Contextual economic conditions and the event of entry into parenthood: first childbearing in Sweden 2000-2007

Christopher Grönberg

Abstract

In a contemporary Europe symptomized by concurrent trends of economic and demographic transformation it is increasingly important to trace how individuals navigate their everyday contexts when making major life course decisions. Placed within an emerging tradition of sub-national demographic research, this study focuses on how municipal economic conditions affect entry into parenthood throughout Sweden. Employing event-history analysis using individual and multi-level regression models on Swedish register data for the period 2000 to 2007 the study seek answers to whether growing regional economic disparities are conducive to a fault line between contexts in terms of how individuals enter parenthood. Further it problematizes the measures traditionally used to model contextual economic conditions by introducing a measure of vulnerability as a covariate alongside traditional unemployment rates. The findings reveal that poor economic conditions, in combination with individual characteristics, distinctly affect entry into parenthood and are mostly composed of a timing-effect.

Keywords: Fertility, Entry into parenthood, First Childbearing, Contextuality, Economic conditions, Vulnerability, Multi-level random effects

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1. Introduction

As a response to the period of economic volatility and falling birth rates across Europe over the last 20 years, demographers became interested in the linkages between macro-level economic conditions and fertility behavior (Kreyenfeld et al, 2012). Their findings showed that the effects of economic conditions on childbearing often escape simple explanation, but that there is indeed growing motivation to focus on macro-level economic conditions as a factor for explaining the changing demographic pattern. This study continues this research tradition and expands the discussion by shifting focus from the national to the local level and widens the concept of economic conditions.

Sweden has since the mid-1970s been characterized by interrelated processes of economic transformation and demographic shifts. Albeit characterized as a stable and prosperous country, today these processes have fostered a fault line between the central, urban regions and the peripheral and largely rural ones. Initiated through the restructuring from industrial to an information-based economy, the socio-demographic narrative has come to be a question of urban domination and rural decay; a string of cyclical processes hollowing out the peripheral regions once constituting the industrial backbone of Sweden whilst adding to the rapid urban growth. In linking this changing economic landscape to fertility, researchers have indeed found reason to direct attention to the sub-national level. In what is largely a precursor to this study, Hoem (2000) established a causal connection between the economic recession of the 1990s and the trends of fertility decrease. Furthermore, other studies have established spatial variations within countries developing through processes of local level divergence running parallel to macro-regional convergence, something explained by structural differences between regions (Basten et al 2011).

The objective of this study is to answer whether differences in contextual economic conditions across Sweden have fostered a demographic fault line in how individuals approach and realize parenthood aspirations. To answer this I use Swedish register data for the period 2000-2007 to perform a discrete-time event history analysis in a multi-level framework. The main question is whether municipal-level economic conditions have an independent effect on entry into parenthood. In realizing that the contextual economic conditions consist of a complex set(s) of social, economic and demographic trends, I have also attempted to test whether the picture emerging shifts significantly between different measures of economic conditions. I ask whether there is a difference in using traditional measures of

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unemployment and youth unemployment rates compared to using an aggregate index of municipal economic conditions, in this case an index of local vulnerability.

In asking these questions, I strive to add new understanding to the complex patterns characterizing European fertility today and how they related to local economic conditions. This is especially important seeing the situation of intermittent crisis that have symptomized large parts of Europe recently. It is also highly useful to see whether the findings provided by Hoem (2000) remain in non-crisis times through the regional disparities in fertility behavior.

2. The Swedish context

To understand how economic conditions influence demographic behavior today, it is vital to place the study into a greater context. Here I will draw a landscape in which the changes occurring along the lines of economic restructuring and institutional reform, which are interrelated through feedback mechanisms, are discussed and developed.

2.1 Economic restructuring and regional shifts

Traditionally, the Swedish economic framework has been a basic center-periphery model; a number of distinct regions developing through the economic activity associated to a specific primary resource and its refinement (SNA 1995). In terms of labor market specifics, Sweden has had high labor market participation, especially in terms of female employment (Fahlén and Oláh 2013, 17), and as a result – excluding a few years during the late 1970s – has been seen as one of the strongest European economies.

Then, during the first half of the 1990s, Sweden underwent a system-wide economic downturn largely caused by decreases in global demand and trade. The result was an increase in unemployment from roughly 1.5% to 8% (Statistics Sweden 2005) (see appendix 1). Concurrently, linked to both a changing welfare state paradigm and the fiscal consequences of high unemployment, Sweden entered a phase of public sector downsizing (the "budget sanitation phase") which, despite private sector rebounds, caused unemployment to remain high up until 1998 (Magnusson 2000, 35). Since then, driven by the service and information sectors, Sweden regained its economic momentum and experienced lower unemployment. Despite decreasing overall unemployment, an effect of this crisis was the consolidation of high youth unemployment, which started from a low around 3 % in 1990, peaked at 18,4% in 1993 and has since stabilized at today's levels around 10-13 % (Statistics Sweden 2005).

This period of shock-and-rebound had two interrelated faces and effects: an increased shift from an industrial to a global service economy and an un-even regional impact (Lundborg 2001). These two, which relate to (high) youth unemployment through decreased access to entry-level employment

opportunities, can be understood within the context of the 1990s crisis, which hit the traditional manufacturing sectors and regions hard (ibid). Statistics for the period 1990-2004 show that the primary resource extraction saw a significant decrease whilst the financial and educational sectors saw strong increases, something that concurrently led to a strong population shift into the metropolitan and large city regions (SNA 1995, 11-20; see appendix 2). An explanation here is that smaller municipalities lack the structural resources necessary to meet the changing requirements of economic transformation. At the individual level, this mean that older generations lack the tools required to navigate new circumstances whilst those young enough to (re)-train tend to leave for cities with greater possibilities. This is shown by the fact that a significant proportion of the negative population trends in Swedish municipalities can be accounted for by education-related migrations (SOU 2007:35).

At the heart of the implications of the structural transformation of Sweden lies a discussion of regional vulnerability (Tillväxtanalys 2011; Tillväxtverket 2012; Nutek 2002; Tickamyer and Duncan 1990). In response to initial economic shocks of the 70s and 80s the realization was that the same economic strategy, the export-base theory, that previously created regional economic growth in certain municipalities now instead led to high unemployment, relocation of jobs and a steady depopulation (Tillväxtanalys 2011, 15). As a measure of identifying places susceptible to these trends – the idea of contextual vulnerability developed from economic geographic concepts of path dependency, lock-in effects and clustering. In essence the assumption is a linear relation between a region's economic foundation and its susceptibility to external shocks; the higher the dependency on a single economic activity, the higher the vulnerability of given place (Briguglio et al 2008) (See Appendix 2.)

2.2. The institutional arrangement

Considered both a catalyst and mediator of economic change, the Swedish welfare system is also a factor shaping demographic behavior. Theoretically, policy instruments affect family transitions both directly by enabling individuals to combine work and family (Hoem 1993), and indirectly, through the various policy instruments that help youths deal with their lack of resources restricting them from getting over the threshold to adulthood transitions (Juang & Silbereisen, 2001). Within the almost fully encompassing Swedish welfare system we can circle three spheres of interests: family policy, the educational and the employment systems.

Swedish family policy has, since the 1970s, focused on strengthening women's labor market participation, promoting gender equality and enabling work-family balance without leaving the individual too dependent on other people or being limited by institutional factors (Andersson 2008, 90). As a consequence, policy instruments related to parental leave and child care have been devised to stimulate labor market entry prior to childbearing and then maintain the established link. This work-family link is visible in the parental leave benefit, which allows those holding a job when having their

first child to an ~80% income replacement during 13 parental leave months[2] (ISF 2012). This can be used flexibly and alternated between parents. In contrast those with no earnings are only allowed a flat-rate replacement (Neyer & Andersson 2008). As to increase labor market re-entry there are provisions for individuals to re-enter employment after the leave-period; significant here are the regulations enforcing the right to return to the same position within a company and a highly subsidized universal public child care system (Duvander and Ferrarini 2010). Finally, within the intersection between work and family policy lies the individual taxation regime which makes it profitable for a household to have two earners compared to one high-earner, which pushes female labor market participation (ibid.). In effect, the result is as Dribe and Stanfors (2009) argue that family policy development has "changed female labor participation and female relative wages on childbearing from being a hindrance to almost a prerequisite" (2009, 34).

Entwined within the pro-work emphasis of family policy and the economic shift into knowledge-based production, the Swedish education system is a major factor shaping the pathways of young adulthood, and thereby entry into parenthood. In essence, undertaking higher studies in Sweden has low real costs as the system grants access to generous public assistance, which combines low-interest loans and grants available to the majority of students, coupled with free-of-charge public institutions and heavily subsidized private options (Thalberg 2012). Student financial aid, however, in terms of income, does not compare well to labor market participation meaning that despite a low(er) threshold to education, especially for those from a poorer background, higher education is seldom a stable period to make major life decisions.

The decisive power shaping the Swedish labor market has traditionally existed within the collective agreements struck between unions and employer organizations (Magnusson 2000). As a result the state employment agency has predominantly only been active in providing wide-ranging options through activation and education programs for the unemployed (Sianesi 2004, 139). In line with the developments surrounding the economic recession and the spirit of austerity, the regulating framework have weakened in protecting the Swedish norm of full-time permanent employment and centralized wage-bargaining (Iversen 1996). As a result temporary, part-time and externalized contracts are growing into a greater segment of the Swedish economy with a variety of differing effects (Tegle 2000). Nested within these changes, an important discussion has taken place about whether these changes have limited the reach of major policy instruments to only those in already strong and stable labor market position rather than the entire working-age population. Allowing this assumption then

[2] The Swedish parental leave system allows for a total of 16 parental-leave months. Out these 13 months are compensated with the 80% earnings-replacement benefit whereas the remaining 3 months are compensated with at a lower flat rate. Further the Swedish system is generous regarding a temporary parental leave benefit, also at 80% of earnings, which includes 100 days yearly leave for taking care of a sick child etc.

unemployment benefits entitling individuals to 80% of the lost income[3] (Carling and Richardson 2003) become an elusive policy instrument for many without stable employment, such as youths, immigrants and people in poor economic contexts. Alongside this problematic aspect is fact that young adults have a hard time solidifying their employment on the Swedish labor market (Tegle 2000, 49). A causal mechanism to this threshold is the hiring-and-firing regulation, which among other things, stipulates that if a company downsizes then it must follow the seniority rank-order, the "Last-In/First-Out" principle (Von Below and Skogman Thoursie 2010). In situations of uncertain economic conditions this should be seen as a major potential source of uncertainty and vulnerability to young people and those who recently have re-entered the labor market.

3. Theoretical Framework

This section presents the theoretical and analytical framework for the study. It starts with the individual-level mechanisms relating economic situation to fertility decisions, moving on to a discussion of contextual-level economic conditions. Each section also reviews the most significant and relevant empirical findings.

3.1 Individual level

In the life course perspective, becoming a parent is conceptualized as the pivotal trajectory marking full entry into adulthood (Gauthier 2007). Having found a suitable partner, individuals face three problems before taking this step: 1) coordinating the long-term perspectives of partners; 2) having sufficient resources for having children; and 3) enabling compatibility between different commitments, especially the strenuous balance of the work-family relationship (Settersten and Ray 2010; see also Hobcraft & Kiernan 1995). This section will develop an analytical framework for understanding the individual-level economic factors influencing fertility. Specifically focus will be on three different approaches: the new home economics paradigm, the resource-aspirations theory and the theory of timing of marriage. The mechanisms and effects suggested in these models are, furthermore, moderated by institutional settings, such as Swedish social and family policies.

In the new home economics paradigm, which applies neoclassical economic theory to the family sphere, Becker (1960) establishes a model in which individuals' preferences are treated as fixed and the realization of these preferences (and thus, fertility behavior) is affected by its costs (both direct and opportunity costs) and incomes (and wealth). Ideally entry into parenthood will occur freely when income(s) are high and costs are low, whereas changes to this will alter the dynamics of fertility decisions (Robinson 1997). Linked to this cost-income mechanism is that individuals, within a partnership, employ utility-maximizing task specialization to realize parental preferences. Traditionally, there has a division of labor within households which Becker explains as a result of

[3] This is pending on whether the individual has have worked at least half-time (80 hours a month) for at least 6 months within the last 12 months and is a member of the unemployment insurance fund, something that has traditionally been a universal trait.

men's higher earning capacity and women's higher productivity at home. This makes the household division rational. A result increases in men's income and earnings prospect boosts fertility where it is harder to delineate the effect of women's employment as income should increase fertility but also increase opportunity costs, which decreases it (Diebolt & Doliger 2005).

This household task specialization has importantly resulted in gender inequalities which, in turn, significantly shaped life course developments during early adulthood and youth (Blossfeld & Huinink 1991; Acock & Demo 1993). Over the last few decades, however, it has been shown that the withering of traditional sex specialization, through increasing female labor employment and real wages, has been one of the most significant developments affecting family and fertility developments (Blossfeld & Huinink 1991; Charles 2011). It is argued that women, as their earning power grows, find fewer advantages with the traditional life course path of early marriage and motherhood. Instead, they adapt traditional male strategies of education and employment (Charles 2011; Lundberg & Pollack 2007, 7-10). These developments have been directly linked to the recent postponements trends as individuals, especially women and those with high education, with stronger labor market attachment start to wait until their preferences for becoming parents outweigh the lost income of exiting the labor market. In light of this and as a bridge between the balance of opportunity and direct costs - spells of unemployment can be important periods during which individuals are allowed to realize their childbearing desires without incurring any (extra) wage penalties (Adsera 2011).

A second important aspect of the economic individual framework for fertility is constituted by the question of aspirations. Easterlin's (1976, 417) resource-aspirations model proposes that if resources are abundant relative to aspirations then people will be freer in pursuing their goals whereas if resources are scarce relative to aspirations then they will be hesitant. Without going too far into what establishes aspirations in the first place, one can argue that economic conditions, through contextual and individual-level mechanisms, function both as a driver and mediator of established aspirations (Easterlin 1978). For example under the assumption that the contextual economic conditions are poor then a person with the initial preference for becoming a parent may choose not to since their resources are scarce and must be concentrated into other choices.

