

**The conditionality of the substitution thesis on type of urban
economy**

**An analysis on the impact of immigration on unemployment in Dutch
metropolitan areas**

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Abstract

Studies on the substitution thesis in advanced economies show scattered results: the impact of immigration on the wages and unemployment of lower-educated natives and immigrants varies strongly. In both studies on the substitution thesis itself, as well as studies on the unequal development of urban economies in post-industrialism, there are suggestions that this is because the substitution thesis is conditional on the type of urban economy. More specific, they indicate there is reason to expect that a strong service-centered urban economy yields more labour demand for the lower educated, which consequently mitigates the substitution between immigrants and natives or earlier waves of immigrants. The empirical validity of this expectation is tested by comparing the impact of immigration on the employment level of lower-educated urbanites between 22 Dutch metropolitan areas. The findings corroborate the central hypothesis: immigration leads to higher unemployment levels, but this impact is weaker in the most service-centered urban economies.

1. Introduction

As many advanced economies have seen the immigrant share in their populations rise in recent decades, many studies have been devoted to assessments of the validity of the so-called substitution thesis. According to this thesis, immigrants and their descendants can be *substitutes* for domestic workers on the market for labour (Chiswick 1982; Johnson 1980). Some studies on this thesis find no negative impact of immigration on wages or on the likelihood of becoming unemployed, while other studies do. In the latter, a negative impact on the wages and likelihood of unemployment of both lower-educated natives and immigrants is found (Longhi, Nijkamp & Poot 2005; Okkerse 2008).

A recent OECD study showed that the findings on the likelihood of unemployment due to immigration are conditional on the type of national institutional framework: in states with less interference, lower-educated natives and immigrants are less likely to become unemployed due to immigration (Jean & Jimenez 2007). This offers an explanation for divergent findings *between* states, but the scattered results in studies on the substitution thesis *within* states still call for an explanation. This article tries to do so, by building on two sets of research findings that suggest that the impact of immigration on wages is *conditional on the type of urban economy*.

Findings of studies on the substitution thesis and in urban studies on the consequences of post-industrialism for urban labour markets suggest that labour demand at the bottom is strongest in the most service-centered urban economies. Consequently, the substitution between immigrants and lower-educated natives or former waves of immigrants will be less strong in the most service-oriented urban economies. If so, this

might be an explanation as to why studies on the substitution thesis within one state yield scattered results.

This expectation is what is assessed in this paper. More specifically, it tries to answer the question whether the negative impact of immigration on the unemployment level of the lower educated is weakest in the most service-centered urban economies indeed. Before answering this question, the theoretical underpinnings and findings of both the substitution thesis and the urban social consequences of post-industrialism will be addressed in section 2.

2. The impact of immigration on wages and employment

2.1 The substitution thesis: theory and evidence

The substitution thesis applies a neo-classical economic model of supply and demand to the labour market, expecting that immigration – read: increasing labour supply – lowers the price for labour (Chiswick 1982; Johnson 1980). Hence, immigration will lead to declining wages of workers with whom the immigrants compete, or, in the case of inflexible labour markets, to rising likelihood of unemployment.

Most studies in this field of research focus on the United States, but still a substantial number address western European countries. In 2005, Longhi, Nijkamp and Poot made an inventory of the few dozens of studies on the impact of immigration on wages until 2003, and analysed their research findings in a meta-study. A few years later, Okkerse (2008) followed with a review on the findings of studies on the substitution

thesis until 2005. She stated that the ‘approaches and results [of her study] complement the ones discussed in the meta-analysis carried out by Longhi, Nijkamp and Poot (2005) on wage effects of migration.’ (2008 p. 2). This because her study was more comprehensive, since it took ‘a broader definition of labour market effects’ (2008 p. 2), as it ‘also question[ed] the effects of immigration on labour participation and on the likelihood of being employed or unemployed’ (Okkerse 2008 p. 2). As such, her review included almost all empirical studies on the substitution thesis until 2005.

Despite their different approach and scope, both studies come to the same conclusions. Firstly, ‘immigration negatively affects wages of less-skilled labourers and earlier immigrants’ (Okkerse 2008 p. 24), especially the wages of the latter since ‘immigrants are more in competition with other immigrants than with natives’ (Longhi, Nijkamp & Poot 2005 p. 472). It needs to be stressed however that these effects are very small, as emphasized by these authors themselves (Longhi, Nijkamp & Poot 2005). Secondly, ‘the probability that immigrants increase unemployment is low in the short run and zero in the long run’ (Okkerse 2008 p. 24). In short, it might be concluded that the substitution thesis holds in general: immigration depresses wages of lower skilled natives and immigrants – especially of the latter. The overall effects are weak however, and the employment effects wither in time.

