Employment Protection Legislation and Labor Markets in Transition: Assessing the Effects of the Labor Code in Armenia

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Abstract

The effects of employment protection legislation (EPL) on a country's labor market are clear in theory but empirical evidence is only starting to catch up. In particular, EPL is not robust as an indicator of overall unemployment, but previous panel data analyses have shown it affects the flow of workers into and out of employment. Examining monthly and quarterly data from Armenia, I find that the country's package of EPL has this same effect, and worker flows have slowed under the country's new Labor Code. The paradox of where Armenia's workforce is going still remains but can be hypothesized as entering the informal sector.

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1. Introduction

The question of the effect of employment protection legislation (EPL) on labor markets is a hotly debated one in both policy and economic circles. Broadly defined, EPL is designed, in the words of the World Bank, to "create conditions that are more conducive to job creation, protecting employment, and improving working conditions" (World Bank 2007a). In practice, this usually means a package of legislation that governs hiring and firing of workers, treatment of workers on the job (including holidays, sick leave, and maternity issues), and other related issues (such as workplace safety).[2]

The creation of EPL often rests upon the assumption by economists and policymakers that legislation can be expertly designed in such a way as to improve the welfare of workers while not impacting the labor market in a negative manner (these assumptions mainly are based on a Coasean view of the world – that is, in a world of low transaction costs, negotiations can lead to redistribution without loss of efficiency).[3] In justifying the need for EPL, there usually is some reference to "market failure," with legislation needed to protect workers from the depredations of employers in a situation of informational asymmetry. However, there are strong economic arguments against the adoption of EPL. Theoretically, interference in the labor market could increase costs to hiring and thus create or maintain unemployment, advantaging those who already have a job at the expense of those who are still looking. Additionally, EPL can focus on only a symptom of a weak economy (turnover) rather than underlying structural flaws that lead to these outcomes, and thus create even more distortions.

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[2] Botero e. al (2003) separate EPL into three distinct areas: employment law, industrial and collective relations law, and social security law. For the purposes of this paper, I will focus on employment law.

[3] See especially Freeman 2005 for an overview of proponents of this viewpoint.

A growing literature, typified by the OECD's major initiatives over the past 4 years (see, for example, Bassanini and Duval 2006), has attempted to quantify the effect of EPL on labor market performance, but has thus far yielded mixed results (more of this in Section II below). Much of this work has been done at the cross-country level, but has been restricted to developed economies, ostensibly to research differences in labor market performance connected with continuing stagnation in Europe, but also because labor market regulation data is much more prevalent in developed countries. A much more interesting case can be made for attempting to observe the effects of EPL in emerging and transition economies, however, as their labor markets are still developing; thus, changes in EPL could be expected to have larger effects than in a developed economy and can help our understanding of the transmission channels of labor market policy. This, in turn, can offer more accurate policy prescriptions for both transition and developed economies.

Sadly, little is known about the effects of EPL on the labor market in emerging market economies, and even less about how EPL can change the market in a specific country over time. The purpose of this paper is to help redress this lack of knowledge by examining the effect of EPL in one particular transition economy: Armenia. The Armenian Labor Code, introduced in late 2004, is a modern piece of employment protection legislation that sets restrictions on hiring and firing and represents a comprehensive package of EPL unlike that which has ever existed in Armenia. This paper represents the first attempt to quantify the scale of the Code's impact on the Armenian labor market; in particular, I will take a quantitative and econometric look at the effect of the Labor Code, based on performance in the job market in Armenia both before and after its inception. Through this analysis, I will seek to answer how recent employment protection legislation (EPL) affected the labor market in Armenia, and examine if previous results on the effects of EPL hold true in the Armenian case.

The paper is organized as follows: Section 2 will provide a brief overview of literature dealing with EPL around the world, while Section 3 will examine the specific case of Armenia and the data available for analysis. Section 4 will describe the data and Section 5 the model, while Section 6 presents the results of the analysis. Section 7 offers some conclusions and avenues for further research.