Albeit not specifically concerned with entry into parenthood, Oppenheimer´s theory of marriage timing provides a useful structure for linking socioeconomic status and life course decisions during early adulthood (Oppenheimer 1988). The model assumes that young adults evaluate their potential life course based on the options at hand (selection) and that these options are constantly being re-evaluated within the context of developing situations (adaptive socialization). A specifically important aspect of this is that youth adults often have to deal with situations and decisions which are largely clouded by a high degree of uncertainty and instability. Placing entry into parenthood within the context of economic uncertainty the model would assume that as economic conditions worsen;

individuals start to re-evaluate their situations and future aspirations according to how they see their own potential future developing. Looking to the direct effects on fertility, individuals with high labor market potential should strive to ensure this potential either by seeking better contexts (moving) or more firmly entrenching themselves in the labor market thus fertility would be postponed. For individuals with lesser labor market potential then it could be envisioned that they would either feel worse off, which would decrease fertility in total, or find parenthood as an increasingly alluring pathway, thus hastening entry into parenthood.

Studies on Swedish fertility patterns have shown that the dominant trends of postponement and below replacement fertility have been counteracted during the first years of the 21st century by a strong increase in the number becoming mothers after 30 and a lesser degree of postponement among younger cohorts (Andersson & Kolk 2011). In 2007 – the Swedish TFR was 1.88 as compared to 1.50 in 1997. Moving beyond these TFRs, researchers have found strong support for the theoretical linkages between fertility and socio-economic status. In terms of entry into parenthood, Bernhardt and Ström (2012) showed that there was strong support for the Hobcraft-Keirnan preconditions scheme[4] and that the increasing importance of income compared to housing and education for younger cohorts could be seen as a result of harshening labor market conditions (ibid., 30). This has been supported by studies on labor market status and parenthood showing that those who are inactive on the labor market are also less likely to enter parenthood and this also extends to those with part-time or temporary contracts (Andersson and Lundström 2012; Fahlén and Oláh 2013). Studying the effect of the economic recession during the 1990s on first births, Hoem (2000) found that first-birth rates changed alongside municipal aggregate unemployment rates and that these effects were especially strong for young women (under 30) and for students. It was also found that, regardless of economic conditions, earned income increased fertility. In line with the decreasing effect of being a student, Thalberg (2012) showed that students, suffering from low income and being shut out from the potential strength of the parental leave benefits, postpone childbearing until after completing their education and entering the labor market. Andersson (2008) links the importance of labor market participation to the Swedish policy system which rewards women being established on the labor market prior to becoming parents, especially the individualized taxation, the earnings-based parental leave benefit and the potential flexibility allowing for moving between part-time and full-time work. Regarding an educational effect then it shown that women with greater educational attainment tend to delay first births longer as well as control the number of children more than others. This has been supported by findings showing that well-educated women postponed fertility the longest when the economy worsens (Dribe & Stanfors 2009, 33).

[4] This scheme argues that the establishing of these five factors are prerequisite for entry into parenthood; having a partner, graduating, finding employment, finding housing and achieving some security (having sufficient resources) (Hobcraft and Kiernan 1995)

3.2 Contextual level

The term context in this study summarizes the combination of aspects of time and place into which individuals and their lives are embedded (Elder and Shanahan 2007). Specifically it concentrates on economic contextual conditions which combine the different macro/meso-level elements providing individuals with economic opportunities and restrictions. In demography contextual effects have seldom been approached with strong consensus. The dividing issue boils down to whether specific patterns are the result of context-specific effects, i.e. where structural and individual factors directly influence certain behavior, or whether it is a question of selection effects where spatial patterns are the result of the "the sum of all individuals" living in the selected area (see Galster 2001; Andersson and Musterd 2010 for a better discussion of these issues). Analytically and theoretically I have worked from the assumption that these two different mechanisms can work in a complementary fashion to create spatial patterns.

A useful entry into how contextual conditions can influence individual behavior is to look at the concept of opportunity structure. The concept expands the individual-level economic approach of transforming individual resources (education, social background, income) into outcomes (fertility, labor market development, social status) by including contextual factors (labor markets, macro-level institutions) to argue that these conditions regulate and influence both access to individual resources as well as the individual ability of transforming then into desirable outcomes (Tieben et al, 2013: 2). Basten et al (2011: 576) highlight the following as the relevant elements of a municipality's opportunity structure in terms of influencing fertility behavior: 1) **The material and institutional infra-structure** including place-related factors such as urbanization, family relevant services and housing stock; 2) **Economic conditions** summarized as the conditions and prospects of the local labor market, 3) **Socio-structural factors** such as the degree of socio-economic segregation and the socio-structural composition of the partner market; 4) **Cultural factors** such as fertility and family-related values and norms, gender roles and social norms; 5) **Embededness** in local social context such as closeness to kin and friends and to the geographic area.

Using the concept of local opportunity structures we conclude that it invites to consider both direct and indirect contextual effects on entry into parenthood. In demography it has traditionally been held that the relation between context and fertility is non-causal and instead results from compositional effects. Regional fertility patterns result from (non)-migratory events in which individuals anticipate their future decisions and select their living context accordingly. Kulu et al (2007) exemplifies this when discussing why there are patterns of low(er) fertility in larger settlements: they argue that the opportunity structure of these areas attracts individuals, especially females, focused on paid-labor who, after taking a longer time becoming active on the labor market, usually have higher (opportunity) costs associated with childbearing. These areas also tend to have less family housing options and fewer affordable childrearing institutions. In contrast, smaller settlements have higher

fertility since those women who stay behind are left with favorable partner markets (sex structure-wise) whilst rural and smaller towns also have better housing stock for families and a more uniformly traditional attitude towards family values. Such an explanation is usually referred to as the *selection hypothesis* and is often accompanied analytically by the *adaptation hypothesis* which argues that individuals adapt to their general peer groups and contexts (Basten et al 2011). In terms of entry into parenthood – this logic argues that first-time parents are younger in smaller settlements than in larger settlements.

Here the evident omission of economic conditions greater than the individual-level and the labor market structure is surprising. The mechanisms outlined seemingly rely on holding economic conditions constant between regions, something obviously in stark contrast to recent developments. To further build off this then we can also take into account the quality of economic conditions across Sweden. Recently researchers have connected this to fertility behavior and found that shifting opportunity structures as well as mechanisms of social interaction and feedback functions can create population-level responses to socioeconomic change affecting fertility in a way greater than individual-level effects alone. In studies on the Nordic fertility fluctuations linked to the recession during the 1990s, Hoem (2000) and Kravdal (2002) separately came to the concluding propositions that the link between increasing unemployment and fertility change is not only established through a possible direct loss of income or decreased wages but also through an impression-based evaluation of the near future. Hoem puts it as "… *The trends influence childbearing behavior via the impressions couples get concerning how things may develop for themselves in the near future. A sudden drop in local employment may cause a shock effect where the initiation of childbearing is postponed until things take a better turn"* (Hoem 2000: 15). Alongside this fertility may also be influenced by other individual's decisions of fertility and migration (Boyle et al 2007), which introduces the possibility of a contagion effects as behavior changes among some individuals. In summary the findings expand the relevance of context and local opportunity structures to include an impression-based fluctuating appreciation of one's living context and it's appropriateness for starting a family.

A combination of the aforementioned perspectives whilst also exemplifying the vulnerability concept is Myrdal's structural cumulative model. Fundamentally related to mechanisms of momentum it argues that the socioeconomic fabric of places is regulated by "inter-locking, circular interdependence within a process of cumulative causation" (Myrdal 1957). Myrdal exemplifies the potential contextual effects through a story in which a factory, which is the major source of employment and income, burns down and is not rebuilt. The event causes unemployment to rise whilst decreasing general income and demand. Said change causes other businesses to lose income thus the circular causation gain strength. Assuming that no exogenous change occurs, say through government interaction or a new employer arriving, the downward momentum continues and the town becomes less attractive to outsiders whilst those within the community will find increasing reason for leaving.

As the process continues – it radically reshapes the age structure and tax base thus virtually making it impossible to endogenously reverse the process. This logic also dictates that the reversed is true if the story instead has a positive narrative; a catalyst driving positive change which starts a positive cumulative causation.

One may be somewhat critical of the simplistic view of endogenous change possible in Myrdal's scenario, especially with regards to the positive effects of outward migration which reduce competition for resources and opportunities. Yet barring this the importance here lies in seeing the contextual economic change as the driver of demographic change. The individual and the structural level clearly embedded within another. The exemplified situations approached through the concept of local opportunity structures can said to have changing influence on entry into parenthood. In the case of negative cumulative causation then we would see that increasing unemployment that decreases overall income and taxes would lower the availability of quality public institutions thus it would decrease the attractiveness of the municipality for prospective parents and decrease overall fertility. Concurrently the increasingly poor economic conditions push outward migration of prime working/fertile age individuals as to create a decision-stream moving against entry into parenthood.

In summary contextual-level mechanisms influencing entry into parenthood can work independently of and in combination with individual-level mechanisms. In the first case it could be argued that worsening economic conditions would be detrimental to the individual-level economic framework for fertility as individuals experience increasing economic stress in their own lives, either becoming unemployed, fearing this or having friends who experience it. Here economic conditions shape fertility by framing the individual-level mechanism into greater economic framework where the absolute effect would depend on the specific individual, their life situations and how they are affected by macro-level change. Looking to the direct contextual effects it could be argued that municipal-level economic conditions affect the entire structural fertility framework. As municipalities become increasingly affected by worsening economic conditions their suitability for childbearing decrease thus prospective parents either leave or postpone their entry into parenthood. This logical extension is that municipalities with poor conditions will have lower fertility than those with high availability.

3.2.3 Contextual level findings

The empirical findings of contextual effects on demographic behavior can be summarized into two different strands: regional demography, focusing on mapping and tracing spatial patterns within countries and across regions, and contextual effects aimed at displaying the potential effects that spatial circumstances have on demographic behavior.

Regional demography's major contribution has been to bring forward an urban-rural dichotomy in which urban regions have driven the overall trends of decrease and postponement whereas the rural

regions have lagged behind and caught up, something often explained by selection hypothesis and diffusion processes. In the Nordic countries – findings have found patterns of fertility by regional categorization in terms of sociocultural background, showing that metropolitan areas have lower rates in the youngest and highest fertile ages yet higher during peak ages when compared to peripheral traditional regions (Thygesen et al 2005); by the urban-suburban-rural typology showing the urban lows and the suburban and rural high forms (Kulu et al 2007, 2009; Boyle & Kulu 2009; Boyle et al 2007); by settlement size showing that small municipalities have high fertility forms but that these differences decreased by parity and over time (Kulu et al 2007). These studies tend to argue that regional differences were driven by the socioeconomic and cultural characteristics of the areas inhabitants.

The regional demographic findings have increased interest for including contextual effects in fertility research. Here the work done on Norwegian and Swedish data connecting aggregate municipal unemployment to demographic behavior has been important for providing a foundation for this study. Hoem (2000), using Swedish register data for the period 1986-1997, links municipal aggregated labor market trends to changes in first childbearing for women. The results show that first birth-rates followed changes in the municipal employment rates and that these effects were, especially, strong in the younger age groups. For example showing that individual level earned income (over 100,000SEK)[5] increased birth rates three times in comparison to those without any income. Linking this finding to contextual effect by including municipal employment trends to the individual-level factors it was shown that contextual level changes explained most of the period effects. Similarly Kravdal (2002) found that aggregate-level changes in unemployment lead to a reduction in total fertility where an increase in unemployment from 2% to 6% is associated with a reduction of fertility by about 8%, as a combined individual- and aggregate-level effect. In another study, Kravdal (1996) found that aggregate women's unemployment is linked, as a confounder or mediator, to the effect of infra-structural factors on fertility. The study focused on day care supply and refuted that the regional differences in Norway of day care facilities alone have an effect on fertility.

Expanding outside of the Nordic countries – studies on European and Latin American fertility have provided strong support to the abovementioned findings. Pailhé and Solaz (2012) showed that persistence of high regional unemployment would lead to a delay, notably true for the whole population and not only to those unemployed. Adding to this, Adsera (2011) showed that the age groups of 15-19 and 20-24, which we should label young adults, was significantly influenced by unemployment as she found a 1 year lag between rising unemployment and increasing fertility. Further, Adsera and Menendez (2011) added shocks of unemployment lead to women seeking new roles where entering motherhood was an important strategy in finding these and securing financial

[5] According to Hoem – an income of 100,000 SEK (roughly 12,000$ in 2000) can be seen as a proxy of being employed for the larger part of the working year.

stability for those with low education. Confounding the argument that housing markets lead to mostly selection effects – Clark (2012) showed that living in expensive housing markets in the U.S resulted in a 3-4 year delay in entering parenthood, even after controlling for individual factors, and that completed fertility did not change.

Anticipating this study, Basten, Huinink and Klüsener (2011) incorporate the elements of an opportunity structure as mentioned above into a model and use it to study regional fertility variations in Austria, Germany and Switzerland. Using an historical data set spanning 150 years from the Princeton European Fertility Project, they show that there are large periods of time when the regional patterns diverged. Further using local-level data for the period 1971-2006 and a case study of the Germany city of Bremen, they paint a broken picture across Europe in which "*local divergence runs parallel to overall regional convergence*" (ibid: 573). Albeit chiefly providing explanations centered on institutional and sociocultural differences they also provide some proof of positive ecological association between high unemployment and high fertility in Saxony during the 1980s. This association turns negative as the fertility remains high despite unemployment falling which prompts them to avoid in-depth analysis instead suggesting that further study in a multi-level framework including individual-level data is needed to study this relation (ibid: 600-601). A similar comment on the need for sub-national studies is made by Blotevogel and King (1996) when studying the links between economic restructuring and demographic behavior (primarily migration). Their concluding remark is that the pattern of demographic discrepancy between and within European regions shows no sign of converging but instead follows a constantly changing pattern of growth and declining strongly linked to patterns of economic change (ibid: 155).