Studies on the substitution thesis that appeared after 2005, or were not included in the meta-studies addressed above, basically show the same results: no impact (Arrasco, Jimeno & Ortega 2008; Catanzarite 2002; Cohen-Goldner & Paserman 2006; Islam 2008), or weak negative impact on the wages or likelihood of unemployment of low-skilled natives (Borjas 2006; Islam 2009; Ferderman, Harrington & Krynski 2006;

Wilson & Jaynes 2000) – be it that this impact is somewhat stronger on the jobs and wages of (former waves of) immigrants or ethnic minorities since those are the most direct competitors of immigrants on the labour market (Catanzarite & Aguilera 2002; Reed & Danziger 2007; Platt Boustan 2007).

So, although there is a great variety in findings, the ‘overall’ results of studies on the substitution thesis published between 1980 and 2009 can be summarized as follows: immigration has negative impact on both the wages of natives and immigrants they compete with, especially on the wages of the latter. Furthermore, it can lead to unemployment for both of these categories – especially in countries with more labour market regulation (Jean & Jimenez 2007).

The variety in findings within nations still begs the question as to how this comes about. Two fields of research suggest this is because the substitution thesis is not only conditional on state interference in the labour market, but on the type of urban economy as well. Both will be addressed below.

2.2 *The substitution thesis and the local economy in post-industrial capitalism*

Several authors that assess the substitution thesis suspect that urban economies differ in the extent to which immigration impacts on wages or unemployment levels. Card (1990), for instance, assessed the substitution thesis using the ‘natural experiment’ that has become known as the ‘Mariel boatlift’. The cause of this event was that Cubans were temporarily allowed to leave Cuba in 1980. Consequently, within a time span of approximately six months the Miami labour market experienced a no less than seven

percent rise in overall labour supply – a figure that is much higher at the bottom of the labour market, as most immigrants were unskilled. Despite this large influx of unskilled Cubans, there was hardly an impact on the wages and unemployment rates of low-skilled natives and former waves of immigrants.

Card wondered what might have caused this situation that seemingly flies in the face of the neo-classical economics' supply and demand logic of the substitution thesis. He put forward that the local economic structure was responsible for mitigating the wage and unemployment effects of increasing labour supply. More specifically, he expected that the strong presence of 'immigrant intensive industries [such as] private household services, hotels and motels, eating and drinking establishments, and business services' in the Miami metropolitan economy was responsible (1990 p. 256; cf. Card 2005).

Others have quite similar arguments. Wilson and Jaynes, for instance, stress that 'the adjustment of local labour markets to immigration may be very quick, particularly if the inflow is modest and *the economy is sufficiently diversified to allow for the absorption of immigrants in a variety of sectors*' (2000 p. 159, italics added: JvdW; cf. Catanzarite 2003; Friedberg & Hunt 1995). A recent comparison between Amsterdam and Rotterdam corroborated this logic. In Amsterdam, that has a more service-centered economy than Rotterdam, immigration did not lead to downward pressure on the wages of lower-educated natives and immigrants, while it did in Rotterdam (Van der Waal, 2009a).

In short, several researchers on the substitution thesis argue, and several research findings indicate, that cities with a well-developed service sector yield higher labour demand than other urban economies, and are therefore better equipped to integrate

newcomers on the labour market without consequences for the wages or unemployment risks of natives and earlier waves of immigrants. If so, the neo-classical economics' supply and demand logic of the substitution thesis is still basically correct, but it cannot properly be assessed by taking only the supply side, i.e. immigration, into account. It needs to be taken into consideration that urban economies might have differing labour demand.

