity, norms, tradition, attitudes and conventions toward divorce in different regions. We also control for time fixed effects in order to capture the common time shocks for all provinces.[19] These models have been used by several researchers to analyze the determinants of divorce or marital dissolution (e.g., Amato and Beattie 2011; Hellerstein and Morrill 2011; Schaller 2013).

Beside fixed effect estimation, we also apply the dynamic GMM method in the regression analyses. In dynamic panel model, we control for possible persistency in dependent variable (divorce rates) by including the lag of divorce rate in the right

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[19] Year fixed effects can control for policy reforms in specific year which affect all provinces in a country at the same time. Such policy shocks are like the example of Danish legal reform that changed how pension savings are shared upon divorce and thus affecting the divorce rates (see Amilon 2012).

hand side of model. There is also endogeneity concern regarding some of our main variables which makes application of GMM method more appealing. For example, we assume that higher housing costs increase divorce rate in Iran. However, researchers have shown that rise in divorce rates translates into an increase in number of households (Yu and Liu 2007; Keilman 2003), which increases housing demand. The increase in demand increases house prices and rents (see Dewilde 2008 for the impact of divorce on the housing movements in Europe and Gram-Hanssen and Bech-Danielsen 2008 for the case study of Denmark). Also increasing divorces may push the demand for job upward, increasing pressures on the labor market and thus affecting unemployment rates.

When there is endogeneity problem ordinary least squares (OLS) estimates may be biased. The problem can be solved by applying instrumental variable methods such as GMM (Wooldridge 2009). The GMM panel estimator provides consistent and unbiased estimates under the assumption that unobserved heterogeneity exists but is fixed or time-invariant (Wintoki et al. 2012). The GMM estimator was introduced by Arellano and Bond (1991), and further developed by Arellano and Bover (1995) and Blundell and Bond (1998). Equation (2) is a dynamic panel model, which allows for dynamic effects ($DIVR_{it-1}$), province fixed effects (v), year fixed effects (Ω), and error term (u).

$$
\begin{aligned}
DIVR_{it} = \alpha &+ \beta_1 \cdot \ln HC_{it} + \beta_2 \cdot UNEMP_{it} + \beta_3 \cdot INF_{it} + \beta_4 \cdot \ln EDUEX_{it} \\
&+ \beta_5 DIVR_{it-1} + v_i + \Omega_t + u_{it}
\end{aligned} \tag{2}
$$

In this study, we apply difference GMM for estimation.[20] In the difference GMM, individual specific unobserved effects are eliminated by using a first differencing transformation. First differencing also control for the effect of possible time trend in our main variables of interest. After first-differencing, the equation is estimated via GMM. Difference GMM applies lagged values of the dependent and independent variables as instruments for the current independent variables.

For models estimated by GMM method, it is important to calculate the second order (AR (2)) serial correlation statistic proposed by Arellano and Bond (1991). AR (2) is a test for serial correlation in the first-differenced residuals, under the null of no serial correlation. The p value of AR (2) statistic should be insignificant (Arellano and Bond, 1991). Finally, we test the validity of the instruments used in the GMM estimations by applying the Sargan test. The Sargan test is a test for over-identifying restrictions (a Chi square test to determine if the residuals are correlated with the instrument variables). The validity of the instrument variables should not be rejected by Sargan test (Arellano and Bond 1991).

4.2.3 Estimation procedures

First, the regressions were run for all provinces. Second, we drop Tehran province from the sample and look only at other provinces for investigation. It is because Tehran is the only province in the sample where house prices and rents are much

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[20] Results are robust in the case of using orthogonal deviation instead of first difference transformation of variables.

higher than other provinces. Thus, Tehran province might be outlier and its removal may affect the results. Finally, we checked for robustness of our results using national time series and measuring the response of divorce rates to shocks in housing costs.