4. Hypotheses

Drawing from the theoretical framework we can forward a number of hypotheses for answering the main research questions. These questions were whether economic conditions at the municipal level have an effect on entering parenthood and whether these effects differ when using traditional measures of unemployment and youth unemployment rates or an aggregated index of economic conditions, such as the vulnerability index devised by Svenskt Näringsliv and Tillväxtverket.

First and foremost I will argue that the realization of previous findings on this topic and the theoretical mechanisms amount lead to a possibility where the total proportion who enter parenthood could either decrease or increase. With respect to the possibility of an increase we combine the selection patterns found by previous studies with potential economic mechanisms, most notably the Easterlin aspirations framework and the Oppenheimerian life course stability, and argue that:

H1) Municipalities with poor economic conditions, often being less populated and peripheral whilst also having a specific opportunity structure focused on early transition into adulthood, will have a stronger propensity for entering parenthood.

Regarding the possibility of a decreasing effect then we would see that a high proportion of unemployed would logically be reflected in a lower total proportion that enter parenthood. Further we should allow for the cumulative contextual effects in which the cumulative downward economic change of these municipalities have reached a point where individuals see limited future prospects for financial success and stability. Such situations of limited opportunities would also develop a socialization process which negatively influences others who then also abstain from starting a family:

H2) Municipalities with poor economic conditions, as signified by high unemployment or high vulnerability index will lead to lower hazard of first childbearing.

In both hypotheses there is also the possibility for an increased early into parenthood among those living in poor economic conditions. This would be driven by the structural layout of the local labor market in which there are fewer top positions, necessitating investment in educational attainment and career development, in the labor market. The limitations and the accelerated pace of reaching one's labor market potential would here lead to an earlier entry into labor force, thus establishing a stable life situation, which then results in a decreased interest in the postponement of childbearing. In these scenarios an Oppenheimerian logic of lowered expectations (adaptive socialization) for the pre-requisites for entering parenthood would be at play. This framework of mechanisms should equally be evident in the case of a decrease as an increase of entry into parenthood.

Moving on to the cross-level patterns between individual and contextual factors then there is reason to assume a within-municipality difference between those employed and those unemployed and for this divide to be stronger in poor economic conditions. Said logic relate both to selection mechanisms

where those who stay in these contexts accept the conditions for what they are and to the heightened risk of being unemployed, which increases the utility of becoming a parent.

H3) Individual employment status will be a determining factor for how economic conditions affect entry into parenthood in poor economic conditions.

With respect to the idea that parenthood becomes an increasingly attractive role in face of economic uncertainty and to the fact that most municipalities facing poor conditions are characterized economically by the primary sector and male employment, we should also see two distinct gender patterns. For women motherhood becomes an specifically important role since they should have a harder time to establish themselves in these male-dominated labor markets (sector-wise), which would limit their income potential, but also have an opportunity structure pushing for their entry into motherhood, specifically the socio-structural aspect of partner-markets and the socio-cultural norms. For women we should therefore see that:

H4) Women in poor economic conditions will have the highest risk of entering parenthood.

For men we instead expect that the important thing would be the ability to earn an income and this would be increasingly important in poorer economic conditions. The Beckerian framework should be a decisive mechanism determining entry into parenthood for men and lead to a situation where:

H5) Men in poor economic contexts, as compared to the rest of Sweden, will not have any significant change in the odds of entering parenthood.

Finally in terms of the different measures of economic condition I will abstain from providing a hypothesis as it is difficult to properly test the theoretical implications of the various measures through statistics. Instead a discussion on the different measures and their implications will be running as a red thread through the analysis. This traces a logic suggesting that the different measures capture different aspects of economic conditions which may have differing effects on fertility. This relates to the assumption that the vulnerability index is more closely related to the concept of an opportunity structure whereas the youth unemployment rate relates to the life-period, and the related structures, when young adults make their foundational decisions shaping entry into parenthood. The total unemployment rate more fully encompasses the whole population and their economic conditions which during the observation period were stable thus the context effects become averaged out and few local/regional differences become delineated.

5. Data and Method

Discrete-time event history analysis was used to analyze entry into parenthood by following an individual during their fertile period with a focus on the transition from being childless to having the first child. To introduce the contextual level into the analysis multilevel logistic regression with random effects has been used.

5.1 Data

The data has been taken from different registers collected within the "Sweden in Time: Activities and Relations" (STAR) database administered by the Stockholm University Demography Unit (SUDA) and the Swedish Institute for Social Research (SOFI). It combines a large selection of official Swedish registers and provides ample possibility for longitudinal and multivariate research for the time-period 1960-2007. This study uses the time-period 2000-2007.

In the Swedish official registers each individual is assigned an identification number which enables the tracking of individuals across time and between data sets. It also enables linkages of individuals to household units and family relations, such as who is married to whom and who is the father/mother of whom. My data set has been developed as to contain all individuals in Sweden at the risk of having their first child during the period of observations. Due to biological limitations and contemporary fertility trends, this means all individuals between the ages of 16 and 49 (women) / 52 (men) during the period of observation. Censoring here occur when someone leaves of the study population, i.e. by dying or leaving Sweden, or when they have their first child.

The data-structure is discrete-time which means that every individual has one observation for every year that they are under observation. The individuals are clustered within the municipalities, which also has one observation for each year of observation. This choice for a discrete-time structure was a practical decision resulting from the fact that the contextual information and many independent variables were only available on a yearly-basis. The final result is total population of 1,741,179 with a total of 551 309 events. Across the period 2000-2007 and the 290 municipalities these individuals account for 10 508 797 person-years in total.

5.1.1 STAR Sources

I have utilized five different registers to cover the different elements and trajectories that make up the traditional life course phase of early adulthood and lay the foundation for entry into parenthood. These are:

a) **The Integrated database for labour market research** (LISA) which, due to its high quality and depth on information, is the foundation for my own data set and provides most of the independent variables (Statistics Sweden n.d).

b) **Total population registry** (RTB) provides the fixed descriptive variables for each individual.

c) **Registry of High School applicants** which provides, from 1971 and onward, information on which municipality an individual attended high school. A note of importance is that information taken from this register is limited to those who attended a Swedish high school thus there is a selected sample. The variable stayers thus only includes information on 7 066 520 of 10 508 797 person-years.

d) **Multi-generational register** (flergen) [6] connecting each child born in Sweden to their respective mother and father, as well as their adoptive parents.

e) **Statistics on the wage income structure** (LSS) is a survey-based registry of the Swedish wage income structure across the different sectors (Statistics Sweden n.d.). It should be noted that the information is only available for those who have been employed during the year and included in the selected sample. The specifics are that the information is collected from five separate sources at different dates during the year. The information on the public sector is complete but the private sector is only covered at roughly 50% of those employed. The direct result is that the information, on employment type and sector of employment, is only available for 525 764 individuals out of the entire study population.

A side-effect of the LSS selection methodology is that the models using this sample have a very small proportion registered as unemployed. Those unemployed here are those who worked less than 50% and were registered as unemployed in the LISA registry. See a further discussion on the issues related to the LSS in the notes on data and methods, specifically section 5.4.5 on page 29.

5.1.2 Contextual variables

As to introduce contextual level information on the municipalities I have used three different official sources. All the information used is readily accessible to the public through the respective homepage. Since the data-creation and documentation is less readily available – I will provide a more advanced description of the process.

Using **the unemployment agency** (AMS) I utilize summary information on the municipal unemployment and youth unemployment rates on a yearly basis (AMS 2012)[7]. This information covers those who have reported to the unemployment agency as being "openly unemployed". This specifically means that the individual has been in unemployment between 6 and 24 months[8]. The

[6] Authors translations of RTB, flergen and lonestruktur. The Swedish titles are: Register för totalbefolkningen; flergenerationsregistret and lonestrukturstatistiken. See http://www.scb.se/Pages/List 257147.aspx for a list of Official Swedish registers and databases (In Swedish)

[7] The information has been extracted from the excel document called " Öppet arbetslösa och sökande i program med aktivitetsstöd, andelar av befolkningen" available at http://www.arbetsformedlingen.se/Om-oss/Statistik-prognoser/Tidigare-statistik.html

[8] Description of open unemployment taken from http://www.arbetsformedlingen.se/Om-oss/Statistik-prognoser/Fakta-om-statistiken/Definitioner-och-forklaringar.html

criteria for selection lead to an underestimation of the actual unemployment, such as being in temporary or cyclical employment. I will go into further discussion on this in notes on data section.

As to get a working indicator for municipal vulnerability I have used the conceptualization of "regional vulnerability" as devised by **Swedish Agency for Economic and Regional Growth** (Tillväxtverket) and the **Confederation of Swedish Enterprises** (Svenskt Näringsliv) in their report on regional vulnerability in Sweden (Tillväxtverket, 2011). The report works from a concept of vulnerability collapsing six different components within the areas of economic dependency, entrepreneurial activity and the labor market.

The calculations were made using statistics for 2010 combining a municipalities rank between 1 (lowest) and 290 (highest), for each of the following aspects: 1) percentage of household income arising from market activity, 2) municipal tax, 3) proportion of municipal services operated through private entrepreneurial activity, 4) proportion in employment, 5) level of economic activity defined as the number of private companies per 1000 inhabitants and 6) entrepreneurial activity defined as number of new private activities per 1000 inhabitants, which includes responsibility for developing an enterprise, part-owner in an active company, or a member of the board in an active company.

It should said already that using a vulnerability index created for 2010 for a study on the period 2001-2006 can be considered as a problematic. A reason as to this is the practical dimension as it is would be very expensive to purchase the necessary information and this is something that I could not undertake for this thesis project. Further speaking for the inclusion of this variable is the fact that 50% of the vulnerable municipalities (ranked 200 and above) was identified as vulnerable in 1999 in a report on regional economic dependence (Nutek 2002, p.10). This supports the idea that regional vulnerability is a long-term process and the municipalities identified as vulnerable in 2010 should have been so through the study period as well. I did not include the 1999 index as it is less suitable for my purposes seeing that it was created using completely different variable and focused predominantly on industrial production.

5.2 Variables

5.2.1 First Childbearing

Birth of First Child is the dependent variable and was created using the *flergen* registry by identifying each first child born between 2001 and 2007 to each mother and father. Each birth can therefore represent two events; one to the father and one to the mother. The variable is coded as 0 and 1 (event).

5.2.2 Control Variables – Individual

All variables excluding gender and native are included as time-varying variables on a yearly basis for the period 2000 to 2006. To model the sequence of events in time – I have lagged the independent

variables one year thus a child born in 2001 is tied to descriptive information for 2000. Including individual-level covariates is a useful way of controlling for compositional effects on the municipal-level.

Year of observation is included as year and as year squared. The inclusion is to control for the fluctuations in childbearing patterns.

Gender is coded as a 0=men and 1=women.

Employment status is coded as 0=employed and 1==non-employed[9]

Employment type is coded as 0=part-time and 1=full-time.

Sector of employment coded as 0=private and 1=public sector.

Educational Attainment is coded to reflect the levels of the Swedish educational system: 0=primary education; 1= secondary education (high school); 2=tertiary education. The measure reflects the highest reached level for each year.

Age and **age squared** is included as a continuous measure which aims to capture the time aspect of fertility as well as the duration decay. The clock here is started at the youngest age thus 16 equals 0 and each subsequent year adds one to this (See discussion on left truncation on the following page).

Stayers concerns whether one lives in the same municipality as one attended high school and is coded as 0=yes and 1=no

Country of birth coded as 0=Sweden and 1=Foreign. A potential issue here is the study does not control for whether an immigrant has already had their first child prior to migrating to Sweden. This means that the results concerning immigrants should more be viewed as a notation about whether they choose to start a family in Sweden in the face of changing economic conditions.

[9] See section 5.4.5 Individual employment status for a discussion on this

Table 1. Summary Statistics and Exposure Times

Individuals	1 741 179	Events	551 309
Person-Years	10 508 797		

Variable	**Mean**	**S.D**
Age	28.62	7.99
Gender (0 = men)	0.41	0.49
Country of Birth (0 = Sweden)	0.1	0.30
Employment Status (0 = employed)	0.32	0.46
Sector of Employment (0 = public)	0.6	0.48
Employment type (0=Part-time)	0.83	0.37
Having left home municipality (0 = no)	0.55	0.49
Municipal Unemployment Rate	3.42	1.25
Municipal Youth Unemployment Rate	4.53	2
Municipal Vulnerability Rank (1-290)	83.1	74.4

	Primary	**Secondary**	**Tertiary**
Educational Attainment	16%	49%	35%

Municipalities by Vulnerability index and SKL Classification[10]			
Rank	1-199	200-249	250-290
Metropolitan	100%	0%	0%
Suburban	97%	3%	0%
Larger Cities	94%	3%	3%
Suburban to Larger City	86%	5%	9%
Commuter Municipality	67%	24%	10%
Tourism and Travel	65%	35%	0%
Manufacturing	35%	19%	46%
Sparsely Populated	30%	45%	25%
In densely populated region	80%	17%	3%
In Sparsely populated region	69%	19%	13%

[10] http://www.skl.se/kommuner_och_landsting/fakta_om_kommuner/kommungruppsindelning

5.2.3 Contextual identifier and Municipality Vulnerability Index

In this analysis, **municipality** was set as the contextual level identifier. Each municipality is identified by the official four digit-codes (Statistics Sweden 2013) which enable me to track geographic location across data sets as well as add macro-level information to the municipality itself. Further the **municipality of high school attendance** was set as a proxy for home municipality.

