

On The Nexus Between Compulsory Military Service Law And Labor Market Performance

Master in Law and Economics of the Arab Region
Thesis

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Abstract

Using a panel data of 106 countries from 2000 to 2016, this paper aims to analyze the nexus between compulsory military service laws and labor market performance measured by employment rates. The theoretical literature on the topic have consensus on the costs affiliated with compulsory military service laws. However, the empirical literature does not share the same consensus as the empirical results are mixed with respect to the effect of compulsory military service law on different economic outcomes. We found that compulsory military service laws are likely to reduce employment rates significantly. Additionally, our results showed that the longer the length of compulsory military service the more significant the effect.

JEL classification: E02, E24, H56, K30.

Keywords: Compulsory Military Service Law, All-volunteer System, Employment Rates, Costs, Human Capital Accumulation.

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1. Introduction

Countries usually recruit military personnel by using an All-volunteer system, in which young men or women can serve in the military if they see this as the best option for them, for example: Germany, UK and USA. Other countries recruit military personnel through promulgating Compulsory Military Service (CMS) laws that provide a process of enlistment people -usually young men- in the military service by the force of law for a period of time, and in case of non-compliance with the law; they will face sanctions ranged from fines to harsh imprisonment, For example: Egypt, South Korea and Ukraine.

Each system has its own effects on different economic consequences and associated with different types of costs. The outcomes of CMS and All-volunteer system are the core of a debate between economists, politicians and even the citizens. The labor market outcomes namely employment and unemployment rates are amongst the core topics in this debate. In this paper, we examine empirically the nexus between compulsory military service laws and labor market performance, that we measured by the employment rates. The research question is simply —what is the impact of CMS on labor market performance namely employment rates?

The debate on CMS is very intriguing, yet it is not tackled in most of Middle East and North Africa (MENA) countries for political considerations because the military is the main player in the political arena in most of MENA countries. Also, in the midst of the waves of transition and change that the region faces, policymakers have to study every single situation and problem to minimize the costs of transition. Military service is one of the controversial problems that policymakers in developing countries —especially in MENA countries- shall study the costs and benefits of it.

Besides, the effect of CMS on labor market performance is still understudied despite its importance in the policy debate. Therefore, the importance of this study lies in contributing to this debate by providing further evidence on the CMS laws effects on labor market performance especially on employment rates.

The literature on the effect and the different consequences of military service is rich; it can be divided into two groups. The first group includes theoretical literature that stated the different costs of CMS. In this group, there is nearly a consensus that CMS is a costly burden on countries and it is better to abolish it. Since Adam Smith who argued against CMS as he sees in All-volunteer army a supremacy over CMS (Smith, 1776), to more recent economists such as Milton Friedman who played a role in changing the military service policy in the United States of America¹, Friedman's argument is based on a cost/benefit analysis where the social costs of CMS, which is the implicitly imposed in-kind tax on the conscripts, exceed that of All-volunteer military (Friedman, 1962). However, the most significant cost of conscription is the opportunity cost imposed on the conscripts (Fisher 1969; Warner and Asch 2001). CMS involves dynamic costs as well, as young adults serve in a very core moment (age) of their lives, most of CMS laws enforced on young men between 18 to 35 years old. This age could be better dedicated to improving their human capital factors, namely education, training and experiences on the labor market (Lau et al, 2004). Despite this consensus, there are few exceptions see that CMS is less costly than All-volunteer system (Lee and McKenzie 1992). The Second Group encompasses empirical studies that have mixed results regarding the impact of compulsory military service on labor market performance. For example, Imbens and van der Klaauw (1995) find that Dutch conscripts in the 1980s and early 1990s lose up to 5 percent of lifetime earnings compared to

¹ Friedman was chosen in Gates commission during Nixon term that discussed all-volunteer armed forces in 1970, and then CMS was fully abolished in 1973.

non-conscripts. However, Bauer et al (2012) used a regression model that showed that compulsory military service has zero effects on labor market outcomes in Germany. As a result of this debate, a trend has emerged to abolish the CMS and to transform into an All-volunteer system.

We use a regression model based on Feldman (2007) to measure the effect of military service law on labor market performance in countries where conscription exists compared to countries that have no conscription. The model examines the impact of CMS on employment rates as an indicator of labor market performance. Additionally, we analyzed the effect of the duration of CMS on labor market. Our estimations showed that CMS has a significant negative effect on employment rates. Also, we found that the longer the duration of CMS, the more significance the impact on employment rates.

This paper is organized as follows: Section 2 reviews the theoretical and empirical literature. In section 3, we present some stylized facts on compulsory military service laws status all over the world. Section 4 presents the methodology and data. Section 5 displays the empirical testing and the results. Section 6 concludes.

2. Literature Review

The related literature on Compulsory Military Service (CMS) laws, its costs and effects on different aspects of economic outcomes can be divided into two main groups. The first group includes theoretical qualitative literature that stated the different costs of CMS. In this group, there is nearly a consensus that CMS is a costly burden on countries and it is better to abolish it. Since Adam Smith who argued against CMS as he sees in the All-volunteer army a supremacy over conscripted army (Smith, 1776), to more recent economists such as Milton Friedman who played a role in changing the military service policy in the United States of America. Friedman's argument is based on a cost/benefit scheme where the social costs of CMS, which is the implicitly imposed in-kind tax on the conscripts, exceed that of the All-volunteer military (Friedman, 1962). Nevertheless, the most significant cost of CMS is the opportunity cost levied on the conscripts (Fisher 1969; Warner and Asch, 2001). CMS involves dynamic costs as well, as young adults serve in a very core moment (age) of their lives, most of the CMS laws enforced on young men between 18 to 35 years old. This age could be better dedicated to improving their human capital factors, namely education, training and experiences on the labor market (Lau et al, 2004). However, despite this consensus in the theoretical literature on the costs of CMS, the second group the empirical quantitative literature does not share the same consensus.