2. Literature Review: Theoretical Predictions and Empirical Results

The effects of EPL on the labour market have been well-understood in the context of economic theory, both in terms of its influence on the stock of current workers and the flows of workers into and out of the system. From a theoretical standpoint, any legislation that a government enacts to restrict the flexibility of employers should have a negative influence on the flow of workers, raising the cost to hiring and firing and thus protecting the stock of current workers at the expense of the unemployed.[4]

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[4] Indeed, all EPL is in some way a distortion to market-determined forces: if private actors did not have these safeguards already, there must not have been a clear-cut demand for them, and if these safeguards did exist, government action would be redundant. However, other schools of economic thought would

In effect, this is a planned market distortion and exactly what EPL is *designed* to do; in pursuit of "stability" or "worker protection," EPL by its nature seeks to reduce turnover in the labor market that already exists and make it more difficult for turnover to occur in the future. However, the cost for this reduced turnover would not only be felt in the reduced flow of workers, but the cost to society of longer unemployment spells (Blanchard and Portugal 2001). With less turnover, there will be less vacancies and thus those out of work would have to wait longer for a job. EPL also can decrease wages for those seeking to re-enter the workforce: with a longer wait for a job, any applicant would be willing to settle for a lower wage for work (Blanchard 1999 also shows that the cost of unemployment for those already employed would also increase, thus making current workers more willing to accept a lower wage than to confront the threat of extended unemployment).[5]

Given these negatives, it would appear that EPL is, on an economic level, a policy to be avoided. Yet theorists have conjectured that on various levels (apart from turnover) that EPL can be beneficial, as "policies that try to restore equality of opportunity are warranted even in the absence of efficiency reasons" (Bassnini *et. al* 2005, p. 10). In their study of workplace training in Europe, Bassanini *et. al* (2005) note that high workforce flexibility (i.e. high turnover) reduces the incentive to provide skills and knowledge to workers, and thus EPL, by keeping workers employed longer, would also increase investment in human capital on those workers that were employed. From a social/political standpoint as well, EPL reduces the risk of a particular employee being laid-off, reducing political tensions that can arise from job insecurity. Moreover, well-designed supporting or secondary institutions in the labor market (Abraham and Houseman 1994) can mitigate from the employers' side some of the rigidity imposed by EPL, thus finding alternatives to layoffs that also improve employer adjustment to changing market conditions. Finally, as Addison and Teixeira (2001, p. 3) note in their overview of the theory surrounding EPL, "employment protection legislation can enhance productivity performance by encouraging worker cooperation in the development of the production process, stimulate training investments, and reduce 'excessive' turnover" at the aggregate level. These effects are based mainly on the supposition of labor market imperfections, such as asymmetric information and/or misaligned incentives, which can be mitigated by appropriate legislation.

The myriad types of EPL and how they are implemented are also presumed on a theoretical level to influence different segments of the labor market in different ways (see Table 1); for example, government-mandated maternity leave can be expected to increase the relative cost of hiring women, thus altering an employer's incentives towards hiring males instead. These effects can be mitigated in a Coasean world (see Lazear 1990) through flexible institutions that enable bargaining to distribute cost; for example, restrictions on firing workers could be alleviated for employers by having

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imply that the absence of employment protection is a "market failure" that needs to be redressed via governmental action, which is the most common argument politically for the institution of EPL.

[5] Little work has been done empirically on the wage effect of EPL, mainly due to the difficulty of obtaining data. The only notable research done on individual-level data to this point has been Leonardi and Pica 2007, who examined EPL effects on workers in Italy and found that entry wages were unaffected but wages during the first and second year (i.e. when a worker is most likely to be fired) decreased by 20% and 8% respectively.

employees pay a sum equal to the net present value of the firing cost upon their hiring. However, in the real world, and especially in a world that imposes EPL, this kind of flexibility is usually lacking and the distortions that EPL impose can remain.

While a large literature has coalesced around both the theoretical effects of EPL on labor markets, unfortunately there is little agreement on their effects empirically, with many studies finding no effect of EPL on broader employment trends, with others showing effects only in specific employment indicators. While the most sweeping study done by Botero *et. al* (2003) finds, consistent with the theoretical framework noted above, that "heavier regulation of labor is associated with a larger unofficial economy, lower labor force participation, and higher unemployment, especially of the young,"[6] the record of other research is mixed. Indeed, most cross-country studies finding that EPL does not have a significant effect on labor markets in terms of aggregate employment or unemployment (see Micco and Pages 2007 for a brief review). For example, an early attempt by the OECD (1999) to estimate EPL effects over 1985-97, using two-period panel regressions, finds that in almost all cases that EPL has a negative but insignificant effect on employment (with the only significant effect on the sub-group of "prime [working]-age men"). Similarly, Heckman and Pages (2000) use a sample of OECD and Latin American countries but find little significance across their specifications for EPL and unemployment.