Three different contextual variables were used to measure the economic conditions. All of these were centered at their means when used in the models. First a **vulnerability index** devised by Tillväxtverket and Svenskt Näringsliv (2012) was used. This is a ranked scale of 1-290 reflecting each municipality's position among Swedish municipalities according to economic vulnerability. For the descriptive analysis it was recoded into a categorical variable by ranking: non-vulnerable=1-199; vulnerable=200-249 and high vulnerability=250-290. This is the same division that Tillväxtverket uses in their report. In the regression models it was included as a continuous variable (divided by 100) to better capture the changes as the vulnerability index increases. Moreover both the open **youth unemployment rate** (ages 16-24) and the open **unemployment rate** (ages 18-64) in the form of percentages, as reported officially by the unemployment office, was added. Both variables are continuous.

5.3 Discrete-time event history analysis

Event-history analysis (EvHA) provide a methodological tool kit for analyzing entry into parenthood as it is fundamentally concerned with studying the duration of time elapsed until an event occurs. In this case it means studying childless individuals for a seven year period during their fertile ages as to see whether they have their first child or not. The data has been ordered in discrete-time, each individual having one observation for every year up until censoring or having the first child.

The choice of using discrete-time rather than continuous was decided by the fact that the necessary data was only available on a yearly basis. It should also be said that the discrete time approach is excellent for fulfilling the main methodological aspirations of the study; being able to use a period approach to see whether entry into parenthood differs between contexts and linking to changing status. Discrete time allows for the easy inclusion of time-varying covariates thus allowing us to trace the effect of changing economic conditions and statuses across the time period. The most significant drawback is that the yearly observation may complicate the separation of clustered events within a year, such as the case of becoming a parent and getting married, as we are unable to tell which happens first. Since the sequence of events is not a direct interest of this I believe that this is not a decisive issue in itself.

Furthermore I have used logistic regression to estimate the modes. In the individual-level models (one-level) I have clustered the standard errors have been clustered by municipality as to account for any heterogeneity within the geographical categories. Further the choice of distribution enable me to

easily compare the odds of having a first child between different categories as the output is provided in terms of odds ratios (hereafter OR). OR give output in terms of an event occurring within a specific category compared to the reference category. For example if the output for variable *X* is 1.20 it means that those in *X* have 20 percent higher odds of becoming parents than those in group y. In the case of the covariate being continuous then the output concerns the change in odds per unit increase. Concerning the significance levels then output with a significance value over 0.05 have been considered insignificant and reported within brackets.

5.3.1 Multi-level Random Effects Model

The study ultimately boils down to the assumption that different municipalities will have different schemes of fertility. Therefore I have utilized random-effects multilevel regression that fundamentally account for how individuals are nested within larger categories, such as geographic areas. It is of outmost importance here to stress that using random-effect multilevel models means that we are interested in understanding something about the municipalities rather than something about the individuals as such (Reise and Duan 2003).

An important point is the use of random-effects, rather than fixed-effects models, was primarily practical. Fixed-effect models, which would allow us to control for the time-constant differences between municipalities, would have been a natural choice since we have included all of the municipalities in Sweden. Alas when running these in STATA they failed due to convergence errors and numerical overflow issues. Attempts to solve this by fitting coefficients from the initial logistic models did not lead to any progress. Due to the amount of time required for troubleshooting and properly setting the fixed effects specifications I have stopped attempts to solve this within the time frame of this paper. As a result – random-effects models were used and subsequently we must acknowledge that the multi-level models use a randomly (i.e. "random-effects") selected sub-sample of municipalities to run the analysis on (Snijders 2002). A potential reason as to why the multilevel models only run on a random sub-sample instead of including all the municipalities, as the fixed-effects would have done, is that new municipalities have been added to this level of populations (municipalities) thus the models are unable to use all of the municipalities as groups through the entire period of observation.

These models introduce a random-effects term containing the difference between individuals from each municipality as to compare them. By utilizing the multilevel framework for this analysis we are able to check for an important statistical issue associated with nested data structures where the standard errors of the contextual variables become deflated thus yielding poor results (Lyngstad 2011, p 64). However it is important to understand that these models mean that we rely on an assumption that each individual within a municipality are interchangeable with each other (Snijders 2005).

To present this in a formula I have adapted Lyngstad's (2011, p.65) formula for a multilevel fixed-effects model by substituting his fixed-effect term with two random-effect terms. Simplified the model can be formulated as:

$$\log\left(\frac{P\,(Yijt=1)}{1-\mathrm{P(Yijt=1)}}\right) = \alpha_t + \beta X_{ij} + \delta Z_{ijt} + \lambda M_{jt} + U_j + W_{ij}$$

Here we find that the model is suited for discrete-time data by fitting the logit baseline hazard of having the first child ($Yijt = 1$). In this equation the letter *j* identifies the contextual-level, and the letter *t* refers to the observation point (time). Further α_t refers to the duration baseline parameters, X to the time-constant individual-level variables and Z to the time-varying individual-level variables. λ is the parameter for the contextual-level variables and U_j introduces the random-effect term measuring the difference between the selected municipality and the average across all the municipalities. Finally W_{ij} has the error term for the individual-level differences between an individual within a municipality and all the individuals in the same municipality.

To add understanding to how contextual effects differently affect individuals, such as the effect of unemployment rates on unemployment, we can include a cross-level interaction term between the individual-level variable and the municipal-level variable (Hox 1995). This model would have this formula:

$$\log\left(\frac{P\,(Yijt=1)}{1-\mathrm{P(Yijt=1)}}\right) = \alpha_t + \beta X_{ij} + \delta Z_{ijt} + \gamma M_{jt} + \delta Z_{ijt}\, M_{jt} + U_j + W_{ij}$$

Here we see that the interaction term is formulated as multiplying the individual-level time-varying variables with the contextual-level variable.

5.3.2 Selection, censoring and truncation

This study selects its population on the basis that they are within a certain age range, have not had a child before the year 2000 and is found in the LISA registry. This leads to potential issues regarding selection, censoring and left truncation.

Left truncation, meaning that individuals are not observed from the absolute start of the period of risk, constitutes a potential issue since creating a baseline of socioeconomic standard and appreciation becomes difficult. This study's main assumption is that economic contextual conditions combined with the individual situation have a specific effect on first childbearing. On the individual-level left-truncation is corrected in the regression models by starting the clock when the person first entered the risk-set, i.e. age 16, rather than when I started observing them (Gou 2003). For example a person turning 29 in 2000 has an initial clock of 13 years.

5.4 Notes on Data and Methodology

5.4.1 Open Unemployment

The unemployment and youth unemployment rate are taken from Arbetsmarknadsstyrelen's official aggregate statistics. These aggregate statistics only register those who are in "open unemployment" meaning those who have been unemployed for at least 6 month and less than 24 months. For youth it also includes those who have been unemployment for more than 100 days. Importantly here is that it only collects those who are registered at the unemployment office (AMS 2007).

The use of these percentages, which have been selected since they are the only available statistics on the municipal level for the entire period, can be considered limiting if one wants to model the full complexity of the municipal labor market. First of all – to be accounted for in the statistics one has to register at the employment office which means that there may be an under-representation of the actual unemployment rate in the groups that should be included. This effect should be specifically important for the youth unemployment rate since unemployed youths may not have been employed thus they are not able to collect income replacement awards and so forth. Second, the fact that one is not included in the statistics if one is unemployed for more than 24 month is also problematic since it removes those permanently outside the labor market and those in long-termed unemployment. Especially damaging this could be in cases of economic restructuring as the increasing unemployment pairs with an increasing number of labor market mismatches which would result in long-term unemployment for specific social groups without possibility for re-education, being restricted due to age or finances.

It should, however, be said that the measure of open unemployment does allow us a good grasp of how hard it is to find a job in a municipality. Being registered at the unemployment office and within the first 2 years of unemployment would signal that one is looking actively for work yet is not able to find any. Therefore it could be said to be a good variable to include when modeling economic conditions. Overall, however, the unemployment rates should not be wholly trusted to give an perfect of whether people are experiencing a new kind of economic uncertainty in which they are unable to cross the thresholds associated with short-term or part-time contracts to full-time. It is therefore important to couple these measures with other constructs and individual level information on employment status and whether one is working part or full-time.

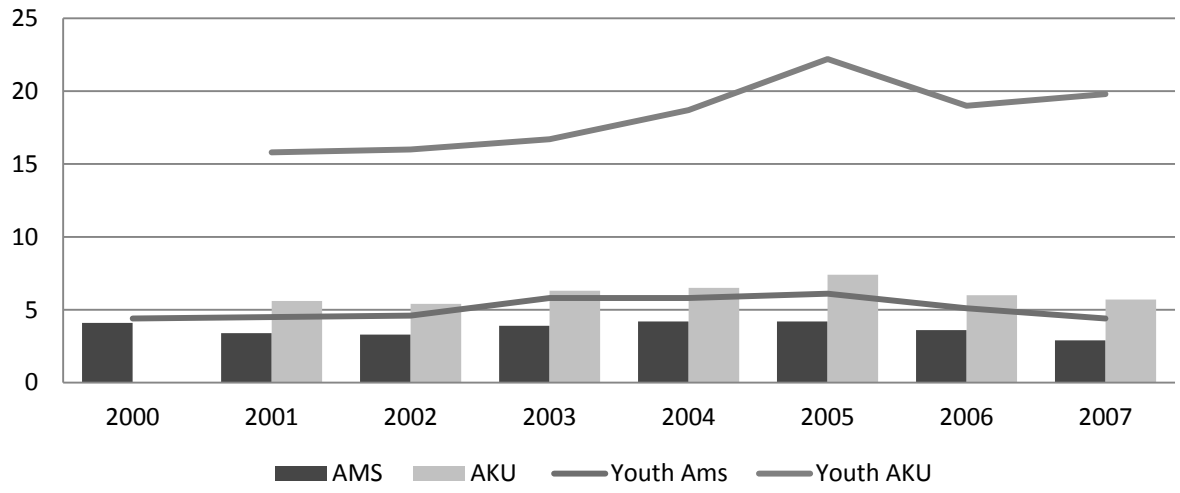
Figure 1 depicts two measures of national unemployment and youth unemployment against each other: the official unemployment statistics from the Labor Force Survey (AKU)[11] and the official open unemployment from AMS that I have used. The difference summarized is the AKU includes all "*who are not working yet able to work and is looking for work*" (SCB 2010b, 19) which, among

[11] See http://www.scb.se/statistik/_publikationer/AM0401_2010A01_BR_AM76BR1001.pdf for a greater discussion on the Labor Force Survey statistics

others, includes students who are excluded from the open unemployment numbers. As we can see from the graph there is a significant difference between the two sources. For example - during the period of increasing unemployment starting in 2004 – we can see that the AKU reports a total unemployment of 7.4% in 2005 whereas the AMS only reports 4.2%. The inclusion of students in the AKU numbers makes the youth unemployment discrepancy even greater; it is 22.2% in the AKU whereas only 6.1% in the AMS.

In response to the reality behind the high AKU youth unemployment – Statistics Sweden (2005) showed that almost half of those unemployed were actually full-time students. This means that, despite the issues with under coverage in the AMS statistics – I would argue that the AKU numbers are even less suitable for our purposes.

Figure 1. Unemployment and Youth Unemployment Rates(%) , Sweden 2000 to 2007



Finally in terms of testing whether the contextual variables are significantly correlated. I have run statistical tests which show that it is not a significant issue: the youth unemployment rates and the vulnerability index were strongly correlated to the degree of 0.52 whereas there was only a 0.2 correlation between total unemployment and vulnerability index. Along the same lines the open unemployment rate and the youth unemployment rate was correlated by 0.67. Thus one might worry about the degree of correlation between the vulnerability index and the youth unemployment rate as well as the open unemployment and the youth unemployment rate but testing for multi-collinearity (VIF-tests)[12] found no cause for alarm; none of the variables had a VIF over 2.5 which is well-below the threshold at 5.

[12] Variance inflation factor measures how much of the variance (the square of the estimates standard deviation is increased due to collinearaity. The output thus tells the reader how much larger the standard error is

5.4.3 Which level of aggregation matters

According to Andersson and Musterd (2010) the different contextual mechanisms also have different spatialities; direct relational mechanisms, such as socialization, require face-to-face contact whereas the larger structural does not. Therefore the question of scale and unit of analysis is a theoretical problem with strong methodological ramifications. In this study, both by choice and by data limitation, the contextual unit is the municipality, which is the second smallest political unit in Sweden.

First of all one can argue that the municipality is the most accurate aggregation to model the interaction between the structural economic and the individual level in Sweden. It is at the municipal level where people work and pay taxes, the most immediate political decisions made and carried out, public services provided. In essence the relationship between individual economic activity and contextual conditions is high. In terms of labor market policies there have, since the economic recession of the 90s, been a strong active decentralization towards the county boards and the municipalities which means that municipalities take a hands-on approach in the economic activity of their population (Sianesi 2004, 139). This is also true for the responsibility of the public educational institutions upon until tertiary education.

Secondly, from a practical point of view, it is only at the municipal level that the sufficient contextual data is available thus it is the only level that allowing for the inclusion of a second level. Using classification schemas, such as Local Labor Markets and Functional Areas, would have forced me to aggregate my measures and thereby introduce a number of potential errors.

With respect to measuring the contextual effects it relies on the correct categorization of sub-populations into specific clustered units. An ill-advised unit biases any possible analysis by misrepresenting social interactions and factors. This possibility is highly relevant to the question of contextual effects at the municipal level since it uses a mainly political and administrative unit. Looking at Sweden – we see that that some municipalities are depopulated and largely rural whereas others are highly populated areas within larger metropolitan regions. Obviously we should recognize that within and between these artificial units we will find a plethora of differences in terms of social interaction. The question therefore becomes whether the municipality enables us to sufficiently model real contexts and whether this choice biases the results. Even if we allow for the fact that our measured effects will be weaker than they would be on the neighborhood level then I believe that they will still represent true effects. This is supported by Galster (2003) who argue that the direct within-area effects will be weaker outside the closest environments, such as neighborhoods, but that the structural and correlated effect should be evident at all levels of aggregation yet at different strength.