5 Empirical results

5.1 Main analyses

This section presents and discusses the results of our panel data analyses. Table 3 presents the pooled OLS and fixed-effect regression results when we use full sample data. The findings show that increases in house prices (HP) have a positive and significant relationship with divorce rate (DIVR) in the full sample of provinces in pooled OLS, province fixed-effects and year fixed-effects models (columns 3.1–3.3 of Table 3). Similarly, the coefficient of rents (HR) has a positive sign and is significantly associated with DIVR at the 1 % level (columns 3.5–3.8 of Table 3). These results support our hypothesis and are not consistent with Harknett and Schneider (2012) who found that greater housing market distress is significantly associated with higher marital stability in the U.S. The positive impacts of housing costs on divorce in Iran can be mainly explained by the *psychosocial stress perspective* hypothesis. It is noteworthy that the coefficient on HR (on average across different specifications) is almost two times bigger than the coefficient on HP meaning that that marital dissolution in Iran is more sensitive to rents than house prices. This difference arises because households with rented houses increased from 22.9 % in 2006 to 26.6 % in 2011 while house ownership by households decreased from 63.4 % in 2006 to 56.4 % in 2011, according to 2011 census conducted by Statistical Center of Iran.

Regarding the control variables, our findings show that increasing spending on education (EDUEX) is positively associated with DIVR when we apply province fixed-effects model (columns 3.2 and 3.6). This is consistent with Aghajanian and Thompson (2013) and Aghajanian and Moghadas (1998) who noted that the rising women's education increases the risk of divorce in Iran. Unemployment rate (UNEMP) has also the expected positive sign and is significant at conventional levels when province fixed-effects model and province and time fixed-effects model are applied (columns 3.2, 3.4, 3.6 and 3.8). This result is consistent with the *psychosocial stress perspective* hypothesis, which suggests that economic hardship linked with high unemployment increases marital instability. This finding is not in line with previous studies in developed economies such as Amato and Beattie (2011), Schaller (2013) and Hellerstein and Morrill (2011) who found that higher unemployment rate reduce divorce rate.

Interestingly, we find that inflation rate (INF) has a negative and significant relationship with DIVR in most models in full sample of provinces. It means that an increase in inflation decreases DIVR in Iran. It is because when incomes are relatively fixed in inflationary economy of Iran a couple would lose out on larger economies of scale if they were to divorce and live apart. This result is not

Table 3 Divorce and housing prices and rents, full sample (2002–2010)

	Dependent variable: divorce rate (DIVR) (rates are per 1,000 total population)							
	3.1 Pooled OLS	3.2 Province fixed effects	3.3 Time fixed effect	3.4 P & T fixed effects	3.5 Pooled OLS	3.6 Province fixed effects	3.7 Time fixed effect	3.8 P & T fixed effects
lnHP	0.980*** (3.73)	0.269** (2.38)	0.831** (2.32)	0.152 (1.25)				
lnHR					1.473*** (4.75)	0.811*** (3.79)	1.373*** (3.02)	0.354*** (2.87)
UNEMP	0.004 (0.41)	0.018*** (3.67)	−0.003 (−0.33)	0.011*** (2.93)	−0.001 (−0.13)	0.016*** (2.88)	−0.006 (−0.35)	0.011*** (3.12)
INF	−0.011*** (2.97)	−0.005*** (−2.81)	0.019 (1.47)	0.0005 (0.08)	−0.009*** (−3.89)	−0.007*** (−3.94)	0.027** (2.46)	0.002 (0.44)
lnEDUEX	0.202 (1.45)	0.861*** (8.13)	0.158 (1.07)	0.037 (0.18)	0.152 (1.05)	0.587*** (4.45)	0.152 (1.07)	−0.035 (0.16)
Province fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Time fixed effects	No	No	Yes	Yes	No	No	Yes	Yes
Adj. R–squared	0.37	0.92	0.44	0.95	0.47	0.93	0.50	0.95
Obs.	225	225	225	225	233	233	233	233
Provinces	30	30	30	30	30	30	30	30

The constant term is included (not reported). t statistics shown in parenthesis are based on robust standard errors which are clustered at the province level (White period method)