Studies from a different research tradition point in the same direction. Several scholars in urban studies argue that the economic fortunes of cities vary considerably in the post-industrial era. Dangschat (1994), for instance, roughly discerned 'winners' and 'losers' in the transition to a post-industrial economy. In this dichotomy, the 'winners' are cities that already had a substantial share of producer services in their economy before deindustrialization started in the 1970s: New York, London, Frankfurt and Amsterdam for instance. The 'losers', on the other hand, are those cities that still strongly depended on heavy industries back in the 1970s, such as Liverpool, cities in the German Ruhr area, Rotterdam, and in the US so-called rustbelt cities as Detroit (similar arguments can be found in: Cheshire 1990; Kasarda & Friedrichs 1986; Meijer 1993; Sassen 2006, 2007). The clustering of advanced producer services in many of these industrial or rustbelt cities lags behind until this day (Van der Waal, 2009b).

What is important for the issue addressed in this paper – the conditionality of substitution thesis on type of urban economy – is that this clustering of advanced producer services is considered the driving force for creating plenty of job-opportunities for both lower-educated natives and immigrants in cities in advanced economies nowadays. Directly, since these services create much labour demand in cleaning,

catering, security and the like. But also indirectly in the form of services such as nannies, housekeepers and the hotel and catering industry that all serve to the high-income strata working in the advanced producer services (Sassen 2001, 2006). That's why advanced producer services are often labeled as 'growth sectors' and is their presence considered to be an indication of urban economic viability. Cities do actually compete for companies active in these services now, and their settlement is considered a solution for alleviating unemployment problems at the bottom of the urban labour market (Sassen 2007).

And indeed, several studies show that urban economies with a strong and growing presence of advanced producer services increase the prosperity of their citizens irrespective of ethnicity and educational level (Drennan et al. 2002), and create jobs for the highly as well as lowly educated (Elliot, 1999, 2004; Sassen 2001; Van der Waal 2009b; Van der Waal & Burgers 2009, 2010). Cities with a more industrial character, on the other hand, have to contend with high unemployment levels the bottom of the labour market (Elliot, 1999, 2004; Kasarda 1985, Kasarda & Friedrichs 1985; Van der Waal 2009b; Van der Waal & Burgers 2009, 2010), and have witnessed a decline of the prosperity of their citizens – especially of the lower educated stratum (Drennan et al. 2002).

It is clear that these findings in urban studies show striking similarities with the expectations on the conditionality of the substitution thesis: that in diverse (Friedberg & Hunt 1995; Wilson & Jaynes 2000) and service-oriented (Card 1990, 2005) urban labour markets the demand for labour at the bottom is likely to absorb supply shocks in labour due to immigration. Consequently, the influx of immigration will hardly affect the wages or likelihood of unemployment of natives and former waves of immigrants.

So, just as the substitution thesis is conditional on national institutional frameworks (Jean & Jimenez 2007), these two sets of studies suggest it is conditional on the type of urban economy as well. More specifically, on the basis of the findings and arguments in these two sets it can be expected that the substitution between immigrants and natives or former waves of immigrants is weakest in the most service-centered urban economies.

3. Research format, data, and operationalization

As this article aims to assess the conditionality of the substitution thesis on type of urban labour market within states, it is best to compare cities within a state that is known for its centralistic labour market interference. Otherwise a different impact of immigration on wages between the cities under scrutiny might not be the result of the type of urban economy, but due to different local labour market interference.

The Netherlands is the country par excellence for such a research framework (cf. Burgers & Musterd 2001; Musterd, Ostendorf & Breebaart 1998; Newman & Thornley 1996; Parkinson et al. 1988): its welfare policies are highly centralistic in comparison to other western countries, especially since the 1980s when most European countries decentralized many (financial) responsibilities to local governments. As a consequence, the increased differentiation between cities when it comes to welfare measures and labour market interference in other European countries in recent decades is largely absent.

To assess the central expectation of this study I constructed my own dataset by using data on the 22 metropolitan areas in the Netherlands, which are freely available at

the website of the Statistics Netherlands (CBS) (www.statline.nl). Although these data are available from the early 1990s until 2008, for some variables addressed below the data did not fully cover this period. Furthermore, the impact of immigration on unemployment levels is measured with a two-year time lag. consequently, the analyses are on 22 Dutch metropolitan areas between 1998 and 2007, yielding 220 cases, or put differently, 220 city-year combinations (22*10).

Unemployment level lower educated measures the unemployment level of the total lower-educated urban population, that is natives *and* immigrants, as this data could not be retrieved for immigrants and natives separately.

Immigrant share measures the share of immigrants in the population of a metropolitan agglomeration two years prior the measure of the dependent variable *unemployment level lower educated*. Such a time-lag is a standard research practice in studies on the substitution thesis, as the displacement of workers due to immigration will not show itself immediately.