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compared to the possible result if the variables were uncorrelated. According to most literature on the issue – a VIF of 5 or lower is acceptable. (Robinson & Schumaker 2009)

In conclusion – there can be reason to expect smaller contextual effects since the aggregated measure compromises something larger than the closest lived environment.

5.4.4 Geographic Change

There are municipal changes within my period of observation (SCB 2011)[13]. In 2003 Knivsta (0330) becomes a new municipality, breaking from Uppsala (0380). To enable analysis using the stayer-leaver distinction Knivsta was treated as Uppsala for the entire period.

5.4.5 Discrepancy between data sources.

As to add information on the individual economic situation the statistics on wage income structure have been used to create a variable for sector of employment and percentage of employment (part-time or fulltime). There are two significant potential issues with using this database: under-coverage related to the survey sample and duplication possibilities due to collection technique.

The specifics of the wage-income structure are that it consists of five separate income surveys collected at different dates during the year. The public sector is subdivided into three levels and collected by the branch organization Swedish municipalities and counties (SKL): the municipal and the county are collected on the 1st of November whereas the state is collected on the 1st of September (October 1 for universities). The private sector is subdivided between blue-collar and white-collar workers and collected using a stratified random selection of companies which are cross-classified by branch of industry and number of employees. Companies with more than 500 employees are specifically surveyed. In total – the register covers roughly 50% of all those employed in the private sector. The direct result is the variables collected were only available for 525 764 individuals out of the entire population. These variables have been included into the analysis since to trace the labor market development during the late 20th and early 21 century in Sweden relates to strongly to changes along the lines of public sector downsizing and an increase in temporary-contract employment, which deviates strongly from the Swedish model.

Secondly – the collection technique allows for the possibility that the same individuals are present more than once each year as an individual could either hold jobs in different sectors or simply switch in between collection points. A solution to this was to only keep one entry for each individual by allowing the largest contract in terms of percentage to trump any other information unless the individual had the same occupation in both entries. In the case of a double-entry within the same occupation then the percentages were combined into one.

In these cases - the information of the largest percentage was kept and if this was a tie then only the first entry was kept. At the end of the process - no individual could work more than full-time (100%)

[13] http://www.scb.se/Grupp/Hitta_statistik/Regional%20statistik/Indelningar/_Dokument/kommunandringar.pdf

thus all entries were formatted to account for this. If there was deviation in terms of sector then the public sector trumped the private.

Ultimately when running the event-history analysis cases with missing values in included variables have been omitted from the analysis.

5.4.5 Individual Employment Status

As individual employment status is a key variable in this study it is important to fully disclose what it actually uses to distinguish between those who are employed and those who are not.

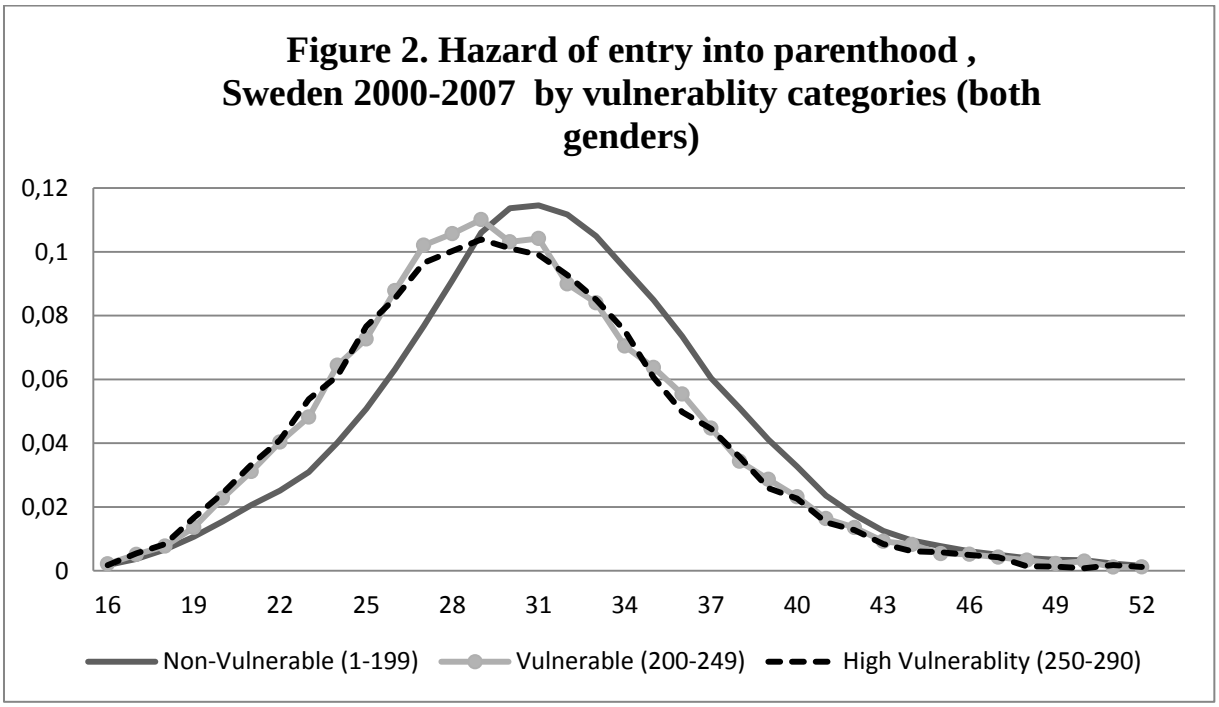
The data on employment status has been taken from the LISA database which draws information from the Register-based labor market statistics (RAMS). RAMS collects information on whether an individual has a taxed income from employment during the month of November each year and ascribes all individual's a status with regard to this. If a person has income then 1) employed or if not then one can either be listed as 2) non-employed but with information on the occupational situation and 3) non-employed without any information during the year. This means that the non-employed label is a catch-all status for all those who are not employed, i.e. unemployed, students and individuals outside of the labor market.

During my data creation I combined the two non-employed statuses (2 and 3) into one single non-employed status and performed the analysis using this as a proxy for not working. From this project's theoretical foundation used on individual economic activity, i.e. having an income and being stabilized in a labor market position, I believe that this distinction between non-employed and employed does capture the most important differences between the two statuses; is the individual active and established on the labor market and do they have an income which enable them to afford various life choices, such as becoming parents?

Much of the issues addressed in the section on municipal unemployment and measurements issues do apply to the individual employment status as well so I will not repeat too much of what has been said. However, there are clear issues where individuals, for various reasons, will fall on the wrong side of the distinction between employed and non-employment thus complicating how they relate to my discussion on how employment affects transitions into parenthood. There is little to be done about these issues when using the data that I have selected but it is important to remember that there is a clear division between being non-employed and unemployed within the context of the analysis.

6. Descriptive Analysis

This section introduces the analysis of entry into parenthood by different measures of economic conditions using hazard rates and survival plots. This presents an initial picture of the differences within Sweden and how this picture emerges in various shapes between various context-level measures of economic circumstances.



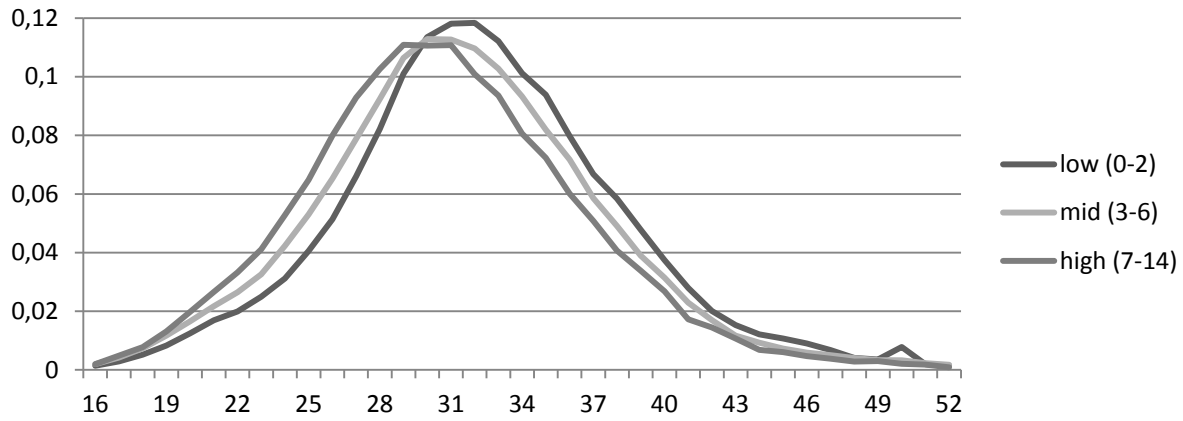
I begin by plotting the hazards of entry into parenthood by three major categories of vulnerability: the non-vulnerable (ranked 1-199), the vulnerable (ranked 200-249) and the highly vulnerable (250-290). The categorization mimics the division used by Tillväxtverket in their report (2011) and enables a proportional division of cases[14].

Figure 2 shows a distinctly different pattern between the categories, in which vulnerable municipalities have early entry into parenthood compared to non-vulnerable municipalities. In the vulnerable municipalities (which have a vulnerability score above 200), entry into parenthood begins to increase around the age of 19, that is, after the regular age of graduating from high school, whereas in the non-vulnerable municipalities, the hazard of entry into parenthood starts increasing around the age of 22. This gap of 0.02 remains up until the late 20s. In vulnerable municipalities, the hazard increases until the ages of 28-29 years, after which it starts to decrease and level out in the late 40s. In contrast, people in non-vulnerable municipalities have lower hazards of entering parenthood up until ages 30-31, when they reach a peak of 0.11. After this age, the hazard remains higher all the way until the early 40s.

[14] This division sorts the observation into roughly proportional categories where the non-vulnerable make up 70% of the person-years and the vulnerable categories make up 15% each.

The second main question was whether different measures of municipal economic circumstance produce different patterns of entry into parenthood. The results in Figures 3 and 4 suggest that the findings clearly depend on which measure we use. In these figures, unemployment rates are divided into the lowest and highest quartiles and the middle half. For the unemployment rate this means that the low is 0-2 (lowest 25%), the mid 3-6 (middle 25-75%) and the high 5-10 (highest 25%). For the youth unemployment this is low 0-2 (lowest 25%), mid 3-6 (25-75%) and high 7-14 (top 25%).

Figure 3. Hazard of entry into parenthood, Sweden 2000-2007, by youth unemployment rates (ages 16-24) (both genders)



Looking at the youth unemployment (Figure 3), we see a similar pattern as in Figure 2. This is not surprising given a correlation of 0.6 between vulnerability and youth unemployment. The general pattern is that as youth unemployment increases, so does early entry into parenthood.

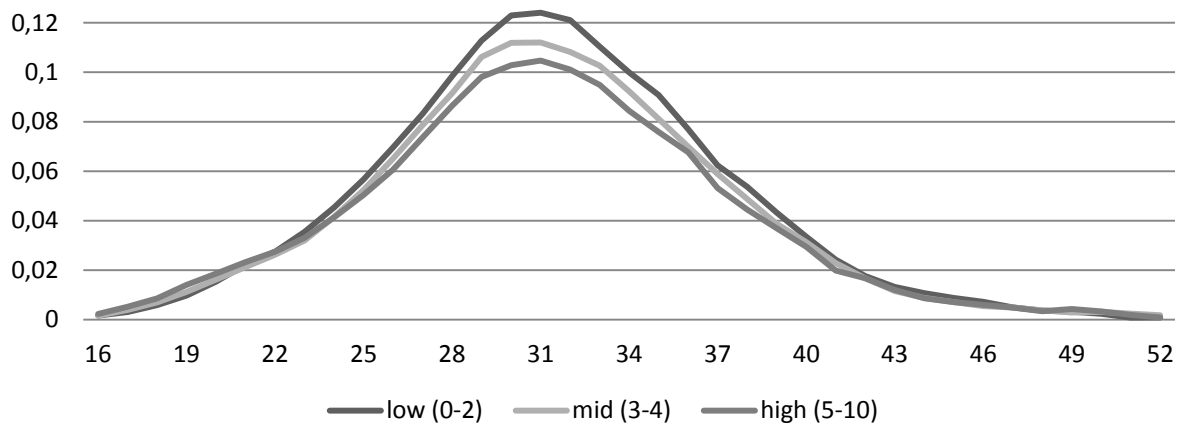
Figure 4, which presents the hazard in entry into parenthood by total unemployment, shows a somewhat different pattern Municipalities with lower unemployment rates have higher hazards throughout the fertile ages, without differences in when the hazards peak as in the previous cases. A note of interest that hint toward the difference between total open unemployment and the other measures is that the correlation between this measure and vulnerability is only 0.2.

An explanation to the divergent picture between different contextual measures could be that they do capture different things in terms of economic conditions. The correlation between youth unemployment rate and the vulnerability, which is 0.52, could be seen as they both capture the specific effect for young adults, which is why it is mostly related to timing, whereas the general unemployment, correlated to vulnerability by 0.3[15], capture the conditions affecting those beyond early adulthood and therefore produces a different pattern.

[15] As noted earlier – the correlated between open total unemployment and youth unemployment was 0.67

One could follow this lead by further arguing that the effect of poor economic conditions are primarily felt by those with less stable labor market ties, in the Swedish framework youths, whereas those who are working do not experience the contextual effects in the same way.