The reason for the divergence between theory and evidence has also been a bone of contention for economists, with several ideas mooted, including that there are country-specific effects not captured in the panel data, or, more likely, omitted variable bias distorts the effect of EPL. Additionally, indicators of EPL can be misspecified, as they have been mostly utilized in cross-country regressions as an index or score (as in the OECD's 18 point EPL scale, see OECD 1999). However, a more simple explanation may exist for the lack of correlation, in that labor policy changes tend not to occur very often, and thus simply examining stocks of workers at any one time would do little to show a reaction to a long-standing policy. It would be more effective to find data and specifications that actually comport with the theory noted above: that EPL is designed to reduce turnover, and thus examining job flows, rather than unemployment stocks, are the only way to see the effect of EPL.

Work done in this arena has, for the most part, found more robust correlations between EPL and reduced job flows, confirming much of the theory on how EPL can restrain a job market. In the seminal paper in this area, Blanchard and Portugal (2001), the authors compared Portugal, with one of the strictest EPL frameworks in the world, with the US, which has one of most flexible, to ascertain why unemployment rates of the two countries were similar over 1983 to 1998. While coming to the same conclusion of EPL and its effects on aggregate unemployment, their analysis of Portuguese data showed that EPL reduced job flows, reducing unemployment, but increased unemployment duration which in turn increased the unemployment rate. The

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[6] This would be *prima facie* evidence of the overriding influence of transaction costs as well, with the impact on efficiency unable to be negotiated away.

concurrence of these two effects would be a wash on overall unemployment, but taken individually they show how the labor market is adversely affected by EPL.[7]

This result has been replicated by several researchers, with one of the most persuasive arguments for examining job flows coming from Wolfers 2005, who noted that the vast majority of cross-country studies utilize annual data, which in and of itself smoothes out monthly, seasonal, and quarterly patterns of employment. In order to avoid this aggregating effect, he argues that "employment protection does not significantly alter a firm's response to highly persistent shocks – such as those present in annual data" and rather it is transitory shocks, such as seasonal changes, that can show the effect of EPL; this can only be seen in quarterly or monthly data, as shown in Barsky and Miron (1989). Using quarterly OECD data, disaggregated by industry, Wolfers concludes that job flows are significantly and negatively affected by employment protection. Other work at the industry level has confirmed these results, showing that combining the lower-turnover effects with prolonged unemployment leads to negative effects for any labor market, but one that may not be captured by broader unemployment figures.[8]

Beyond these methodological issues, empirical analysis of EPL could also be suffering from a misinterpretation of cause-and-effect, a misinterpretation caused by focusing on mainly industrialized nations. In reality, most countries that originally enacted EPL were countries that already had high per-capita incomes and had more resilient labor markets and institutions that were already on their way to providing some form of EPL. To assume that EPL in these countries was given exogenously, rather than occurring as a function of the country's already-existing institutions and growth trends, is thus an error in sequencing and ignores the role of prior institutions in creating new policy and administration. If EPL is instead endogenous, we could expect that legislation that comes out of existing institutions and past performance would have less of an effect than a more radical break with the past, and would be more incremental than EPL that is imposed on a fledgling market. This hypothesis is also consistent with Botero et. al (2003), which finds that richer countries tend to regulate labor less than poorer countries, perhaps as a result of their higher incomes and mature labor market institutions, and perhaps as a result of previous experience with labor regulation.

If this hypothesis is indeed true, we should expect to find the impact of EPL to be much more significant in transition economies, where market institutions and frameworks are weak, and where the imposition of Western-style EPL can cause a major distortion in the labor market. As noted in the introduction, rigorous empirical work on transition economies has been lacking, and only starting to come on-line in the past few years. Cazes and Nesporova (2003) have attempted the broadest and most sweeping analysis of EPL in transition economies, analyzing labor market changes and EPL in Central and Eastern European transition countries, the Baltic States, and the Russian Federation. Their findings suggested that EPL had only a minor impact on

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[7] Similarly, Hoek 2002, examining regulated and unregulated labor markets in Brazil, found that changes in unemployment in the formal sector, subject to strict EPL, were more persistent and less cyclical than in the informal sector (where EPL did not apply); thus, flows (if not stocks) were impacted by the use of EPL.

[8] See for example Kugler and Pica 2007, an excellent look at Italian industry-level data that concludes that 1990 EPL reform in Italy reduced entry rates and employment adjustments.

these transition countries, a result that may have been tempered by the fact that they appeared to analyze only the advanced transition economies (leading to confusion of causation and correlation). Other work in this area has found somewhat stronger correlation between EPL and unemployment in transition economies (Haltiwanger et. al 2003), while modeling exercises undertaken by the IMF have shown this same correlation for countries outside of the former socialist sphere (Koranchelian and Fanizza 2005). It is in this vein that I propose to examine the effects of EPL in Armenia.