* Significantly different from zero at 90 %, ** 95 %, and *** 99 % confidence

Table 4 Divorce and housing prices and rents, excluding Tehran sample (2002–2010)

| | Dependent variable: divorce rate (*DIVR*) (rates are per 1,000 total population) | |
	4.1	4.2
lnHP	0.094 (0.87)	
lnHR		0.329** (2.56)
UNEMP	0.011*** (3.06)	0.011*** (3.22)
INF	0.001 (0.16)	0.002 (0.40)
lnEDUEX	−0.036 (−0.18)	−0.129 (−0.61)
Province fixed effects	Yes	Yes
Time fixed effects	Yes	Yes
Adj. R-squared	0.94	0.95
Obs.	217	225
Provinces	29	29

The constant term is included (not reported). *t* statistics shown in parenthesis are based on robust standard errors which are clustered at the province level (White period method)

* Significantly different from zero at 90 %, ** 95 %, and *** 99 % confidence

consistent with Nunley (2010) who shows that inflation has a positive and persistent effect on divorce rate in the U.S. society.

Table 4 presents the panel fixed-effects regression results when we exclude Tehran province (SWTP, hereafter). The results indicate that the coefficient of HR is positive and significant for the SWTP (see column 4.2 of Table 4). We also find that higher levels of UNEMP significantly increase DIVR in the SWTP. Finally, the association between INF and DIVR as well as EDEXP and DIVR no longer are statistically significant when the full sample is excluding Tehran.

Further, we estimate regressions using difference GMM method to ensure the robustness of our findings, controlling for dynamic in model and possible endogeneity of main variables of interest. Table 5 shows the results.

Similar to the fixed-effects regressions, the GMM estimations show that HP and HR are important determinants of DIVR, as their coefficients are statistically significant and positive ($p < 0.01$) for the full sample of provinces and SWTP (columns 5.1–5.4 of Table 5). As column 5.1 of Table 5 shows the coefficient on HP is 0.506 meaning that one percent increase in the HP is associated with 0.0053 ($\approx 0.534/100$) increase in the number of divorces (per 1,000 population) while all other variables in the model are held constant. The coefficient of HR in the full sample is 0.573 implying that a one percent increase in HR is associated with 0.0057 increase in number of divorces (per 1,000 population), *ceteris paribus*.

For robustness and elasticity interpretation of housing cost-divorce nexus, we have also used log–log specification in which both dependent variable (divorces per 1,000 population) and our key independent variables (HP, HR) are in logarithmic form. Using this latter specification to re-estimate model 5.1, our results show that a one percent increase in one square meter prices of house is associated with a 0.36 %

Table 5 Divorce and housing prices and rents, full sample (2002–2010), dynamic panel models

	Dependent variable: divorce rate (*DIVR*) (rates are per 1,000 total population)			
	5.1 Difference GMM	5.2 Difference GMM (excluding Tehran)	5.3 Difference GMM	5.4 Difference GMM (excluding Tehran)
lnHP	0.534*** (2.94)	0.498*** (2.74)		
lnHR			0.573*** (3.13)	0.503*** (2.99)
UNEMP	0.018*** (3.86)	0.017*** (3.92)	0.016*** (2.89)	0.013*** (2.73)
INF	−0.007 (−1.22)	−0.009 (−1.53)	−0.0006 (−0.09)	−0.001 (−0.26)
lnEDUEX	0.889** (3.66)	0.993** (4.20)	0.966*** (5.92)	1.078*** (6.61)
DIVR(−1)	0.101 (0.96)	0.112 (1.22)	0.097 (1.05)	0.097 (1.13)
Time fixed effects	Yes	Yes	Yes	Yes
AR (2) *p* value	0.44	0.38	0.62	0.82
Sargan *p* value	0.54	0.65	0.26	0.32
Obs.	164	158	172	166
Provinces	30	29	30	29

Difference GMM method is used to remove the cross-section fixed effect, and controlling for possible trend in data. As instruments we use 1–2 lags of house prices and rents, and one year lag of unemployment, inflation and education variables besides 2–3 lags of dependent variable (DIVR). White period robust *t* statistics are reported in parentheses