2.1 Theoretical Literature

The general privilege of the All-volunteer military service system over compulsory military service system (for surveys see Sandler and Hartley 1995; Warner and Asch 2001 or Poutvaara and Wagener, 2007a) is due to the number of costs affiliated with compulsory military service

laws, these costs are mostly stated in the qualitative studies and supported by a small number of quantitative studies as follows:

2.1.1 CMS as an inequitable and inefficient tax

The compulsory military service is a tax in-kind imposed on young individuals by forcing them to join the military (Freidman, 1962). This type of in-kind implicit tax equals to the difference between the income that those individual conscripts could earn in the civilian market and the lower income they get from the military service (Bauer et al., 2012). Moreover, besides its inequity and inefficiency, it may lead to higher costs, Schleicher (1996) reported that the total cost of compulsory military service resulting from this implicit tax equal to more than 27 percent of the defense budget of Germany in 1995. Also, the matter of age raises equality concerns (Oi, 1967), as contrary to the All-volunteer system where the whole society pays fiscal taxes to finance the military, CMS makes this burden mostly on the young conscripts rather than distributing it more equally across all cohorts of taxpayers. Besides the inequality of CMS as an in-kind tax, efficiency concerns arise. Levy (2004) investigated which age would maximize the social welfare, he found that it would be more efficient to enlist middle-aged, rather than young-aged individuals especially in the cases which the psychological trauma arising from serving would be more serious on the youth, taking into consideration the impact of the age on army size, probability of war and costs arising from war.

As a result, the young recruited conscripts always try to dodge this in-kind tax. Lokshin and Yemtsov (2005) found that Russia's CMS is avoided by more than 90 percent of young men, by using illegal and legal methods such as counterfeit medical certificates, bribery, and university studies. However, these methods of dodging will depend on the sanctions provided by the

military service law itself that differ from one country to another. Despite these shortcomings of CMS as an in-kind tax, it is not an easy decision to either abolish it or to keep it. Because in abolishing the CMS the older generation who already served in the military will suffer from an excess burden as they are already paid by serving and they will be asked to pay a fiscal tax instead of the in-kind tax to finance the professional army (Poutvaara and Wagener, 2011), and as in keeping the CMS the recruited young men will suffer from a double burden, they will be underpaid and the one who bear the costs of financing the military in-kind. This dilemma is one of the unsolved core issues in the debate on military service laws.

2.1.2 Static inefficiencies of the CMS

The static inefficiencies of the CMS are very focal and frequent in the CMS debate (Hansen and Weisbrod, 1967; Fisher, 1969; Sandler and Hartley, 1995; Warner and Asch, 2001). These static costs are mainly boiling down to the welfare losses due to the skill mismatch of the conscripts qualifications and tasks, forgone pros of specialization and violating the principle of comparative advantage (Keller et al, 2009). Smith's argument against CMS was based on these points (Smith, 1776). Jobs shall be assigned to the individual who specializes in it; as result of this appropriate assignation, the specialized employee will be more productive than the non-specialized one when he handled specific tasks over a period of time. However, by forcing people to join the military and assigning them to different jobs that did not meet their qualification, would lead to an inefficient organization within the military. Nowadays, this inefficiency would be greater as military operation became more complex and needed more specialized professional military personnel to handle (Poutvaara and Wagner, 2007).

2.1.3 Opportunity costs and Human capital argument.

The opportunity costs caused by CMS are incurred by both the whole society and the individual conscripts. For the whole society, these are the costs of the forgone higher productivity of the conscripts if they work in a field other than their specialized field. These opportunity costs will lead consequently to substantial social costs that exceed the accounting costs of operating the military via conscripts, for example, these costs are twice the budgetary costs that the government would have spent to recruit a professional army in Belgium as estimated by (Krestens and Meyermans, 1993).

The opportunity costs incurred by the individual conscripts involve a number of aspects. First, the costs of missing opportunities in a free labor market instead of the forced service in the military; this can be measured by the difference between potential income in the market and the real income that the conscripts receive during the service (Keller et al, 2009).

Second, it is settled in the literature that the early phase of the career is very crucial for the individuals' success in the labor market (Oreopoulos et al, 2005). Also, it is not denied that interruption of this early phase of the career will have a continuous negative effect on the overall career of the individual (Kletzer and Fairlie, 2003; and Devereux, 2004). Holmlund and Liu (2006) found that interrupting education by one or two years decreases the average lifetime earnings of men by 21 (37) percent of annual earnings at the age of 40. In fact, CMS represents a career interruption at an early stage (Buonanno, 2006), as the period of the service vary from 3 months to 3 years and imposed on young men usually between 18 and 30 years old, this will affect the conscripts in their subsequent labor life after the expiration of their service. Lau et al (2004) provided that CMS includes dynamic costs consist of the interruption of the investment

process into the human capital (i.e. education, training and experiences on the labor market) during the standstill period of the service which would be better dedicated to upgrading these human capital factors. Moreover, during the period of the service these human capital factors would be depreciated, indeed, this depends on the length of the period (Keller et al, 2009). Consequently, the economy's reserve of the human capital and qualified labor will decrease (Spencer and Woroniak, 1969).

Despite this consensus on the several costs of CMS and the overall preference of an all-volunteer service over CMS, there are few exceptions see that CMS is better and have a positive effect on the labor market, as it works as a “bridging environment” between the studying stage and the working stage (Browning et al, 1973). Also, De Tray (1982) argued that the service may present a good screen for the employers to choose the productive employee from the less productive one. Although, these considered outdated opinions, it still had its sense for the developing countries, subsidized by the fact that CMS is less budgetary costly than all-volunteer system (Lee and McKenzie, 1992).

2.2 Empirical Literature

The Second Group encompasses of empirical studies that have mixed results regarding the impact of compulsory military service on different economic outcomes. These empirical studies can be subcategorized into two categories.

Studies in the first category concentrate on employment and labor outcomes. The results, contrary to the qualitative studies, did not show any consensus about the effect of CMS on employment and labor outcomes. Angrist (1990) showed that conscript status has reduced

civilian wage by approximately 15% compared to non-conscripts in the United States. However, the subsequent studies show that the wage gap between conscripts and non-conscript has declined over time (Angrist, Chen, and Song, 2011). Also, Angrist and Krueger (1994) provided that the ex-combatants in World War II earn no more than the non-veterans. Imbens and van der Klaauw (1995) found that Dutch conscripts in the 1980s and early 1990s lose up to 5 percent of lifetime earnings compared to non-conscripts. However, (Bauer, Bender, Paloyo, and Schmidt, 2012) used a regression model that showed that compulsory military service has no effect on labor market outcomes in Germany, the same result provided by (Garnet, Hart, and Roberts, 2011) but by using British data. Buonanno (2006) found that exempted men from CMS earn more than conscripts by 4 to 7 percentage point in the UK. Kunze (2002) found that CMS result in increasing the wage for men by 3.2 after conscription during the first year. Card and Cardoso (2009) showed by data from Portugal that CMS has a positive impact on labor market outcomes of low-educated males, while it has no effect on high-educated males. Also, Albrecht et al (1999) reported the same result for Swedish conscripts. Torun (2014) found using cross-country data that waiting for CMS decreases the likelihood of labor market participation among young individuals. Keller et al (2009) showed that CMS has a negative effect on the level of income and on the overall economic growth rates in OECD countries.