Service economy measures the share of employment in the advanced producer services, which contain, among other activities, accountancy, consultancy, finance, insurance, law-firms and real estate. Put differently, *service economy* measures the presence of the activities that, according to scholars in urban studies, are the primary drivers for job growth at the bottom of the labour market.

There is need for several control variables since the population in metropolitan areas is not completely determined by labour market logic. For one thing, the decommodified housing market in the Netherlands is also responsible for the share of

lower-educated citizens in a metropolitan area. Therefore the upcoming analysis will contain the variable *share of lower educated*.

The age composition of the population is not completely determined by the market as well. Consider for instance university cities that have a high share of young people in their population that are not, or hardly, dependent on the labour market. Therefore the analysis will contain variables that measure the share of different age cohorts in the working population: *age 15-24*, *age 25-34*, *age 35-44* and *age 45-54*. The last control variable concerns the *working population*, which is the number of citizens in the metropolitan area between 16 and 65 years old, be they employed or unemployed.

4. The impact of immigration on unemployment assessed

As the data have a multi-level structure, 10 years within 22 cities, there is need for multi-level modeling. Therefore table 1 starts with a null model, which shows how much variation of *unemployment level lower educated* is determined by differences between metropolitan areas, and how much by differences between years. It shows that 21.8 percent ($0.217 / (0.779 + 0.211)$) of the variation in the unemployment level of the lower educated is because urban economies differ, while percent 78.2 percent ($0.779 / (0.779 + 0.217)$) of this variation is caused by fluctuations in time – probably the result of the economic boom of the second half of the 1990s, and the economic bust after 2001.

Entering the control variables and *service economy in* model 1 corroborates earlier findings on the high labour demand in the most service-oriented urban

economies.[1] The coefficient is negative and significant, which means that in the most service-oriented urban economies the unemployment level of lower-educated citizens is lower indeed. The variance of *unemployment level lower educated* at year level declines as could be expected, but the variance at metropolitan level increases after entering service economy and the control variables. This is rather odd, for entering variables normally explains part of the variance in the dependent variable. In multi-level modeling this sometimes happens however, and indicates an omission of important explanatory variables in the model (Kreft & De Leeuw 1998).

At least one of these important explanatory variables reveals itself in model 2: *immigrant share*. Entering this variable in model 3 leads to a substantial drop in the variance at metropolitan level, roughly to its initial level – the variance at year level declines as well.[2] The coefficient is, as would be expected on the basis of the substitution thesis, positive and significant: in metropolitan areas with a high share of immigrants the unemployment level of lower-educated urbanites is lower. Model 2 reveals more than this however. In the first place, the strength of the coefficient of *service economy* declines substantially, indicating that the higher unemployment level of industrial urban economies is partly caused by the immigrant share in their population.

Table 1: unemployment level of the lower educated in 22 Dutch metropolitan areas from 1998 through 2007 explained by share of producer services and immigrant share (multilevel regression analysis; entries are regression coefficients; estimation: maximum likelihood. N = 220 (22 cities * 10 years).

	Null model	Model 1	Model 2	Model 3
<i>Independents</i>				
	β	β	β	β
Constant	0.000	0.000	0.000	0.061
Service economy		-0.385***	-0.292**	-0.285**
Immigrant share			0.489****	0.471****
Immigrant share * service economy				-0.214**
<i>Controls</i>				
Working population		0.354*	-0.056	0.117
Share lower educated		-0.371***	-0.276***	-0.286***
Age 15-24		0.123	0.233*	0.251**
Age 25-34		-0.179*	-0.047	-0.036
Age 35-44		0.108	0.124	0.132
Age 45-54		-0.053	-0.001	0.014
Variance year level	0.779****	0.630****	0.602****	0.590****
Variance metropolitan level	0.217**	0.356**	0.232*	0.217*
Deviance	598.60	564.48	547.67	542.47

Source: Statline Statistics Netherlands (CBS) (own calculations).