* Significantly different from zero at 90 %, ** 95 %, and *** 99 % confidence

increase in number of divorces per 1,000 population. The estimated elasticity is statistically significant at 99 % confidence intervals (robust *t* statistics of 2.67). The *p value* of Sargan test in the log–log estimation of model 5.1 is also 59 %, which shows the validity of used internal instruments in GMM estimation, and *p* value for AR (2) is 0.96. For comparison, we also use log–log specification and re-estimate model 5.3. The results show that a one percent increase in one square meter rents is associated with a 0.28 % increase in number of divorces in 1,000 population, *ceteris paribus*. The estimated elasticity is statistically significant at 90 % confidence interval (robust *t* statistics is 1.80) and *p value* of Sargan test is 0.44 (AR (2) *p* value is 0.73).

The results also suggest that increases in UNEMP and EDUEX lead to increases in DIVR across provinces of Iran over time. The lower part of Table 5 includes two post estimation tests for autocorrelation and instrument validity. Sargan *p* value shows that over-identifying restrictions are valid, and Arellano-Bond serial correlation test (AR (2)) shows that the second order serial correlation statistic is not statistically significant.

In summary, our panel data analyses suggest that increases in housing costs increase marital tension and erode marital stability in Iran. More broadly, besides the traditional macroeconomic determinants of divorce, marital instability can be partly explained by changes in housing costs in emerging economies.

5.2 Robustness check by national time series (1982–2010)

5.2.1 Cointegrating regression: FMOLS method

To confirm our findings of panel analyses, we run the regressions by using national time series. We used housing rental index (HRI) in all urban areas as a measure of housing costs in Iran.[21] The HRI is available for the period of 1982–2010. The base year for this index is 2004 = 100. We obtained annual time-series of HRI, unemployment rate and inflation rate from the Central Bank of Iran. Data for annual divorce rate come from the Statistical Center of Iran. Finally, we used the female adult literacy rate (LITR)-as a proxy for the women education- which was collected from the Euromonitor International.

To estimate the long-run relationships between the divorce rate and explanatory variables, we used the fully modified ordinary least squares (FMOLS) method developed by Phillips and Hansen (1990). This technique is among the fully efficient methods for testing long-run relationships. The first reason to use the FMOLS is the existence of the endogeneity problem of independent variables, as noted earlier. In addition, when we ran the standard OLS to estimate the relationship between the dependent variable and explanatory variables, we found that the residuals were serially correlated. Serial correlation violates the standard assumption of the OLS regression that disturbances are not correlated with other residuals. Therefore, in this study the FMOLS method was employed because it can correct for endogeneity and serial correlation in regressions and provides unbiased estimates of the coefficients (Phillips and Hansen 1990).

Table 6 presents the results of the FMOLS using national time series for variables. The results are robust to the findings of panel analyses. The coefficient of HRI is positive and significant at the 1 % level suggesting that higher level of housing rents (as a proxy for housing costs) increase the probability of divorce rate in Iran. Interestingly, the coefficient on HR ($\beta = 0.573$) in panel data analyses applying GMM method is almost same as the coefficient on HRI ($\beta = 0.557$) in time series analysis.

5.2.2 Vector autoregressive (VAR) model

Our analysis so far uses the rental housing price levels instead of *shocks* in housing prices. One may argues that price shocks are more relevant to explain divorce decisions because price shocks only incorporate unanticipated changes while price levels include anticipated and unanticipated changes in prices. We can think that

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[21] Unfortunately, housing price index does not exist for long period therefore we only use HRI as a measure of housing costs.