Figure 4. Hazard of entry into parenthood, Sweden 2000-2007, by unemployment rates (ages 18-64) (both genders)



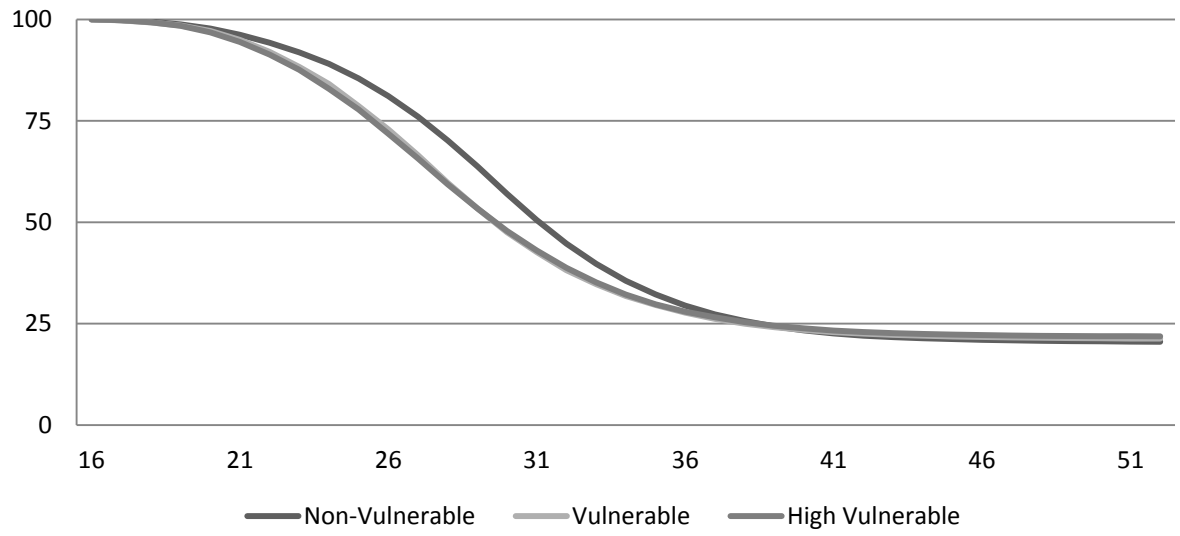
The graphs, specifically regarding the vulnerability and the youth unemployment rates, to a varying extent, provide light on how economic contextual conditions at the municipal-level affect the entry into parenthood. On the whole this difference is made up by an early entry into parenthood which, however, does not result in a greater number becoming parents as the rates during the peak ages and the latter stages of the fertile period is lower than for Sweden in overall.

Specifically related to the difference in timing then it could be suggested that youths living in these municipalities are not establishing other trajectories that would delay entry into parenthood. Whether this is the result of selection or contextual mechanisms are impossible to delineate here but the result does propose a series of follow up-questions. For one, it becomes enticing to ask whether individuals living in poor economic conditions find it easier to realize their immediate life aspirations thus become parents early on or whether they have reached their perceived labor market/educational ceiling thus see no use in postponement. Such a development could either be spurred by the increased utility of parenthood as a key trajectory when times are bad or by, as suggested in Oppenheimer's theory, already having established a stable life situation. This could be further tested through the inclusion of educational attainment and occupation status in the regression models.

The survival graph presented in Figure 5 enables us to look into hypotheses 2. Does the difference, between vulnerability groups, in timing of entry also affect the total propensity for becoming a parent? Here we see that the shape of the hazard does not equate to a difference in terms of total propensity: all the categories converge at roughly 20% surviving. Together with Figure 2, this result suggests

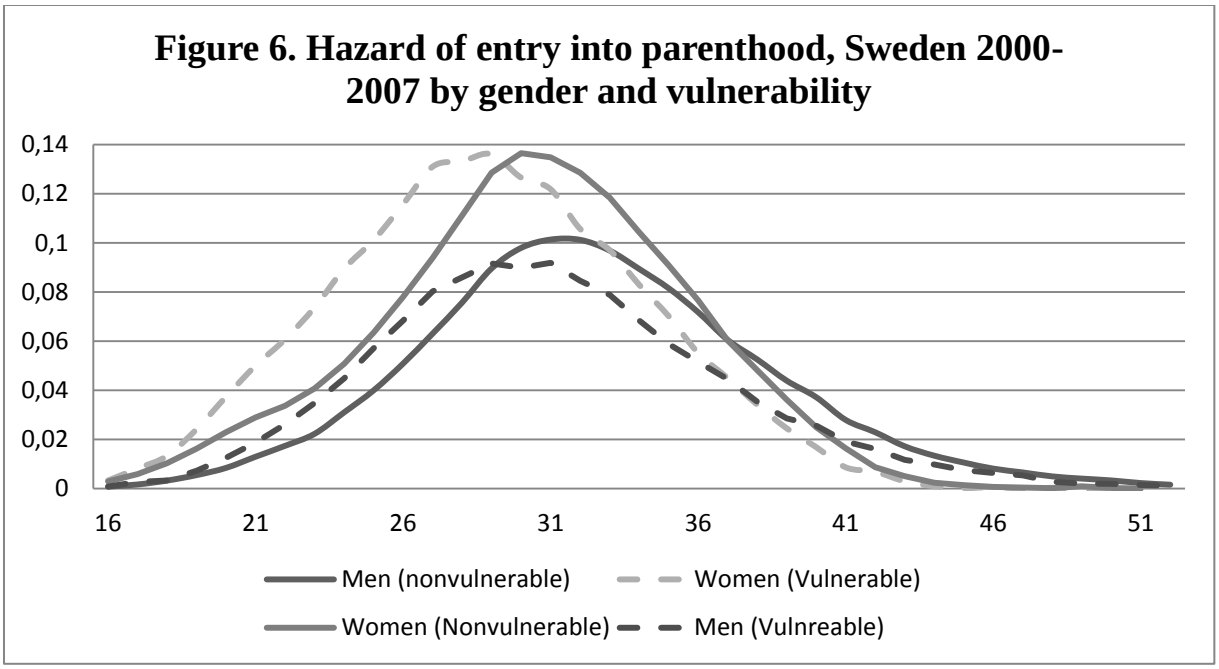
that even though better economic conditions in terms of lower municipal vulnerability postpone fertility, this does not lead to higher levels of childlessness in these municipalities.

Figure 5. Survival Plot for Entry into Parenthood, 2000-2007 by Vulnerability Index (both genders)



Finally with respect to gender differences, Figure 6 shows the hazards of first childbearing for men and women depending on whether they live in vulnerable (ranked 200-290) or non-vulnerable municipalities. The most significant pattern is that women have significantly higher hazards of becoming parents across the entire age-span. For example we see that at the peak of fertility, around 29-30 years of age, women in vulnerable municipalities have a hazard at ~0,14 whereas the men peak at ~0,08. The same difference is established in the non-vulnerable municipalities. Further the trend of young parenthood is specifically apparent among women in vulnerable municipalities who start becoming parents at the age of 18 and by the age of 25 have a higher hazard than the highest rate of men, irrespective of classification.

We also see that both men and women in non-vulnerable areas attribute to the late ebb of entry into parenthood. Both have a comparatively high propensity for entering parenthood after 40. Seeing that the women in vulnerable municipalities have completed their entry into parenthood by the age of 40, this is a remarkably strong difference. Between men in the two categories we see that few start their fertile period before age 20 yet they remain active for a longer period, up until 48.



More than being a practical matter of occurrence rates in the hazard calculations, the higher hazard for women also equates to a greater proportion for entering parenthood. Survival analysis by gender (see appendix 3) showed that only 17% of the women end up childless compared to roughly 24% of the men. These percentages are slightly higher than what we would assume from previous studies; Statistics Sweden, for example, shows roughly 13-14% remaining childless with a larger proportion being men (Statistics Sweden 2011a; Statistics Sweden 2011b). This discrepancy might be due to the fact that we are dealing with synthetic cohorts, in which selection influences the visible results and possibly over-pronounces the number of childless, compared to real birth cohorts used by Statistics Sweden. Despite this it is hard to provide further theoretical explanation for the larger number of men remaining childless since only 1-2% of this overweight should be related to the cut-off at 51 (Statistics Sweden 2011a, 20). A suggestion could be that these numbers are slightly higher than the proportion that ends up childless seeing that the years selected for observation consists of a recuperation period with low total fertility (Andersson & Kolk 2011). Thus the high proportion of childless could be seen as a period effect.

7. Discrete-time event-history analysis

On the following pages I will present and discuss the results from the individual-level and the multi-level discrete-time event history models. These are presented in a step-wise manner: starting with the individual one-level regressions, then the multi-level random effects models and finally multi-level random effect models with cross-level interactions.

Starting with table 2 where I have presented the results from the individual-level models. In these models the standard errors have been clustered by municipality as to control for intra-class correlation between individuals within the same municipality. In model 1, using the socioeconomic information from LISA, the results highlight the facilitating role of employment for entry into parenthood as shown by previous studies and the individual-level framework, most specifically the Oppenheimerian logic. The output shows that the non-employed have less than half the odds of becoming parents when compared to those working. This feature is constant between men and women as seen in the respective separate models (model men and women). Concerning the effect of working part-time then model 2 shows a negative association to fertility when compared to working full-time. We also find that those working in the private sector have lower odds of entry into parenthood than those in the public sector. Overall the results suggest that labor market participation is a decisive factor when it comes to deciding entry into parenthood.

A major caveat when it comes to the results on part-time and sectorial belonging is that model 2 and 3 are based on select samples as a result of the availability of individual data between data sets (see section 5.4.5). First model 3 relies on having been enrolled at a high school in Sweden which means that it underestimates the immigrant sample. Further in model 2 a selection-bias towards the employed becomes evident as a result of the Statistics on Wage Income Structure (LSS) being limited to including only those who were employed during the year and being included in the sampled private sector companies. In this model the non-employed, a very small sample[16], are those who worked less than 25% and were registered as non-employed in the LISA registry.

Moving on to discussing the effect of educational attainment then we find that individuals without high school education have higher odds of becoming a parent compared to those with high school diplomas and tertiary education. Here we can look to the gender separate models and focus on the female model showing that women with only primary education have decidedly higher odds of becoming parents than those with higher education. It is also notable that women with tertiary education have lower odds compared to those who stopped their educational career after graduating high school. Focusing on the comparison between those with low education and those with a completed high school degree then a potential explanation for the decreased odds associated to higher

[16] The person-years for unemployed are only 153,500 in this model. This compares to more than 3 million in the overall population.

education relates to a labor market effect. Those with higher education, as argued in the theoretical framework, postpone childbearing further since they stand to gain more from waiting until a suitable time point with low(er) opportunity costs for exiting the labor market. A troubling aspect of the data modeling here is that there is no control for whether the individual is currently enrolled as a student thus the analyses do not check for the student-postponement factor suggested by previous research (Thalberg 2012).

Table 2. Individual-level discrete-time event history models, clustered by 290 municipalities

Covariate	1	2	3	men	women
Age	1.61	1.59	1.67	1.64	1.66
Age^2	0.98	0.98	0.98	0.98	0.98
Year	1.00	1.02	1.01	1.01	1.00
Non-employed (REF = Employed)	0.42	0.54	0.40	0.42	0.43
Part-time employed (REF= Full-time)		0.72			
Private Sector (REF= Public)		0.85			
Female (REF = Men)	1.45	1.46	1.49		
Foreign Born (REF= Native)	1.22	1.07	(1.03)	1.30	1.13
Primary ed (REF= Secondary)	1.1	1.00		1.03	1.28
Tertiary Ed	(1.00)	1.07		1.05	0.95
Leavers (Non-vulnerable)			REF		
Leavers (Vulnerable)			1.20		
Stayers (Vulnerable)			0.86		
Stayers (Non-vulnerable)			(0.97)		
Constant	5.49e-10	1.87e-19	1.28e-12	3.85e-13	4.92e-07
N	10353514	3489429	7066520	6036219	4317295
LL	-1960236.9	-836377.22	-1264336	-1030954.3	-883847.82
DF	9	11	12	8	8
R2	0.0846	0.0683	0.0963	0.0848	0.1234
Wald	9704.15	14831.21	12245.64	11410.18	57434.70
AIC	3920492	1591367	2411912	2061925	1847428
BIC	3920619	1591524	2412091	2062033	1847535

Note: Estimates not significant at the 5 % level are placed within parentheses.

In model 3 the information on whether one is living in the same municipality as one was when attending high school, a rough proxy for home municipality, is added between the vulnerability (200-290) categorization. Using those who have moved away from non-vulnerable municipalities (Leavers (Non-vulnerable)) as the reference category, we find that individuals still living in municipalities categorized as vulnerable (Stayers (Vulnerable)) have the lowest odds of entering parenthood whereas those remaining in non-vulnerable (Stayers (Non-vulnerable)) and those leaving vulnerable (Leavers

(Vulnerable)) have significantly higher odds. This goes against the results in the descriptive analysis and alludes to an interesting difference in terms of who stays and who leaves these specific contexts. Despite the fact that this variable is a rather poor substitute for (more) complete migration histories then one can still view the result as a hint towards notable differences between municipalities and invite us to move on to the contextual level variables.

To summarize table 2 then the overall results support previous studies; if we link the results concerning non-employment and educational attainment then there is support for the traditional life course pathway of graduating high school and finding employment as important markers for entry into parenthood in Sweden.

Table 3 presents the multi-level random effect models with only contextual level variables and years. As discussed earlier the contextual variables have all been centered at the mean. It is also fair to yet again remind ourselves that we are here primarily interested in how municipal-level factors influence the dynamics of entry into parenthood, which is why we are using random-level multilevel models.

Table 3. Contextual Measures, Discrete-time event history models.

Covariate	1	2	3	4
Year	1.00	1.00	1.00	1.01
Age	1.66	1.66	1.66	1.66
Age^2	0.98	0.98	0.98	0.98
Contextual Factors (centered at mean)				
Open Unemployment (18-64)	0.99	0.99		
Youth Unemployment (16-24)	1.00		1.00	
Vulnerability Index (1-290)	0.95			0.93
Constant	1.87e-07	7.40e-09	1.26e-07	6.86e-41
N	10508797	10508797	10508797	10508797
LL	-2007416.9	-2007433.9	-2007426.5	-2007425.1
DF	6	4	4	4
Wald	188699.15	188360.63	188084.52	188325.65
Contextual-level Variance	.1231311	.1026761	.1355515	.1169118
rho	.0045873	.0031943	.0055541	.0041375

Note: Estimates not significant at the 5 % level are placed within parentheses.