Studies in the second category focus on educational attainment, the mixed results also appear in this category. Card and Lemieux (2001) found that by dodging CMS, the school attendance rates increased by 4 to 6 percentage points in the late 1960s in the United States. In France, Maurin and Xenogiani (2007) showed that the reform abolishing CMS has decreased the time spent in school. In Germany, Bauer et al (2014) estimated that CMS increased the probability of

completing higher education. Di Pietro (2013) found, in contrast, that abolishing CMS has no impact on college enrollment rates in Italy. Also in Italy, Cipollone and Rosolia (2007) found that the exemption granted to several cohorts of males, in South Italy in 1980 because their area was hit by an earthquake, raised school graduation rates by two percentage points compared to non-exempt men.

Additionally, there are a number of other studies and papers that analyzed the impact of CMS on different aspects of economy and labor market outcomes. For example (Bedard and Deschenes, 2006; Dobkin and Shabani, 2009; and Autor, Duggan, and Lyle, 2011) documented a negative impact of CMS on health. Galiani, Rossi, and Schargrotsky (2011) reported a positive effect of CMS and developing a criminal record. Stroup and Heckelman (2001) found that CMS has an adverse impact on economic growth in countries with a higher standard of education.

This paper studies the effect of compulsory military service laws on labor market outcomes namely employment rates. We contribute to the literature by providing further evidence on the impact of CMS on labor market. Also, we surveyed the latest literature on the matter, used the latest datasets available and updated some of the missing data for some countries especially in the MENA region by surveying the laws itself.

3. Stylized Facts

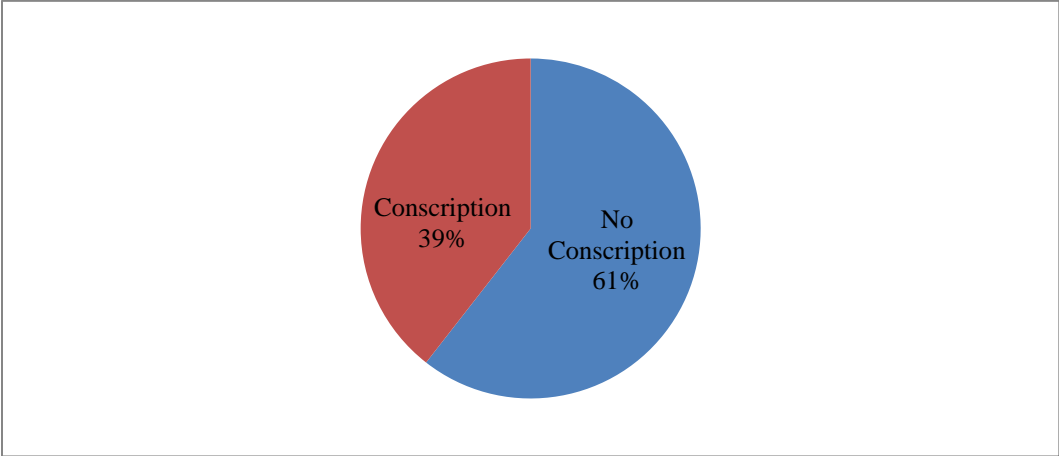
The essential use of power to defend the resources (i.e., land, water ...etc.) of the countries since the dawn of time is the core idea behind recruiting the citizens of these countries to form the first line of defense. This process of recruitment can be traced back to the times of Mesopotamia and Ancient Egyptians. Perhaps, Code of Hammurabi was the first set of legal rules that provide for CMS in which workers owed military service to royal officials. Respectively, the Compulsory Military Service evolved over time and the first nationwide comprehensive CMS provided by the French Republic during the French Revolution in 1793, the French government promulgated a *levee en masse* which imposed on able-bodied unmarried men between the ages of 18 to 25.

During these eras, the imposition of CMS can be traced directly to security threats whether external or internal (see Cohen, 1985; Posen, 1995; Konstantinidis and Lutmar, 2011). Indeed, the success of France in imposing such CMS motivated other countries to impose similar systems, for example, Prussia imposed CMS out of fear of losing to Napoleon in 1806 (Van Creveld, 1999).

However, After being the prominent system to recruit military personnel during the first half of the 20th century, figure (1) shows that CMS became less popular nowadays, especially in Europe after the collapse of the Soviet Union and the dissolve of the Warsaw pact in 1991 as the threats of war was minimized and the use of high-tech weapons system was emerging (Haltiner, 1998). In this study, there exist 35 European countries, only 13 of them still use CMS in 2016 (Austria, Bolivia, Cyprus, Denmark, Estonia, Finland, Greece, Lithuania, Norway, Russia, Switzerland, Turkey, and Ukraine). Most of these 13 countries have laws short durations of the

service that is usually between 6 to 12 month and it is quite easy to dodge the service because the consequences of avoiding CMS is not costly as the cases of exemption are many. For example, individuals can claim that they are conscientious objectors which mean refusing to perform military service on the basis of freedom, religion or conscience this is the case in country like Denmark as they offer a national service instead of the military service for those who are considered conscientious objector.

Figure (1) Compulsory Military Service Around The World.



Source: Own compilation, based on Economic Freedom of the World index (2016) and selected governmental sources.

The situation in North America is similar to the situation in Europe. This study includes 10 North Americans countries, only 3 of them use CMS (El Salvador, Guatemala, and Mexico) in 2016. Also, the CMS was the main system of recruitment during the 20th century until the United States abolished the draft (CMS) in 1973. While in South America, the military service status is a bit different as the trend of abolishing the CMS has yet to emerge until recently. The study includes 9 South American countries, 4 of them still use CMS (Brazil, Chile, Colombia, and Paraguay).

In the Middle East and North Africa (MENA) region, the use of CMS is still obvious, even the trend of abolishing CMS is reversed, as the trend in the MENA region is whether to keep

CMS or to establish it. Table (1) shows that countries such as UAE and Kuwait are evolving Laws to impose CMS on their citizens.

For countries in Africa beyond North African countries, the preference for all volunteer system is more repeated than the preference for CMS. However, the difference is not very obvious as we collected data for 27 south and middle African countries in this study, 16 countries do not impose CMS on their citizens, while 11 countries impose CMS. From the data, we observe that the durations stated in the CMS laws in these 11 countries are high. Figure 2(A) shows that only two countries in Central and South Africa (Chad and Tanzania) impose CMS for a period of less than 12 months. In contrary to Europe, North and South America, where the countries that impose CMS in Europe, North and South America, impose it with shorter durations as Figure 2(B) and Figure 2(C) show.