Table 6 Results of regression for national time-series (1982–2010)

Dependent variable: divorce rate (*DIVR*) (rates are per 1,000 total population)

	FMOLS
lnHRI	0.557*** (4.175)
UNEMP	−2.186 (−0.674)
INF	−0.396 (−0.613)
LITR	−3.570** (−2.690)
Adj. R-Squared	0.78
Obs.	29

Cointegrating equation deterministics: C; Long-run covariance estimate (Bartlett kernel, Newey-West fixed bandwidth = 4.00); *t* statistics shown in parenthesis

* Significantly different from zero at 90 %, ** 95 %, and *** 99 % confidence

rational expectation agents incorporate anticipated changes in their future decisions, as they are forward looking. Hence, only unanticipated changes can have an effect on divorce decisions.[22]

To investigate the response of divorce rates to the increasing "shocks" in the housing costs we use the Vector Auto regressive model and its applied tools such as the impulse response functions (IRF) and variance decomposition analysis (VDA). In this methodology we impose a shock in our interested variable (e.g., housing rental prices) and trace the response of other interested variables to such unexpected and exogenous shocks (e.g., response of divorce rates), controlling for other important variables such as inflation, unemployment and education.[23] We use the VAR modeling at the national level with annual data on divorce rate, HRI (2004 = 100), unemployment rate, inflation rate and literacy rate. The period is from 1982 to 2010. We believe this approach is a useful strategy to shed more lights on dynamic transmission channel of housing costs increasing shocks to the family break-up. One of the main advantages of the VAR modeling is that all included variables are treated as endogenous variables. This addresses the concern of possible reverse feedback from divorce rates to rental prices and other macroeconomic indicators which we discussed earlier.

We estimate the following VAR model:

$$y_t = A_1 y_{t-1} + \cdots + A_p y_{t-p} + B x_t + \varepsilon_t \tag{3}$$

where y_t represents a vector of k endogenous variables (housing rental index inflation unemployment, literacy, and divorce rate); x_t is a vector of d exogenous variables (constant term); $A_1, \ldots, A_p$ and B are matrices of coefficients to be estimated; p is the optimum lag order and ε_t is a vector of innovations that may be

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[22] We thank referees for raising this point.

[23] This method has been used extensively in literature to measure, for example, the macroeconomic and political effects of oil price shocks. For more details on this methodology and its application in modeling shocks see Farzanegan and Markwardt (2009), Farzanegan (2011, 2014a) and Farzanegan and Raeisian Parvari (2014).

contemporaneously correlated but are uncorrelated both with their own lagged values and with all of the right-hand side variables.

We are interested in the direction and the statistical significance of the divorce response to a one standard deviation increasing shock to the housing rental index in Iran, controlling for other variables. For calculating the impulse response functions, we use the Cholesky ordering in which the first variable in ordering affect all other variables contemporaneously but get affected by them with some lags. We apply the following ordering: housing rental index, inflation, unemployment, literacy and divorce rate.[24] Rent Index is one of the major CPI group of consumer goods and services basket and thus an exogenous shocks to it transfer immediately to inflation. Divorce rate is located at the end of ordering. Family structure is getting affected by key macroeconomic indicators shocks contemporaneously but it affects them with lag. Increasing family break ups following economic shocks increase pressure on labor and housing markets in next stages.

The middle line in IRFs displays the response of divorce rates to a one standard deviation shock in housing rental index. The dotted lines represent confidence bands at 68 % confidence intervals which are built by using 1,000 Monte Carlos simulations (Sims and Zha 1999 recommends using one standard deviation for error bands in the IRFs). The impulse responses are statistically significant when the error bands do not include the zero line. Based on the LR (sequential modified LR test statistic), FPE (Final prediction error), AIC (Akaike information criterion), and HQ (Hannan-Quinn information criterion), we use 2 years as the optimum lag length for our VAR model.

Figure 4 shows the response of the divorce rates to a one standard deviation increasing shock to HRI while controlling for inflation, unemployment, and literacy rates. The response of divorce rates to increasing shocks in housing rental prices in Iran is positive and statistically significant in all 5 years following initial housing shock. The positive response of divorce rates to housing costs shocks reach its maximum in the 4th years after shock.