In line with the discussion in the descriptive analysis the evidence suggests that the measures capture different things in terms of contextual effects and mechanisms. The effect of the total unemployment and the youth unemployment rates are small and seemingly non-consequential. In contrast the vulnerability index shows a clear negative effect; increasing vulnerability has a depressing effect on entry into parenthood. When adding all measures into one model (1) the vulnerability index continues to have a clear negative effect. The results run against descriptive findings and suggest that there is a

dynamic potential to the different measures and their inter-relations. A suggestion could be that the contextual effects are non-linear thus the differences only show when the economic conditions surpass a certain threshold. The take-away here is that the variables capture different aspects of economic conditions and that the unemployment rates, for one reason or another, clearly stand in contrast to the vulnerability index.

Remembering that the vulnerability index is a throughout the observation period then it becomes very interesting to test further whether the effect found and the difference between unemployment rates and vulnerability index are due to compositional or contextual effects. Table 4 complements the previous models by adding the individual-level variables into three different models as well as running two basic models (only LISA variables) separately by gender, following the analyses in Table 2.

Table 4. Multilevel random effects discrete-time event history models.

Covariate	1	2	3	m.men	m.women
Age	1.62	1.68	1.60	1.64	1.68
Age^2	0.98	0.98	0.98	0.98	0.08
Year	1.00	1.01	1.02	1.01	1.00
Non-employed (REF = Employed)	0.43	0.40	0.54	0.42	0.43
Part-time employed (REF= Full-time)			0.71		
Private Sector (REF= Public)			0.87		
Female (REF = Men)	1.46	1.50	1.47		
Foreign Born (REF= Native)	1.27	1.01	1.11	1.33	1.19
Stayers (REF = Leavers)		0.80			
Primary ed (REF= Secondary)	1.1	1.12	(0.99)	1.02	1.27
Tertiary Ed	1.08	1.02	1.15	1.10	1.03
Contextual Factors (centered at mean)					
Open Unemployment (18-64)	0.99	0.99	0.98	0.95	0.99
Youth Unemployment (16-24)	1.01	1.02	1.01	1.01	1.01
Vulnerability Index (1-290)	(0.99)	1.02	(0.98)	0.99	1.05
Constant	3.21e-08	2.30e-10	2.03e-18	9.70e-12	.000054
N	10353514	7066520	3489429	6036219	4317295
LL	-1954916.3	-1259956.9	-833735.8	-1029434	-919341.58
DF	11	13	14	11	11
Wald	237172.26	177325.38	80241.42	117027.29	113006.95
Contextual-level Variance	.1198515	.1375865	.1405339	.1065399	.1400464
rho	.0043473	.0057211	.0059674	.0034384	.0059263

Note: Estimates not significant at the 5 % level are placed within parentheses.

The first three models point towards that individual-level factors control away most of the contextual effects, suggesting that the regional differences are largely compositional. Seeing that the vulnerability index turn is insignificant then it could be argued that it relates to the composition of people living in these municipalities whereas the municipal level unemployment rates capture what lies outside of this composition.

The results develop as we turn our interest to the two gender separate models. In stark contrast, the result shows that men and women are affected differently by worsened economic conditions. Starting with the men then the results show that as open unemployment increases then the odds of men becoming fathers decrease. Viewed through the lens of the theoretical framework and in combination with the individual-level variables then this proposes a logic established in the Beckerian framework where men value their income and occupational possibilities as specifically important for entry into parenthood. Moving to the female model then we find that the vulnerability index, which has a positive effect on entry into parenthood, is the primary contextual measure. Allowing that the vulnerability index relates more specifically, in comparison to the unemployment rates, to the concept of local opportunity structures then it could be that females facing these specific economic conditions and possible pathways become increasing interested in parenthood. To look further into this – table 5 and 6 show gender-separate interaction models with individual employment and educational attainment against vulnerability and unemployment.

The choice of using the vulnerability index and the total unemployment rate springs from the previous results in which vulnerability shows the strongest independent contextual effect whereas the open municipal unemployment seem to be non-consequential. The decision to use total open unemployment rather than youth unemployment was based on the interest of contrasting with the vulnerability index. Since the youth unemployment measure and vulnerability index had a high correlation then the open unemployment presented itself as the most useful measure for this purpose. There is also the underlining assumption that the total unemployment rate models the larger economic conditions as they relate to their entire population and this is an important aspect to understand.

Starting with the interactions for women (table 5) and specifically the educational attainment models (1 and 3) then the results show that those with higher education (tertiary) have lower odds of entering parenthood as economic conditions worsen. Whether this is, as discussed previously, because women with higher education living in poor economic conditions find fewer reasons to establish parenthood than their less-educated counterparts or whether they actually check their childbearing as the contextual conditions worsens is something that I am unable to relate to here but it is an interesting track to consider in future research.

Looking then to the interaction between employment status and economic conditions then model 2 show that being unemployed in vulnerable municipalities is less stressful on the prospects of parenthood than in the rest of Sweden. This is also shown in the interaction between municipal unemployment and not being employed (model 4). Non-employed still have much lower odds of becoming parents but the gap between non-employed and employed becomes smaller when the economic conditions worsen. These findings could either be interpreted to corroborate Adsera's findings of how breaks in the employment trajectories are opportunities for becoming a parent (Adsera 2011) or that women in weaker local economics see not working as less of a hindrance for realizing their parental aspirations.

Table 5. Cross-level interaction models, women

Covariate	1	2	3	4
Age	1.68	1.63	1.68	1.63
Age^2	0.98	0.98	0.98	0.98
Year	(1.00)	1.01	1.00	1.01
Non-employed (REF = Employed)	0.43	0.45	0.43	0.44
Foreign Born (REF= Native)	1.20	0.92	1.19	0.92
Primary ed (REF= Secondary)	1.27	1.24	1.27	1.24
Tertiary Ed	1.03	0.97	1.03	0.97
Contextual Factors (centered at mean)				
Open Unemployment (18-64)	0.99	0.98	(1.00)	0.97
Youth Unemployment (16-24)	1.01	1.02	1.01	1.02
Vulnerability Index (1-290)	1.06	1.05	1.04	1.06
#interactions				
Non-employed#vulnerability		1.06		
primary#vulnerability	(1.02)			
tertiary#vulnerability	0.95			
Non-employed#unemployment				1.07
primary#unemployment			1.05	
tertiary#unemployment			0.96	
constant	.0000571	2.75e-09	.0000149	2.81e-10
N	4317295	4317295	4317295	4317295
LL	-919300.91	-880558.95	-919209.36	-880470.03
DF	13	12	13	12
Wald	113072.31	202161.51	113169.03	202004.59
Contextual-level Variance	.1397386	.1193473	.1413291	.119215
rho	.0059004	.0043109	.0060347	.0043014

Note: Estimates not significant at the 5 % level are placed within parentheses.

An aspect of the previous contextual studies was that they were predominantly concerned with women and their fertility. In table 6 this study widens the focus by separate interaction models for men. Here

the output from the two models (3 and 4) interacting individual employment status with contextual-level variables shows that the increasing effect of aggregate unemployment is similar to men as for women. As unemployment and vulnerability increase, the non-employed enter parenthood to a higher degree.

Table 6. Cross-level interaction models, men

Covariate	1	2	3	4
Age	1.64	1.64	1.64	1.59
Age^2	0.98	0.98	0.98	0.98
Year	1.01	1.01	1.01	1.01
Non-employed (REF = Employed)	0.42	0.42	0.42	0.45
Foreign Born (REF= Native)	1.34	1.34	1.33	1.02
Primary ed (REF= Secondary)	1.02	1.02	1.02	1.02
Tertiary Ed	1.10	1.09	1.10	(1.00)
Contextual Factors (centered at mean)				
Open Unemployment (18-64)	0.98	0.98	0.99	0.98
Youth Unemployment (16-24)	1.01	1.01	1.01	1.01
Vulnerability Index (1-290)	0.94	0.96	0.95	(0.98)
#interactions				
Non-employed#vulnerability	1.06			
primary#vulnerability		(1.00)		
tertiary#vulnerability		0.92		
Non-employed#unemployment				1.05
primary#unemployment			1.03	
tertiary#unemployment			1.10	
constant	8.60e-12	9.72e-12	2.99e-12	8.99e-16
N	6036219	6036219	6036219	6036219
LL	-1029407	-1029341.1	-1029341.7	-976941.3
DF	12	13	13	12
Wald	117076.15	117213.27	117145.72	245425.06
Contextual-level Variance	.1065018	.1064814	.1075569	.0883107
rho	.0034359	.0034346	.0035041	.0023649

Note: Estimates not significant at the 5 % level are placed within parentheses.

The result that men who do not work in poor economic conditions have higher odds of becoming father than the non-employed in the rest of Sweden is a specifically interesting finding without clear explanation. One could argue that the explanation extended for women is also valid for men as they do not experience their situation as detrimental to their parenthood aspirations but rather as a chance of realize them. Whether this is, as discussed by Åberg and Hedström (2003:81) in their discussion on the

changing effect of contextual unemployment levels[17], is because the social and psychological effects of being unemployed become less depressing when other individuals also experience labor market instability or whether the utility of parenthood simply is higher at this time is beyond the grasp of this study to fully understand but it is an important result that stimulate further discussion and study. The major point is that the theoretical framework focused on economic explanations does enable to explain this pattern and the mechanism behind it.

If we move our interest to the educational factor then model 2 shows that men in more vulnerable municipalities who have invested in their career potential have significant lower odds than those with only high school or lower. This links to the fact that vulnerable municipalities have traditionally been heavily-focused on industrial manual labor with little need for high human capital skills. The suggestion is that these municipalities are not experienced as suitable contexts for becoming parents by well-educated men. Model 3, interacting education and open unemployment, however has a distinctly different pattern as those with higher education increase their entry into parenthood. The difference in results between these models could be a hint that highly educated men who do not live in vulnerable municipal are stable and safe in their labor market positions whereas those in vulnerable municipalities specifically feel the strain of changing economic fortunes. It could then be argued that for men with high education then the opportunity structure is more important than worsening labor market situations for determining entry into parenthood.

8. Discussion

To start the discussion on the links between contextual economic conditions and entry into parenthood in Sweden we can return and answer the hypotheses placed before us.

A starting point for this discussion on the links between economic conditions and entry into parenthood in Sweden is answering the hypotheses placed. Starting with hypothesis 1 and 2, concerning the propensity for entering parenthood, then the picture emerging from the descriptive analysis was that poor economic conditions neither pushed a total increase nor a decrease. We can therefore say that hypothesis 1 and 2 is false:

H1) Municipalities with poor economic conditions, often being less populated and peripheral whilst also having a specific opportunity structure focused on early transition into adulthood, will have a stronger propensity for entering parenthood.

[17] In their study the authors propose a proportional model of the benefit difference between being unemployed and employed. Their logic suggests that being unemployed in a municipality with low unemployment has a stronger detrimental effect as individuals will feel outside of the mainstream and spend more time in searching for employment whereas being unemployed in a municipality with high unemployment will be less stressing as others share the situation.

H2) Municipalities with poor economic conditions, as signified by high unemployment or high index of vulnerability will lead to lower hazard of first childbearing.

The survival graph did, however, distinctly show that there was a clear timing-difference between municipalities with different economic conditions; those with poor economic conditions having increased odds for early parenthood. This increase was especially strong for women and visible both when using the vulnerability categorization and the youth unemployment rates.

In expanding the discussion by including individual-level economic activity then it became clear that being employed was a major determinant for becoming a parent; the non-employed had only half the odds of entering parenthood compared to those in employment. When deepening the division by including type of employment (half-time or fulltime) then the findings showed that working half-time also had a depressing effect on first childbearing. The overall findings supported Becker's economic framework as stable labor market participation, i.e. income, was important for the entry into parenthood. Further the analysis showed that as economic conditions worsened those unemployed had an increased risk of becoming parenthoods. This falls in line with the previous studies linking economic activity to fertility. We can therefore say that hypothesis 3 is accepted.

H3) Individual employment status will be a determining factor for how economic conditions affect entry into parenthood in poor economic conditions.

A surprising aspect, going against the Beckerian framework, related to the gender specific hypothesis (4 and 5), was found. Starting, hypothesis 4, arguing for increased entry for female in poor economic conditions, was supported both in the descriptive and the event-history analysis. The results propose that females in poor economic conditions are increasingly likely to enter parenthood. Being outside of employment as economic conditions worsen will push this effect even further. This is in line with previous studies and the theoretical framework. We can therefore say that hypothesis 4 is accepted:

H4) Women in vulnerable municipalities will have the highest risk of entering parenthood.

Regarding men then the most interesting result was the interaction between being outside of employment and economic contextual conditions. This showed that men who did not work had higher odds of becoming parents as economic conditions worsened. This challenges the theoretic framework as it goes against the economic individual-level mechanisms and forces us to assume that men who are not employed living in poor economic conditions do not experience their economic situations as detrimental to their fatherhood aspirations. One can pursue three different lines of thought to explain this: 1) an stabilized life course scenario where these men accept their situations and do not feel that these economic changes significantly alter their lives; 2) a no-way-up scenario in which the economic contexts enable few possibilities to move upwards thus removing the penalizing mechanisms of the economic framework. If having no way up or down in terms of economic stability

and prospects – one simply acts in relation to aspirations and impulses; 3) the mechanisms for men are equal to women's i.e. being unemployed enable them to become parents without incurring large opportunity costs. Summarizing hypothesis 5 is false:

H5) Men in poor economic will not have any significant change in the odds of entering parenthood.

The full weight of the findings presented is that changing and worsening economic conditions on the contextual level do have important bearings on entry into parenthood. The results were far more nuanced than simply concerning a straight fault line between slumping rural, peripheral regions and booming central regions within Sweden. This was evident when problematizing the descriptive analysis through the event-history analysis and finding a new depth in the picture of early entry into poor economic contexts which, at the end, did not result in a total difference. The analysis showed that females were more influenced by worsening economic conditions compared to men. As to discuss all the implications the results will beneath be discussed in relation to previous studies; to the discussion of contextual measures and finally in terms of future applicability and development(s).