3. EPL, the Labor Code, and Armenia

Armenia has a labor market that is typical of post-Soviet countries early in their structural (as opposed to macroeconomic) transition, with high informality and hidden unemployment that is not captured by official figures. While the country has shown impressive macroeconomic gains, posting GDP growth on average of 12% over the past 8 years (leading the World Bank to perhaps over-optimistically dub the country a "Caucasian Tiger"), these gains have not been distributed through the labor market nor the country (most of the growth is centered on the capital, Yerevan). Indeed, the largest problem that Armenia has seen since independence is a steady "brain drain," with migration from the country spreading the Armenian Diaspora far and wide. This in turn has led to a large flow of remittances to the country (see Roberts 2004).

Labor relations and employment in Armenia are governed by the Labor Code, enacted in November 2004 as part of a broader effort to unify labor legislation and replace many of the Soviet-era codes that were still governing employer-employee relations at the time (in practice during the 1990s, Armenia followed and enforced the 1972 Labor Code of the Armenian Soviet Socialist Republic, even though it technically had no force of law). Labor legislation since the fall of the Soviet Union moved slowly and in a desultory manner (as the labor market was not a priority for successive Armenian governments), and was reactive to both international donors and the desire for EU accession, with only two major pieces of legislation enacted in this sphere: the Law on Employment Promotion (1996) and the Law on Work Remuneration (2001).

The Labor Code of 2004 was created (with World Bank assistance) to fill this gap, consolidating some of the legislation that had been passed and dramatically expanding worker protections to 24 chapters and 266 articles covering employment contracts, conditions for hiring and firing, work hours, paid and unpaid leave, maternity leave, and collective bargaining.[9] As the World Bank mentioned in its project completion document, the new Code was designed to reduce some of the onerous conditions that existed in the previous socialist code, and was designed to "reinforce the principles of freedom of association and collective bargaining, clarify and simplify the basic conditions for employment contracts, reduce minimum annual leave entitlements, remove existing declaratory privileges to particular groups of employees, and impose

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[9] Wages were not included in the Labor Code explicitly, apart from Chapter 19 where it is noted that minimum wages will be set by the government. As part of the general move towards labor regulation, a Minimum Wage Act was also passed in 2004, setting the minimum wage at 13,000 Armenian drams. It has since been revised upwards to 15,000AMD in 2006, 20,000AMD in 2007 and 25,000AMD in 2008 to remain at approximately $50US/month.

labor dispute resolution" (World Bank 2004, p. 14). The World Bank's "Doing Business" methodology showed that the bulk of the changes in the Labor Code were concentrated in the ability of employers to terminate contracts, making it much easier than previously (the Soviet-era code made it a near-impossibility, and earlier legislation had preserved this "right to work").[10] At the same time, the Labor Code's differences with the socialist code actually made it almost twice as difficult to hire workers (Table 2), as the Code limited fixed-term contracts to a length of 5 years, prohibited the use of fixed-term contracts for "permanent" tasks (Kuddo 2009), and created "the institution of so-called 'temporary work agency' [which was] not defined in either the old or the new legislation" (World Bank 2007a, p. 112).

While the Labor Code moved towards a more recognizable piece of "western" employment legislation, there is still some debate on whether the Labor Code actually achieved its goal as stated by the World Bank as being *overall* less restrictive than the previous legislation. The World Bank, in a 2007 survey of the Armenian labor market, utilized OECD methodology to rate the previous EPL in the country as somewhat restrictive, reaching 3.2 on a 6 point scale and surpassed only by Portugal, Mexico, and Turkey (World Bank 2007a). Using this same ranking system, the World Bank estimated that the new Labor Code enacted in November 2004 was actually less restrictive, at a level of 2.2 (similar to the labor laws of Austria and the Netherlands). The Fraser Institute's "Economic Freedom of the World" Index also has a similar, if more marginal, movement, with the component of "labor market regulations" improving from a rating of 5.22 in 2004 to 5.56 in 2005 (Gwartney *et. al* 2009).[11]