We also carry out the variance decomposition analysis for the divorce rates. Variance decomposition analysis shows the role and importance of shocks in specific variables (e.g. housing rental prices, inflation, unemployment, and education) in explaining the variance of our key variable of interest (e.g., divorce rates) in the system. Table 7 shows the VDA results. The explanatory power of housing rental prices shocks with respect to variance of divorce rates is increasing following initial shocks in the forthcoming 5 years: housing shocks explain about 6 % of fluctuations of divorce rates in the first year after shock but it reaches to significant portion of about 36 % in the 5th years after shock. Shocks in inflation rates have stronger immediate power in explaining the divorce changes (22 % in first year after shock) but its role diminishes in forthcoming years. A major component of consumer price inflation is of course housing costs. Unemployment shocks explain 5 % of changes in divorce in the first year after shock, reducing to

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[24] We have also used the generalized impulse responses which is not sensitive to the ordering of variables (Pesaran and Shin, 1998). The response of divorce to housing costs shocks is similar to the Cholesky ordering. However, Doan (2010, p. 48) suggests against the Generalized impulse responses as "an attempt to avoid the difficulties of identifying orthogonal shocks in VAR models".
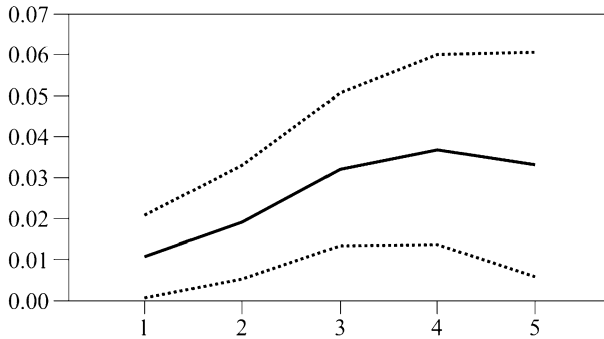
Fig. 4 Response of divorce rates to housing rental price shocks. The *graphs* show impulse responses of divorce rate to one-standard-deviation shock in housing rental index. The *dotted lines* represent ±1 standard deviation. The deviation from the baseline scenario of no shocks is on the *vertical axis*; the periods (years) after the shock are on the *horizontal axis*. The *vertical axis* shows the magnitude of the responses

	Years after shock	HRI	UNEMP	INF	LITR	DIVR
Table 7 Variance decomposition for divorce rates	1	6.46	5.06	21.82	1.76	64.90
	2	14.29	2.99	24.39	1.68	56.64
The figures show the % changes	3	27.39	1.83	16.18	1.21	53.39
of variations in divorce rates due	4	34.25	1.50	10.77	0.82	52.67
to the shocks in other variables, including divorce rates	5	35.79	2.12	8.65	0.62	52.82

almost 2 % in the 5th year after shock. Basic education has a minor role in explaining divorce variance. Past changes in divorce explain almost 65 % of variance of divorce in the first year after shock but this self-explanatory power of divorce reduces over time.

6 Conclusion and policy recommendations

Skyrocketing divorce rate in Iran has attracted attention in domestic and international media, policy-making organizations, and academic debates in recent years. Fragile family structure is suspected of being influenced by rising housing costs among other macroeconomic drivers. This led some observers to suggest that the high level of divorces in Iran was spurred by the high and persistent increases in house prices and rents.

We have examined the relationship between housing costs (house prices and rents) and divorce rate in Iran. We use data from 30 Iranian provinces from 2002 to 2010. By applying panel fixed-effects and dynamic GMM panel models, we show that the increasing housing costs have positive association with marital instability. Moreover, the results show that higher levels of unemployment and public and private spending on education are positively associated with divorce rate,

controlling for unobservable province specific factors such as norms and local traditional attitudes toward divorce.

In our VAR analysis of national level data, we use the shocks or unanticipated changes in housing rental prices. The changes from one year to another include both anticipated and unanticipated changes in housing prices. However, we can argue that only unanticipated changes or shocks in housing costs are important drivers of family break ups. The VAR based impulse response functions show that the response of divorce rates to increasing shocks in housing rental index in Iran is positive and statistically significant over the 5 years following initial shock, controlling for inflation, unemployment, and basic women education. The Variance decomposition of divorce rates also show the increasing importance of housing costs shocks in explaining the fluctuations of divorce rate within the 5 years after shock. The VAR estimation results lend more supports to our previous findings by panel fixed effects and GMM estimations.