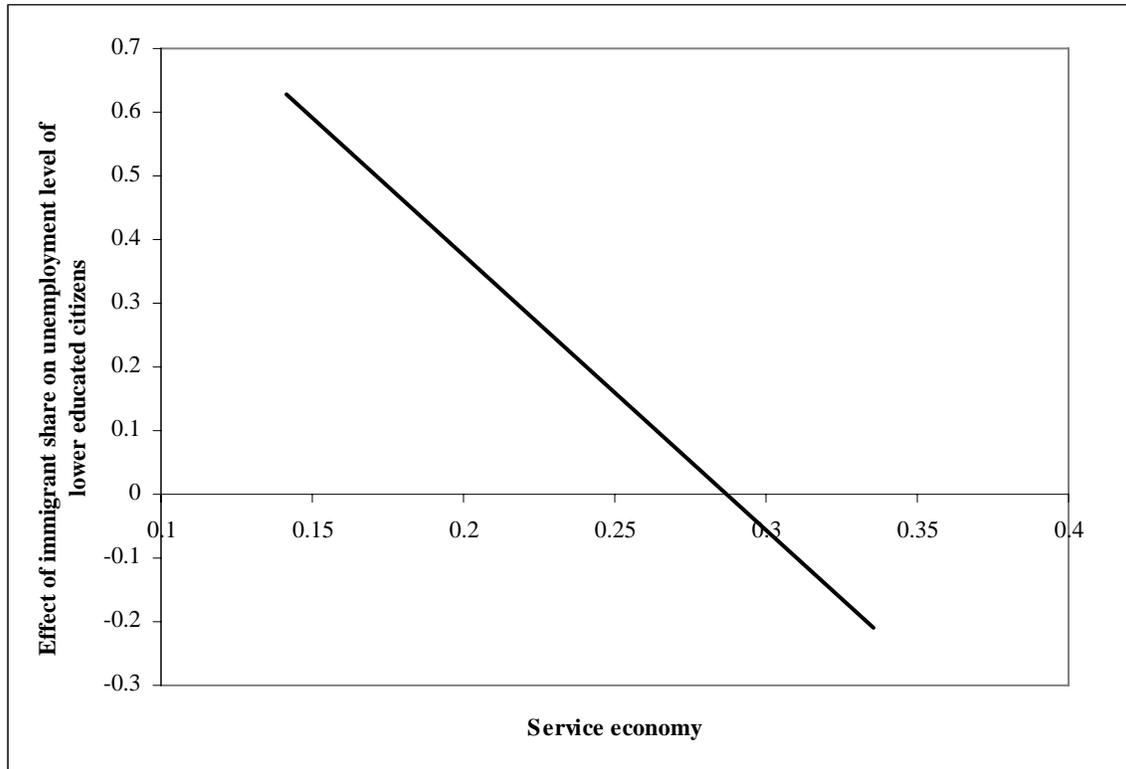
p < 0.10; ** p < 0.05; *** p < 0.01; **** p < 0.001

The question remains whether the impact of immigration on the unemployment level of lower-educated citizens is weaker, or even absent, in service-oriented urban economies. To find out the interaction effect of *immigrant share* with *service economy* is entered into model 3.[3] The coefficient is negative and significant, which means that the unemployment effect of immigration declines as urban economies are more service-oriented – which corroborates the central expectation of this study.

Figure 1 depicts this interaction effect. It shows that in urban economies with high employment shares in the producer services immigration does not have any impact on the unemployment level of lower-educated citizens. The fact that the effect gets negative in

cities with a higher employment share should not be interpreted to rigid. Although it concerns a significant effect, there is no theoretical logic in the substitution thesis to interpret this as that a rising immigrant share in the most service-oriented cities leads to declining unemployment levels.

Figure 1: the conditionality of the impact of immigration on unemployment levels of lower-educated citizens on type of urban economy



5. Conclusions

After almost three decades of research it is clear the substitution thesis sometimes holds, but that the strength of the impact of immigration on wages and the likelihood of unemployment varies by social categories and institutional frameworks. By and large, immigrants compete with lower-educated natives and former waves of immigrants on the labour market. Consequently, these competitors run a higher risk of becoming unemployed, especially in states with more labour market interference, or see their wages decline due to immigration – especially former waves of immigrants.

This article tried to answer the question as to why findings differ *within* states. The expectation derived from two fields of study – in the most service-oriented urban economy the impact of immigration on unemployment is weakest – proved to be basically correct. Immigration only leads to a play of musical chairs between immigrants and natives or former waves of immigrants in less service-oriented urban economies because labour demand in these cities is simply not large enough to absorb the labour supply settled there. As a consequence, immigration aggravates the already scarce labour-market opportunities in these urban economies for immigrants and lower-educated natives alike. In strong service-centered urban economies, on the other hand, labour demand is high enough to absorb supply shocks of labour due to immigration.