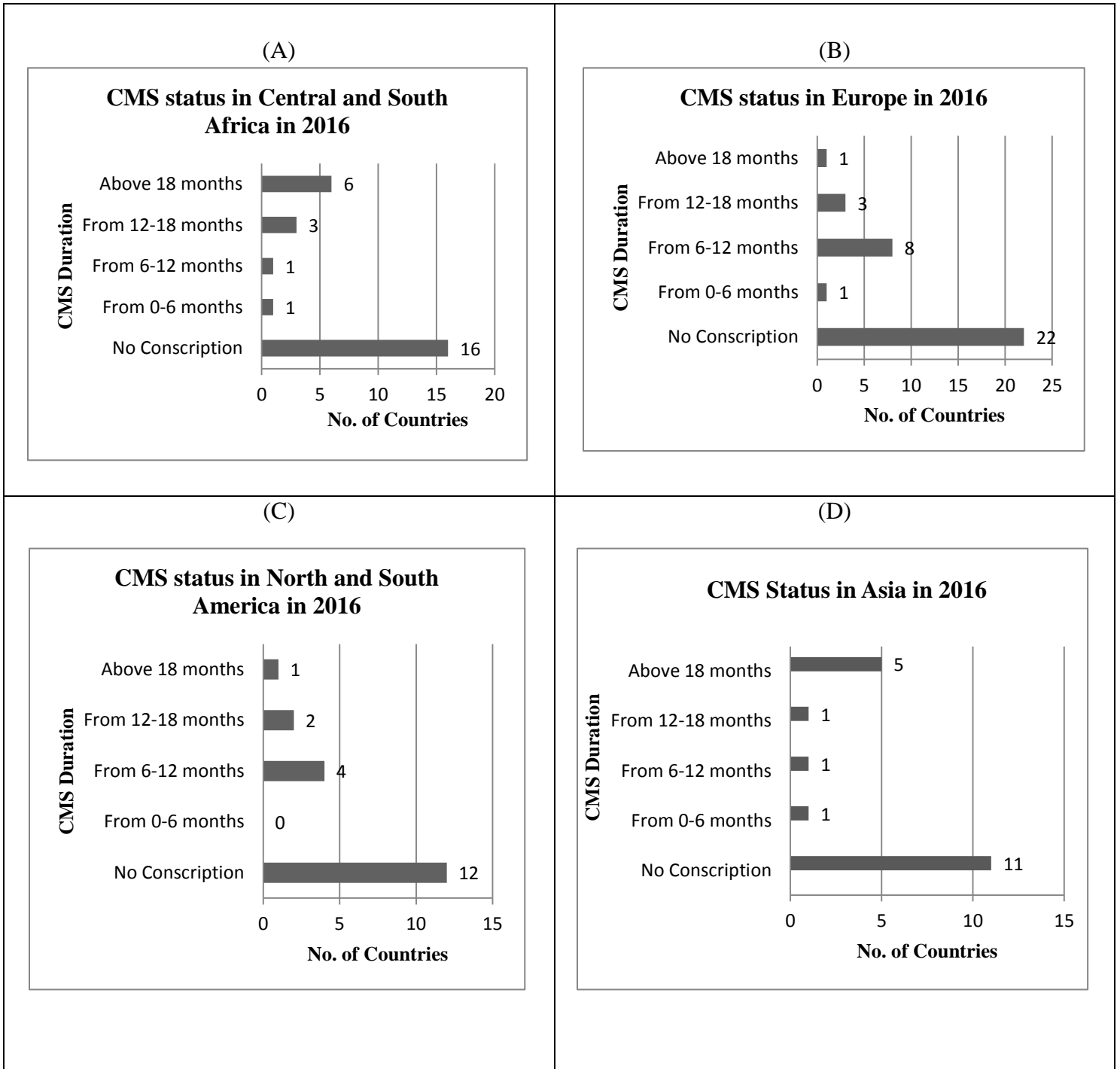
The situation in Asia is nearer to the situation of Africa than to the other areas, as Figure 2(D) shows that, there are 19 Asian countries only in our dataset due to the problem of missing data, 11 of them do not impose CMS, while 8 countries impose CMS. These countries that impose CMS are China, Indonesia, Iran, Kazakhstan, South Korea, Myanmar, Thailand, and UAE.

Table (1) CMS Status in The MENA Region

COUNTRY	STATUS	LAW NO
1. Algeria	Conscription exists	National Service Law No.14-06 of 2014
2. Bahrain	No Conscription	Bahrain Defense Force Law No. 32 of 2002
3. Egypt	Conscription exists	Law of Military and National Service No.127 of 1980.
4. Iran	Conscription exists	In the Constitution
5. Iraq	No conscription	Military Compulsory service Law No.65/1969 (not valid)
6. Israel	Conscription exists	Defense Service Law No. 5746/1986
7. Jordan	No conscription	Law of Flag Service and Backup Service No.23 of 1986
8. Kuwait	Conscription exists	Law No. 20 of 2015
9. Lebanon	No Conscription	Law No.665 of 2005.
10. Libya	Conscription exists	Compulsory Military Service Law No 3/1978
11. Mauritania	No Conscription	Law No. 62.132 of 1962
12. Morocco	No Conscription	Law No.48/2006
13. Oman	No Conscription	Law No.76 of 2008
14. Palestine	No Conscription	
15. Qatar	Conscription exists	National Service Law No. 5 of 2018
16. Saudi Arabia	No Conscription	
17. Sudan	Conscription exists	National service law of 2013
18. Syria	Conscription exists	Law No 30/2007
19. Tunisia	Conscription exists	Military Service Law no.1 of 2004
20. Turkey	Conscription exists	Law No. 1111 of 1927
21. United Arab Emirates	Conscription exists	National Service Law no.6 of 2014
22. Yemen	No Conscription	Law No. 03 of 2001

Source: Own compilation, based on Economic Freedom of the World index (2016) and selected governmental sources.

Figure (2) CMS by Region



Source: Own compilation, based on Economic Freedom of the World index (2016) and selected governmental sources.

From these observations, one can repeat the hypothesis stating that the more developed a country is, the less likely it is to impose CMS. And also the hypothesis that states that the countries with higher levels of militarization will be more likely to impose CMS than countries with lower levels of militarization (for surveys see Asal et al, 2017).