8.1. In relation to previous studies

Overall the results agree with findings from previous studies both on the individual and contextual level. In terms of individual-level factors then we can only echo the continued worth of the traditional life course path; graduating high school, finding a job and a partner and then becoming parents. My analysis concludes that not being active in the labor market continues to be the restricting factor for entry into parenthood.

In relation to the contextual-level studies then the descriptive analysis supported a general schema of regional tempo-differences between periphery, proxy as poor economic conditions, and central areas. As found in Denmark (Thygesen et al 2005), Scotland (Boyle & Kulu 2009) and, to some extent, Sweden (Kulu et al 2007), municipalities with poor economic conditions had higher rates in the younger ages but that the rest of Sweden caught up in the higher ages. The differences did indeed decrease over time and the completed fertility did not change. With respect to the studies of Hoem (2000) and Kravdal (2002) which linked the economic recessions of the 90s to decreasing fertility then the study was unable to suggest a distinct effect of the aggregate unemployment rates. This could likely be related to the fact that the observation period was economically stable and unemployment rates changed little across the duration of time. The results found did, however, show that non-employed men and women increased entry into parenthood in poor economic conditions compared to non-employed in the rest of Sweden. By including men into the analysis the study was able to further develop previous studies and show that individual-level factors were the deciding mechanisms enabling the transition into fatherhood for men.

In relation to the paradigmatic discussion between compositional and contextual effect then this study is inconclusive. Indeed the results speak clearly in support for compositional effect as the individual-levels effects do provide the most significant answers yet there are pieces of support for contextuality as well. For example if we look to the event-history analysis on women alone then it is very clear that women in vulnerable municipalities who face an poor outlook adapt their behavior and become mothers to a greater extent than other women. This study, due to limitations in the data and methodology, is unable to disentangle the full logic behind this but the results do speak for contextual mechanism influencing women and their entry into parenthood.

8.2 In relation to the contextual measures

Throughout the paper the possibilities with using different contextual measures have been discussed. The underlying assumption have been that the three different measures capture different aspects and extents of economic conditions; the vulnerability index enabling a wider construct of economic conditions related to the local opportunity structure and the cumulative structural mechanisms. The youth unemployment rates summarize the economic conditions and contexts that young adults face in taking the step into full adulthood whereas the total open unemployment rate being more general and capture the overall local economic conditions.

And indeed the models and graphs did show a changing contextual picture between different measures. First it should be said that none of the variable had any strong effect in any of the models which is what is expected from contextual effects when also controlling for individual-level characteristics. The fact that there was no strong effect could also be a side-effect of the stability of the measures during the observation period where no strong changes in employment took place. In the future it would be wiser to study a full economic cycle rather than a proportion of it, say 1990-2012 in Sweden, as to enable a link between changing economic conditions, economic restructuring and demographic behavior.

When looking specifically at the influence of the contextual conditions then it was clear that the effects were gender-specific. In the gender-specific models we found out, through the cross-level interactions, that the unemployed had increased odds of entering parenthood as economic conditions worsened. We also found that the highly educated (tertiary education) women checked their fertility as economic conditions worsened whereas the men had different effects between the two measures used; when the vulnerability index increased then the highly educated men checked their entry into parenthood whereas as open unemployment increased then they had higher odds. From this we could assume that the total open unemployment rate and the vulnerability index do indeed relate to different dimensions of the economic contextual conditions; the vulnerability index relating to the opportunity structure whereas the open unemployment rate relate to the economic situation. The results of the education interactions suggest that there is a selection effect in which those with university degrees are

differently affected by changing economic conditions than the rest of the population. This is only logic since the different groups should be active in different parts of the labor market and thus be affected differently by cluster- and sector-specific change. This idea is further supported by the result that men with higher education in vulnerable municipalities control their fertility whereas they, as unemployment increases, are less affected. In conclusion we can see that the measures did capture contextual differences between municipalities which shaped entry into parenthood. Whether this pattern was an effect of local opportunity structures or selection effects could not be answered within the framework of the study but it did provide fuel to returning to ask follow-up questions in an adapted framework

8.3 Future developments and implications

This academic pursuit was spurred initially by a growing interest for how economic transformation fundamentally affected individuals lives. Have the struggle and strife symptomizing industrial and peripheral regions taken a specific toll on the individuals who lived and planned for their lives there? In the various report on vulnerability and economic divergence within Sweden a typified example is usually found in which small struggling towns in peripheral regions are at the complete mercy of economic forces outside their own control. For example there is the case of Hofors, in the southernmost of Gävleborgs Län, in which the industrial steel-giant Ovako employ more than one third of the population and account for more than 50% of the total sum of wage income (Bornfalk 2011). A company that over the last few years have struggled mightily, being subject to a number of serious bankruptcy threads (Gefle Dagblad 2011), still loom large over the seemingly powerless municipality. The pivotal question here, in relation to the twisting and turning of the global economy, is what would happen to life in Hofors if Ovako did leave the municipality behind?

This study is far from providing direct answers to this hypothetical question yet, along with a growing number of studies, it does push an agenda greater than the standard realization of shrinking population numbers and top-heavy population pyramids. This study, when coupled with the results of previous studies, has provided an initial description of the difference existing between and within Swedish municipalities yet it does struggle greatly with the methodological implications concerning data selection and development. In hindsight I see great potential in retracing the steps taken when selecting and creating the data set; it would be more than fruitful to add more complete life course histories with respect to migration, educational status and attainment, partnership status and, most specifically, labor market participation. As the data stands currently it is bare and isolated within a period of greater economic change thereby becoming unable to develop a baseline necessary for undertaking this study and developing the potential nuances of contextual effects.

Specifically a point to continue working from is the finding that those unemployed, both men and women, to a higher degree enter parenthood in poor economic conditions as compared to unemployed

in the rest of Sweden. This dynamic has been pointed to in a number of previous studies on European fertility patterns connected to economic uncertainty (Kreyenfeld et al 2012) and this study magnifies the potential implications of previous studies. It would be interesting to go deeper into this and see what the nuances are behind and what actually drives it. As a starting point one could include more complete labor market histories and partnership details to see what lies at the individual level – what is the driver of this increased entry into parenthood in poor economic conditions? Are these effects true for those who are long-term unemployed or is this a, as suggested by others, an opportunity effect in which individuals realize the low opportunity costs to start a family. Such a thought create implications that push us to ask how these individuals value their situations and what they see as being their futures; is there a "no-way-up" scenario or is there a renewed value in parenthood as the economic and occupational possibilities grow fewer. There are a large number of potential follow-up questions that are interesting to ask in follow up studies.

To conclude by relating to the future then we can reconnect with the question of the future demographic well-being of peripheral regions. In studies dealing specifically with this question it has been advanced that immigration can and must provide the revitalization and become the life pulse of decaying places (Carr et al 2012; Hedberg 2010). This study connects to this potential by theorizing about how the economic conditions in times of change can play a pivotal part in shaping and enabling the demographic aspirations of individuals.

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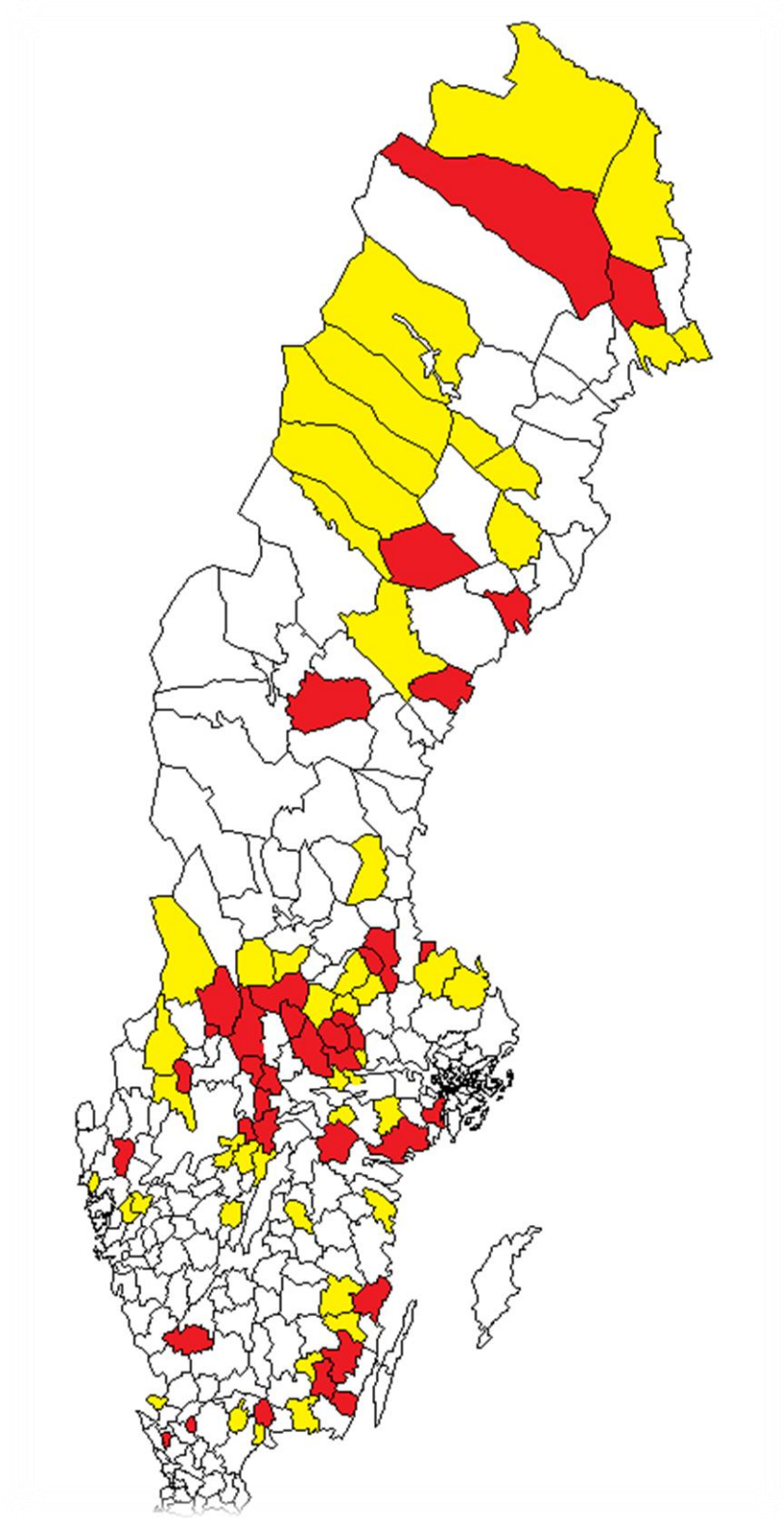
Appendix 1. Table of Socioeconomic Statistics in Sweden 1990-2007

	Population Size Change (absolute numbers)			Total Fertility Rate			Change in Employment % 1990-2007			Change in employment by sector (SNI92) 1990-2004 (number in 100)				
	1990-2007	2000-2007		1990	2000	2007	Men	Women		All	Primary	Manufact	Financial	RND and Education
*01 Stockholm[18]	319885	146139		1,98	1,54	1,91	11%	7%		68	-483	-304	765	477
*03 Uppsala[19]	44898	17221		2,1	1,46	1,78	9%	6%		-4	-58	-21	72	54
04 Södermanland	11827	9300		2,24	1,66	2,04	-9%	-8%		-91	-100	-71	39	41
05 Östergötland	21303	9489		2,18	1,53	1,85	-6%	-10%		-233	-161	-108	48	92
06 Jönköping	10545	6344		2,29	1,64	1,99	0%	0%		31	-36	49	43	78
07 Kronoberg	4198	3638		2,17	1,49	1,89	1%	1%		-56	-46	-11	35	45
08 Kalmar	-5730	-2667		2,29	1,58	1,87	-11%	-10%		-147	-97	-32	35	34
09 Gotland	282	-306		2,49	1,6	1,64	-10%	-6%		-36	-18	-4	0	12
10 Blekinge	1940	1275		2,18	1,6	1,95	-6%	-6%		-60	-87	-52	32	22
*12 Skåne	141342	75571		2,05	1,54	1,86	0%	0%		-245	-323	-73	281	266
13 Halland	40434	17856		2,23	1,68	2,01	5%	9%		48	-44	1	57	95
*14 Västra Götaland	116039	58589		2,13	1,55	1,87	1%	0%		-516	-437	-153	244	435
17 Värmland	-8549	-2774		2,18	1,54	1,87	-13%	-15%		-158	-102	-13	29	57
18 Örebro	4544	2245		2,16	1,62	1,9	-6%	-7%		-131	-139	-47	56	64
*19 Västmanland	6317	5926		2,16	1,59	1,9	-13%	-14%		-189	-136	-93	43	21
20 Dalarna	-11049	-4957		2,32	1,58	1,96	-10%	-9%		-186	-111	-10	22	50
21 Gävleborg	-12667	-5161		2,19	1,54	1,88	-12%	-14%		-220	-109	-51	31	54
22 Västernorrland	-17039	-5850		2,12	1,53	1,96	-14%	-14%		-234	-99	-46	24	34
23 Jämtland	-7852	-3768		2,32	1,48	1,92	-10%	-12%		-89	-43	-2	32	30
24 Västerbotten	7459	883		2,18	1,47	1,72	-5%	-7%		-87	-84	-14	34	73
25 Norrbotten	-12236	-7492		2,17	1,66	1,87	-12%	-13%		-193	-52	-21	43	21

[18] County 01, 12 and 14 contains a metropolitan region

[19] *County 03 and 19 was in 2007 subject to a readjustment where the municipality of Heby (mean population 13656) left Västmanland (19) and became a part of Uppsala (03)

Appendix 2. Map of Sweden by Vulnerability Index. (Yellow 200-249, Red 250-290[20])



[20]When printed in black and white then these indicator become = light grey 200-249, dark grey 250-290

Appendix 3. Survival graph of Entry into Parenthood 2000-2007, by gender