How policy makers in Iran and other countries with similar situation should deal with the housing costs-family-break ups issue? In Iran housing market has traditionally been one of favorite markets for speculators and as a result investment demands and speculations in housing market are among the major drivers of high property prices in Iran (Masron and Gholipour 2010). Therefore, redefining taxing system on property transactions in a way that prevent frequent real estate trading and speculations is recommended (e.g., Gholipour 2012[25]). In addition, introducing a system to identify and tax the long-term vacant houses may also help to increase housing supply. According to Akhondi, the Minister of Road and Urban Development of Iran, there are more than 500,000 vacant investment houses only in Tehran where most of the middle and low income groups are suffering under high house prices and rents.[26]

Another policy lesson is related to macroeconomic policies in an oil rich economy. This is again not unique for the case of Iran. The Dutch disease following positive oil revenues shocks lead to increasing demand in non-tradable sector (e.g., real estate). Such increasing demand cannot be easily satisfied by increasing production of real estate or its import. The natural consequence is raising prices in real estate market. The average population, especially the younger cohorts of population which are increasing significantly in Iran and other Middle Eastern countries due to demographic transition will face real difficulties to secure an affordable housing, reducing the marriage rates in addition to increasing the relational stress among the married renters.[27]

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[25] See also Iran Research Center of Information Technology's report entitled "Speculation in housing market". Available at: www.hamshahrionline.ir/news-52015.aspx [accessed 18 October 2013] [In Persian].

[26] http://www.mehrnews.com/detail/news/2122942 [accessed 20 October 2013] [In Persian].

[27] For a review of related literature on the curse of oil and its detailed transmission channels as well as its potential remedies see Farzanegan (2014b), Bjorvatn and Farzanegan (2013), Bjorvatn et al. (2012, 2013) and Farzanegan (2013b).

Appendix

See Table 8.

Table 8 Average divorce rates, house prices and rents per square meter by province (2000–2010)

Province	Divorce rate	House prices (1,000 IRR)	Rents (IRR)
Azarbayjan-Sharghi	0.1169	4,452	19,184
Azarbayjan-Gharbi	0.1169	2,940	12,742
Ardebil	0.1084	3,305	12,305
Esfahan	0.1262	5,727	18,740
Ilam	0.0509	3,066	12,561
Busher	0.1273	4,540	24,503
Tehran	0.1899	10,920	37,944
Charmohal-Bakhatyari	0.0627	3,867	11,751
Khorasan-Jonubi	0.0889	4,501	14,241
Khorasan-Razavi	0.1663	13,143	18,707
Khorasan-Shomali	0.1135	4,839	18,844
Khuzestan	0.1033	4,459	20,851
Zanjan	0.1157	4,470	17,262
Semnan	0.0913	4,739	17,535
Sistan-Baluchestan	0.0403	2,879	12,444
Fars	0.1311	4,848	21,388
Qazvin	0.1047	5,481	23,785
Qom	0.1648	4,375	16,964
Kurdestan	0.1750	3,708	17,202
Kerman	0.0959	3,279	14,596
Kermanshah	0.1725	3,664	16,527
Kohkyluyeh-Boyrahmad	0.0833	2,515	13,462
Golestan	0.0938	3,685	16,889
Gilan	0.1290	4,410	23,668
Lurestan	0.1130	3,506	13,557
Mazanderan	0.1421	3,985	17,510
Markazi	0.1394	4,934	16,525
Hormozgan	0.0891	4,533	24,107
Hamadan	0.1385	4,234	18,056
Yazd	0.0673	1,855	19,184

Data for house prices in Khorasan-Jonubi and Khorasan-Shomali, Kohkyluyeh-Boyrahmad and Yazd have some missing values. Divorce rates are per 1,000 population

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