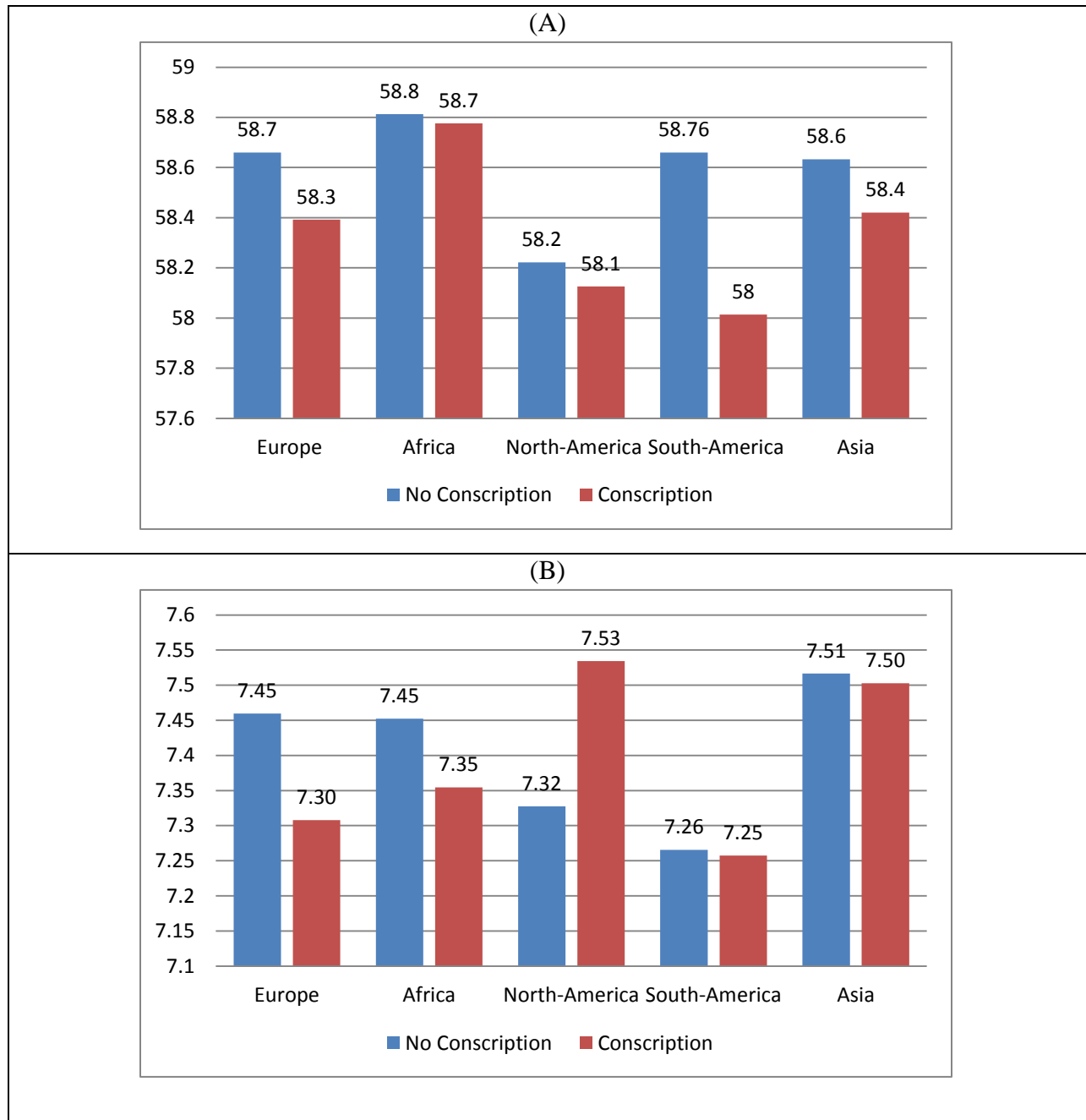
We also observe that the average unemployment rate in the countries that have no conscription is 7.76, which is more than the average unemployment rate in the countries that conscription exists 7.1 in the period between 2000 and 2016. The average GDP US\$ of the countries that have conscription is 3.75 billion, while the average GDP US\$ of the countries that have no conscription is 5.18 billion. These observations are compatible with the mixed results of the previous empirical studies that find CMS has no significant impact on the labor market (Bauer et al 2012), while having a negative impact on GDP (Keller et al, 2009). Also, the average employment rate in the countries that do not impose CMS during the period from 2000 until 2016 is 59.3696, and the average employment rate in countries that impose CMS is 58.5667537 during the same period.

Figure 3(A) shows that employment rates will also decrease in countries that impose CMS which is logical and can be justified by the number of costs of CMS affiliated with human capital and the labor market as mentioned in the literature review section. Figure 3(B) also unemployment rates also decrease in CMS countries except for North American countries, and this can be justified as the number of unemployed individuals will diminish (i.e. the individual who is not working but actively seeking a job) as the condition of the active seeking of a job would be obviated, because conscripts are usually not in a situation that allows them to seek jobs.

In sum, the number of countries that use CMS is declining and CMS laws are correlated with lower employment rates and GDP. However, there are still a lot of countries especially the developing one using CMS. Given that CMS imposes several costs on countries' shoulders; the developing countries are the most in need to limit these costs. Thus, why CMS is still used?

Scholars are trying to answer this question (Cohen 1985; Levi 1997; Haltiner 1998; Avant 2000; Irondelle 2003; Leander 2004; Mulligan and Shleifer 2005; Vasquez 2005; Edmunds 2006; Gilroy and Williams 2006). However, there is no accurate answer agreed upon. One of the arguments states that the determinants of the use of CMS are historical factors (Asal et al, 2017). Mulligan and Shleifer (2005) provided that the French legal origin countries are more likely to use CMS because CMS is a form of regulation and the French legal origin countries face lower administrative costs of regulations. Countries whose military personnel are the elite and have gained direct control through a military dictatorship are more likely to use CMS (Brooker 2000; and the discussion in Acemoglu et al. 2008). In sum, whether countries choose to use CMS because of their historical background or for any other reason, the fact of its social costs of is still obvious and the trend to abolish CMS is consistent.

Figure (3) Average Employment and Unemployment rates by Region



Source: Own compilation, based on ILOSTAT dataset.

3. Methodology and data

This paper investigates the impact of compulsory military service laws on labor market outcomes namely employment rates. We use a panel data for a sample of 106 countries from all over the world (Appendix A) from 2000 to 2016 with number of observation of 1,442. Our regression equation is based on Feldmann (2007); we modified it to take the following form:

$$Y_{it}=\alpha+\beta_1CMS_{it}+\beta_2X_{it}+G_t+\varepsilon_{it}$$

The dependent variable Y is the employment rate in country (i) during year (t), we will use the ILOSTAT dataset for this variable. The independent variable of interest CMS is introduced with three different definitions. First, it is introduced with general definition as a dummy variable that takes the value of 1 if compulsory military service exists and 0 otherwise (Table 2).