This finding is, just as the findings of the OECD-study on the conditionality of the substitution thesis on national institutional frameworks (Jean & Jimenez 2007), in line with the neo classical economics' supply and demand logic of the substitution thesis. For it also models the demand side, i.e. the type of urban economy. As a consequence,

different outcomes could be interpreted according to the supply and demand logic of the substitution thesis. This proves it is fruitful to thoroughly consider the theoretical underpinnings of the substitution thesis when looking for a cause of its scattered results, instead of merely discussing methods and statistics (cf. Card 2005 p. 321). This is not to say that the use of proper methods and statistics are unimportant (cf. Longhi, Nijkamp & Poot 2005 p. 471), but that scattered results can be corroborations of theoretical expectations instead of statistical or empirical aberrations, as the nature and strength of labour demand differs between states and between cities.

The research format and findings in this study not only shed light on the scattered results of previous studies, but also on the weak effects of studies that do find substitution. All studies that use the local immigrant share to estimate the strength of substitution countrywide without controlling for local differences in labour demand are likely to be flawed. Their findings are the net result of the underestimations of substitution in the least service-oriented cities and the overestimations of substitution in the most service-oriented cities. This might be an important cause as to why most studies find weak effects, and conclude there is hardly any substitution between immigrants and natives or former waves of immigrants. This often leaves the authors wondering how this is possible for the substitution logic seems so self-evident. Again, just as in the case of scattered results, it is not that the substitution thesis is flawed, but because the research format is not in accordance with the logic of this thesis that such studies find such weak effects.

Consider for instance the only study on the impact of immigration on wages for the Netherlands as a whole, which was unable to model local differences in labour

demand due to data deficiencies. Hence, in that study ‘the participation rate is assumed to be *identically distributed* across local labour markets for each ethnic minority group’ (Zorlu & Hartog 2005: 120, italics added: JvdW). It concluded that ‘the effect of immigrants on natives’ wages is genuinely small’ (2005: 134), as ‘a 10 percent increase of ethnic minorities from non-EU countries decreases the earnings of low-skilled workers by 0.42%’ (2005 pp. 120-21, cf. the meta-study by Longhi, Nijkamp & Poot 2005 p. 472). Such conclusions are in the first place misleading for they imply that the extent of substitution between immigrants and natives or former waves of immigrants can be effectively measured by simply modeling the immigrant share. In the second place because they depict that substitution is modest, while their findings are probably deflated, because there are no effects in strong service-oriented urban economies (cf. Van der Waal 2009a).

That all said, the findings of this study evoke another question: why do immigrants settle in cities where labour demand is low? This flies in the face of the market logic that is often assumed to be driving migration to the advanced economies. Although, in accordance to this market logic, the most service-oriented Dutch urban economies indeed have higher immigrant shares in their population (pearson’s $r = 0.291$, $p < 0.0005$, $N = 220$), settlement of immigrants is not completely determined by labour demand – otherwise their unemployment levels would not differ between cities. Non-market logics such as the influence of a decommodified housing market, but also kinship, ethnic or social ties with former waves of immigrants are probably responsible for this pattern (cf. Zorlu & Mulder 2008).

All in all it seems safe to conclude that future studies on the substitution thesis should take into account that urban economies differ in labour demand, and that the settlement of immigrants does not necessarily follow market logic. The research format will consequently be more in accordance to the theoretical underpinnings of the substitution thesis, and will yield findings that are better to interpret. Such a format might even become more salient as cities, at least in the Netherlands, diverge in the extent to which advanced producer services cluster (Van der Waal, 2009b). As this clustering proves to be the driving force for labour demand for the lower educated, the conditionality of the substitution thesis on type of urban economy is likely to grow in salience.

Notes

[1] As the seven degrees of freedom (seven variables were entered into the model) yield a drop in deviance of 34.12 (598.60 – 564.48), model 1 is a significant improvement of the null model. According to the chi-square distribution, there is need for only a drop of 14.067 in deviance to be significant at 5 percent level.

[2] Model 2 is a significant improvement of model 1, as using one degree of freedom yields a drop in deviance of 16.81 (564.48 – 547.67), which is more than minimally required (3.841 at 5 percent level).

[3] It proves a significant improvement in comparison to model 2 ((547.67-542.47) > 3.841).

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