Second, more specifically it is introduced in (Table 3) as a dummy variable for each type of compulsory military service system that we have. The first type takes the value of 1 when compulsory military service exists but for no more than 6 months and 0 otherwise, the second type takes the value of 1 when compulsory military service exists for longer than 6 month but no longer than 12 months and 0 otherwise, the third type takes the value of 1 when a country has obligatory military service for more than 12 months but not more than 18 months and 0 otherwise, and the fourth type takes the value of 1 when compulsory military service exists for periods that exceeds 18 months and 0 otherwise.

Third, we convert the categorical variable of CMS that takes the values from 0 to 4 representing each type of compulsory service besides the 0 that means there is no compulsory service, into a continuous variable scheme by taking the average of the periods of each type of compulsory military service we have (Table 4). Therefore, it is introduced as a continuous

variable that takes the value of 0, 3, 9, 15 and 21 months. We will use the Economic freedom of the World index (EFW) for this variable, besides some governmental sources.

X is a vector of the control variables which are, GDP growth to control for the economic conditions in a country (i) during year (t), it settled that the higher GDP growth rate the country has the higher employment rate it will reach. The gross secondary school enrollment ratio which is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the secondary level of education (School Enrollment). Also, we firmly believe that with more secondary school enrollment rates, the employment rates will increase. We will use World Development Indicators (WDI) database at the World Bank for these variables.

We included the variable (Wars) as a dummy variable to control for interstate and internal wars in the respective country that takes the value of 1 if there exist interstate or internal wars and 0 otherwise², we also include the ethnic fractionalization variable computed as one minus the Herfindahl index of ethnic group shares (Fract), reflecting the probability that two randomly selected individuals from a population belong to different groups, as in societies that are not homogenous ethnically³, the cohort that rule may implement policies that is not in favor of the other groups industries, these polices will lead to the decrease of employment rates and will lower the overall GDP (Easterly and Levine, 1997; and Alesina et al, 2003).

Also, to control the geographical conditions we use the share of land area in geographical tropics (Tropical area) and the mean distance to nearest ice-free coastline (distance to coastline)⁴, it is demonstrated that economic consequences are correlated with key geographical variables (Gallup, Sachs and Mellinger, 1999). Sachs et al (2001) argued that the tropical climate impede

² Source: Centre for the Study of Civil War.

³ Source: Alesina et al. (2003).

⁴ Source: Center for International Development.

development, therefore, the employment rates are likely to be decreased in countries that share such climate. Also, the longer the distance to the nearest ice-free coastline the more costly the transportation, thus possibly decreasing employment rates. G is the year dummies and ε is the error term. We use the natural logarithms of the dependent and the independent variables to reduce data heteroskedasticity and to have elasticities.

In the main regressions, the coefficients of the variables are estimated using a random effect Generalized Least Square method (GLS) as a basic specification, also a fixed effect specification and Ordinary Least Square (OLS) controlling for year and country dummies. Besides, to double check the results that came out, we use the unemployment rates as an alternative dependent variable.

We predict that CMS will have a negative effect on employment rates and the effect would be more significant as it became stricter with respect of the penalties and longer with respect of the durations. Therefore, countries with stable CMS that exists for a longer period will suffer from a negative effect on their employment rates'. As with longer periods, conscripts will incur more opportunity costs (experience loss, less education..., etc.). Also, it shall be mentioned that with different degrees of penalties, stated in the law that regulates the military service, regarding those who violates the law by not serving in accordance with it, the effect on the labor outcomes will fluctuate. Because if the law provides for a small fine as a penalty for those who do not want to commit with the military service, economic costs of the law will be mitigated because most of the people will just pay the fine and so they will not suffer from opportunity costs. In contrary, if the law provides for imprisonment, most of the people will abide by the law and will prefer to serve, thus the economic costs of CMS will be demonstrated if the penalties provided in the law are severe and vice versa. Notwithstanding the aforementioned, we will focus only on the

existence of CMS and duration aspects only in the empirical testing as the data on the types of penalties is not available for all the countries.

4. Empirical Results

Table (2) represents the general regression of the effect of CMS on employment rates that included our variable of interest CMS as a dummy variable and the independent variables. The first specification is estimated using random effect GLS shows that CMS has statistically significant negative impact on employment rate. This means that countries that use CMS are likely to have lower employment rates. In the fixed effect regression, we have three omitted variables which are ethnic fractionation (Fract), share of land in geographical tropics (Log Tropical area) and distance to the nearest ice free coastline (Log distance to coastline) as these variables are time invariant.

This finding is robust in the other two specifications which are fixed effect GLS and OLS (Table 2). It is in line with our prediction and with the previous studies that stated that the costs of CMS are affiliated with lower levels of economic welfare (Sandler and Hartley 1995; Warner and Asch 2001 or Poutvaara and Wagener, 2007a). Also, it is supporting the empirical studies that provide for the negative impact of CMS on different economic consequences and labor outcomes (Imbens and van der Klaauw, 1995 or Keller et al, 2009).

Also, the impact of secondary school enrollment rates and GDP Growth rates are positive on employment rates, as demonstrated from the previous literature (for surveys see Duflo, 2000). As the more educated people are the more employment opportunities they will find.

Additionally, GDP growth has a positive significant effect on employment rates, as the growth leads to more development and thus higher employment rates.

This study finds a positive and statistically significant impact of countries that share larger tropical areas on employment rates. Interestingly, this is not in line neither with our prediction nor with the previous studies. It could be that the population of the tropical countries is not high and thus, their employment rates are higher. However, this interpretation shall be tested to be robust and that is far from our scope in this study.

Table (2) Regression results for explaining the Log Employment rates

	Ln Emp	Ln Emp	Ln Emp
CMS	-0.0151*** (0.00490)	-0.0157*** (0.00494)	-0.00873* (0.00513)
GDP growth	0.00133*** (0.000308)	0.00134*** (0.000308)	0.00159*** (0.000336)
Ln School Enrollment	0.0235*** (0.00678)	0.0254*** (0.00685)	0.00799 (0.00835)
Tropical area	0.219*** (0.0407)		0.194*** (0.0198)
Ln Fract	-0.0281 (0.0203)		-0.616*** (0.0745)
Ln Distance to coastline	0.0246* (0.0143)		0.315*** (0.0274)
Wars	0.000541 (0.00923)	0.000420 (0.00924)	0.00493 (0.00911)
Constant	3.693*** (0.102)	3.938*** (0.0298)	1.514*** (0.234)
Observations	1,442	1,442	1,442
Year dummies	No	No	Yes
Country dummies	No	No	Yes
R-squared	0.247	0.069	0.960
Number of countries	106	106	106

Standard errors in parentheses.

Significance Level *** p<0.01, ** p<0.05, * p<0.1

In an attempt to validate and check our main results which represent the effect of CMS on Labor market outcomes namely employment rates, we run extended specifications with three different regressions (Table 3). These regressions introduced CMS specifically as a dummy variable for each type of compulsory military service system exists. It shows that CMS less than 6 month has no effect on employment rates, contrary to the three other types of CMS that have negative effect on employment rates. Interestingly, contrary to our prediction the most significant and frequent effect is found in CMS that is more than 6 month but less than 12 month. As we predict that the longer the period the more significant the effect will be. However, it may be the case that some countries imposing this type of CMS may be imposing harsher penalties at the same time meaning that it would be hard to avoid such system. Also, it may be the case that some countries that use CMS for more than 12 month or more than 18 month are imposing it only *dejure* and not *defacto*. However, these interpretations shall be checked by testing them empirically.

Additionally, we introduced CMS as a continuous variable to double check the main results. We found that the results are more or less the same for the sign and the significance of CMS on employment (Table 4). The estimates for CMS variable indicate that the longer the duration of the CMS the more likely it is to be associated with lower degrees of employment rates. In the three different specifications (Random Effect, Fixed Effect, and OLS) the main results stand still. The significant negative effect of CMS is redundant in the three regressions. The positive significant effect of GDP growth is shown in the three regressions. The school enrollment has a positive significant effect in the three regressions except for the OLS as the significance is not shown for this variable.

From the aforementioned, one can state that countries with longer period of CMS are likely to suffer from lower employment rates more than countries that adopt shorter period of CMS. This can be explained by the several economic costs of CMS mainly, the loss of human capital accumulation of the youth, as the main addressee of the CMS laws as nearly all CMS laws around the world imposed on young males between the age of 18 and 30, due to serving in the military is likely associated with lower degree of employment rates and vulnerable labor market outcomes at the end of the day (Lau et al, 2004). Also, as mentioned CMS associated with other costs that can explain these results which are, the welfare losses due to the skill mismatch of the conscripts qualifications and tasks, forgone pros of specialization and violating the principle of comparative advantage (Keller et al, 2009).

Table (3) Regression results for explaining the Log Employment rates

	Ln Emp	Ln Emp	Ln Emp
CMS (less 6 month)	0.00921 (0.0103)	0.00804 (0.0104)	0.0177* (0.0103)
CMS (more 6 less 12)	-0.0211*** (0.00539)	-0.0215*** (0.00544)	-0.0151*** (0.00558)
CMS (more 12 less 18)	-0.0236** (0.0111)	-0.0246** (0.0114)	-0.0183 (0.0113)
CMS (more than 18)	-0.0213* (0.0113)	-0.0239** (0.0117)	-0.0137 (0.0116)
GDP growth	0.00132*** (0.000308)	0.00133*** (0.000308)	0.00158*** (0.000337)
Ln School Enrollment	0.0232*** (0.00677)	0.0252*** (0.00684)	0.00741 (0.00834)
Tropical area	0.219*** (0.0405)		0.194*** (0.0197)
Ln Fract	-0.0288 (0.0203)		-0.606*** (0.0744)
Ln Distance to coastline	0.0251* (0.0143)		0.310*** (0.0274)
Wars	0.000513 (0.00922)	0.000465 (0.00923)	0.00494 (0.00909)
Constant	3.692*** (0.102)	3.941*** (0.0299)	1.554*** (0.234)
Observations	1,442	1,442	1,442
Year dummies	No	No	Yes
Country dummies	No	No	Yes
R-squared	0.252	0.041	0.961
Number of countries	106	106	106

Standard errors in parentheses.

Significance Level *** p<0.01, ** p<0.05, * p<0.1

Table (4) Regression results for explaining the Log Employment rates

	Ln Emp	Ln Emp	Ln Emp
Continuous CMS	-0.00147*** (0.000472)	-0.00158*** (0.000483)	-0.000969** (0.000490)
GDP growth	0.00132*** (0.000307)	0.00133*** (0.000307)	0.00159*** (0.000336)
Ln School Enrollment	0.0234*** (0.00678)	0.0254*** (0.00685)	0.00766 (0.00831)
Tropical area	0.221*** (0.0407)		0.193*** (0.0198)
Ln Fract	-0.0287 (0.0204)		-0.616*** (0.0743)
Ln Distance to coastline	0.0251* (0.0144)		0.315*** (0.0273)
wars	0.00109 (0.00923)	0.00103 (0.00923)	0.00534 (0.00910)
Constant	3.691*** (0.102)	3.940*** (0.0299)	1.515*** (0.233)
Observations	1,442	1,442	1,442
Year dummies	No	No	Yes
Country dummies	No	No	Yes
R-squared	0.248	0.050	0.961
Number of countries	106	106	106

Standard errors in parentheses.

Significance Level *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Eventually to check the robustness of our results, we substitute the dependent variable in the general specification in (Table 1) with unemployment rates (Table 5). Interestingly, there was no statistical significant impact of CMS on unemployment rates. However, the coefficient sign was negative meaning that when there are no CMS or it exists but with shorter periods, the unemployment rates are tending to be reduced. Despite its statistical insignificance this finding is still interesting as it is against the predictions that associating CMS with weak labor market consequences. However, we did not find interpretation for this finding in the previous studies, but one can argue that this finding may be true. Because once the conscripts join the military in accordance with CMS laws, they will be no more considered from the labor force and then the unemployment rates will be reduced because the number of those who are in the labor force reduced. Many people consider those conscripts as employees in the military and so if conscripts join the military the unemployment rates will be reduced as well, however, this shall induce that the employment rates will increase by CMS and this is not the case as we saw.

In sum, we found that CMS has a statistically negative effect on employment rates in different specifications and several regressions. We checked the results by using different definitions of the variable CMS and it indicated that CMS still has negative effect on employment rates. Also, interestingly we found that CMS has no effect on unemployment rates.

Table (5) Regression results for explaining the Log Unemployment rates

	Ln Unemp	Ln Unemp	Ln Unemp
CMS	-0.00747 (0.0369)	0.00750 (0.0381)	-0.00522 (0.0400)
GDP growth	-0.00911*** (0.00238)	-0.00900*** (0.00238)	-0.00857*** (0.00262)
Ln School Enrollment	-0.201*** (0.0508)	-0.261*** (0.0529)	-0.251*** (0.0651)
Tropical area	-0.763*** (0.152)		-0.455*** (0.154)
Ln Fract	0.114 (0.0743)		0.788 (0.580)
Ln Distance to coastline	-0.0561 (0.0531)		-0.694*** (0.214)
wars	-0.270*** (0.0713)	-0.265*** (0.0713)	-0.289*** (0.0710)
Constant	3.449*** (0.444)	2.948*** (0.230)	8.163*** (1.823)
Observations	1,442	1,442	1,442
Year dummies	No	No	Yes
Country dummies	No	No	Yes
R-squared	0.127	0.095	0.844
Number of countries	106	106	106

Standard errors in parentheses.

Significance Level *** p<0.01, ** p<0.05, * p<0

6. Conclusion

Using a panel data from 106 countries from 2000 until 2016, this paper aims to analyze the nexus between compulsory military service laws and labor market performance. We provide insights on the impact of compulsory military service laws on employment rates. The theoretical literature on the topic have consensus on the costs affiliated with compulsory military service laws, and thus their hypothesis was that CMS will have a negative effect on many economic consequences and aspects including labor market performance that we measured with employment rates. However, the empirical literature does not share the same consensus of the theoretical literature as the empirical results are mixed with respect to the effect of compulsory military service law on different economic outcomes.

According to our regression results, compulsory military service laws are likely to significantly reduce employment rates. Therefore, countries that use compulsory military service are likely to suffer from lower employment rates compared to countries that are not imposing compulsory military service. Additionally, our results showed that the longer the duration of compulsory military service, the more significant the effect. Therefore, countries that impose compulsory military service for more than 6 months are likely to be associated with lower employment rates compared to countries that impose it for durations less than 6 months.

The debate on compulsory military service law is a very useful debate and it had a number of consequences including the emergence of a trend to abolish compulsory military service in most of the regions around the world. However, this debate has never made it to our region due to political considerations regarding the military status in the region. We hope that this study may

begin this debate in our region to decide whether to keep compulsory military service or to abolish it. This is very important during this time of transition and conflicts to reduce as many costs as possible. Finally, we hope that the controversial issues regarding the military status in our region to be mitigated by future studies as there are still a lot of questions opened to discussion and debate such as whether the more severe sanctions in CMS laws have a deeper impact on reducing labor market performance or not.

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Appendix A List of Countries

Albania	Cote d'Ivoire	Indonesia	Netherlands	South Africa
Algeria	Croatia	Iran	New Zealand	Spain
Argentina	Cyprus	Ireland	Nicaragua	Sri Lanka
Australia	Czech Rep.	Italy	Niger	Sweden
Austria	Denmark	Jamaica	Nigeria	Switzerland
Bangladesh	Dominican Rep.	Japan	Norway	Tanzania
Belgium	Ecuador	Jordan	Oman	Thailand
Benin	Egypt	Kazakhstan	Pakistan	Togo
Bolivia	El Salvador	Kenya	Panama	Trinidad & Tob.
Botswana	Estonia	Korea, South	Pap. New Guinea	Tunisia
Brazil	Finland	Kuwait	Paraguay	Turkey
Bulgaria	France	Latvia	Peru	Uganda
Burundi	Gabon	Lithuania	Philippines	Ukraine
Cameroon	Germany	Madagascar	Poland	UAE
Canada	Ghana	Malawi	Portugal	UK
Central Afr.	Greece	Malaysia	Romania	US
Chad	Guatemala	Mali	Russia	Uruguay
Chile	Guinea-Bissau	Mexico	Rwanda	Zambia
China	Honduras	Morocco	Senegal	Zimbabwe
Colombia	Hungary	Myanmar	Sierra Leone	
Congo, Rep.	Iceland	Namibia	Slovak Rep	
Costa Rica	India	Nepal	Slovenia	

Appendix B Variables definition and sources.

Variables	Description and Source
CMS	<p>Compulsory Military Service, introduced as a scale variable that takes the values from 0 to 4. Which 0 is assigned to countries without military conscription, 1 means there exist conscription but with no more than 6 months, 2 is assigned to countries which has obligatory military service with no longer than 12 months, 3 mean that the country has obligatory military service more than 12 months but not more than 18 months and 4 is assigned to countries that has military service periods that exceeds 18 months. We will use the Economic freedom of the World index (EFW). In running the regression we convert this variable into dummy variable, and a continuous variable as mentioned in the Methodology and data section.</p>
Employment rates	<p>The proportion of a country's population that is employed. Ages 15 and older are generally considered the working-age population. Source: ILOSTAT database.</p>
GDP Growth	<p>Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2010 U.S. dollars. Source: World Development Indicators.</p>
School Enrollment	<p>Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers. Source: World Development Indicators.</p>
Tropical Area	<p>Percentage of land in geographical tropics. Source: Center for International Development (1999, 2001).</p>

Ethnic Fractionalization	One minus the Herfindahl index of ethnic group shares, reflecting the probability that two randomly selected individuals from a population belong to different groups. The definition of ethnicity involves a combination of racial and linguistic characteristics. The classifications reflect the judgments of ethnologists and anthropologists on the appropriate definition of ethnicity. Source: Alesina et al. (2003).
Distance to coastline	Mean distance to nearest ice-free coastline, measured in thousands of kilometers. Source: Center for International Development (2001).
War	Introduced as a dummy variable that takes the value of 1 if there exists interstate and internal wars in the respective country and 0 otherwise. Source: Centre for the Study of Civil War (2005).
Unemployment rates	The share of the labor force that is without work but available for and seeking employment. Source: ILOSTAT dataset.

Appendix C Descriptive statistics of the main outcomes and variables.

Variables	N(obs.)	Mean	Min	Max
CMS	1,819	1.206707	0	4
Employment rate (log)	1,819	4.05921	3.421033	4.475255
GDP growth	1,819	3.7247	-36.69995	33.73577
School Enrollment (log)	1,442	4.311887	1.88289	5.099443
Tropical Area	1,819	.4699888	0	1
Distance to Coastline (log)	1,819	5.362178	2.053744	7.772429
Fractionalization (log)	1,819	-1.124535	-6.214608	-.0723557
Unemployment rate (log)	1,819	1.778896	-1.139434	3.393501

Source: Constructed by the author using World Bank Indicators, ILOSTAT dataset and Economic Freedom of the World index (2016).