Despite these two indicators of improvement in Armenia's labor legislation, evidence has mounted that the Labor Code, especially in its enforcement, is more restrictive, not less, than the system that existed previously. A tell-tale sign comes from the Fraser Institute ranking just cited: while the overall ranking improved after the institution of the Labor Code, one of the sub-components of the "labor market regulations" index, hiring and firing regulations, dropped precipitously from a 6.5 to a 5.1. Additionally, the World Bank's Doing Business indicators also has shown differential effects of the Code, showing with more precision which areas have become more flexible and which have not:

> The rigidity of employment index declined from 36 to 31 and firing costs declined from 17 weeks to 13 weeks. The increased flexibility was largely due to the relaxation of restrictions on firing staff (with difficulty to fire reduced from 50 to 20), whereas rigidity of hours remained unchanged at 40 and difficulty of hiring deteriorated from 17 to 33. The latter was mainly due to the Labour Code prohibition on fixed term contracts for permanent jobs. (European Training Foundation 2010, p.70).

Survey evidence of Armenian firms, as well, has shown that many employers feel there are still significant problems with the Code, including worries that it has unclear or

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[10] One of the socialist relics that was preserved in the Labor Code was the "work book," required to be kept by employers for all their employees. It functions as an internal passport for the labor market, and it is a violation to not be in possession of one's work book.

[11] The Fraser Institute ratings systems for its index of economic freedom runs from 0 to 10, 10 being the highest. For labor regulations, this component includes rankings for minimum wage, hiring and firing regulations, centralized collective bargaining, mandated cost of hiring, mandated cost of worker dismissal, and conscription.

contradictory on several provisions and a belief that it tends to regulate areas that are best left to the market (as in the case of overtime – see VGM Partners 2008). The World Bank's own Enterprise Survey in Armenia, taken in 2002, 2005, and 2009 has shown a definite increase in employers who noted that labor market regulations were an obstacle, rising from 0.93% of firms in 2002 to 3.37% in 2005 (the first year of the Labor Code) and 7.59% in 2009. More significantly, especially when compared to other CIS countries, Armenian firms noted in the 2005 World Bank/EBRD Business Environment and Enterprise Performance Survey (BEEPS) that they would increase their existing workforce by an average of 16% if they "didn't have any [formal] restrictions (i.e. didn't have to seek permission, make severance payments, etc.)" (World Bank 2005).

The discrepancy between the perception on the ground and from above on the effects of the Labor Code may be traced back to an issue that has plagued all CIS countries (and indeed, all developing countries): implementation. From a legal standpoint, the new Labor Code appears to be a vast improvement over the Soviet-era Labor Code, which was tilted heavily in favor of worker protection as part of the "worker's paradise." However, during the 1990s, while the old Soviet Code was in theory still in effect, in reality, no labor regulations prevailed on a consistent basis. More importantly, the creation of governmental labor market institutions for oversight that are seen in advanced economies, such as Labor Ministries, employment agencies, and a Labor Inspectorate, were overlooked in favor of other transition priorities. In this environment, any move towards a different legal structure that was to be implemented, no matter how much better it looked on paper, was bound to be restrictive, for the simple fact that it *actually was being enforced*.[12]

This shift from general laissez-faire labor enforcement in Armenia to more state oversight has created its own effects in the labor market: as New Institutional Economics (NIE), especially as applied to transition economies (North 1997), has demonstrated, formal institutional development can influence growth patterns in a country by influencing incentives and transaction costs that developed in the absence of these institutions. Given this disjointed transition in legal and administrative regimes, we can expect that the institution of a new Labor Code and its accompanying governmental entities would have profound effects on the still-nascent labor market in the country. Ascertaining these effects is the subject of the next two sections.

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[12] In this sense, Armenia's labor market is undergoing another transition as the Government is attempting to create formal labor institutions to enforce the Labor Code at the same time that it has created a new legal framework for the market. This has included the development of a State Labor Inspectorate (hived off of other ministries and agencies in 2005) to conduct inspections and a State Employment Services Agency (SESA) to oversee unemployment registration and job matching services. As is often the case with new institutions with an unfamiliar mandate, these agencies are currently lacking capacity and are undergoing "growing pains;" in particular, the Labor Inspectorate is seen by businesses only as a way for the government to collect revenue, while SESA is perceived more as a provider of passive labor measures (unemployment payments) than active measures (job re-training) – see VGM Partners 2008.

4. The Data

In order to ascertain the effect of the Labor Code and Armenia's new formal labor institutions, I have amassed a dataset giving an accurate picture of the labor market both before and after the inception of the Code in November 2004. As in all transition economies, however, there are problems with data in the labor market, and these problems loom especially large in the Armenian context. Of first concern is the fact that unofficial estimates of unemployment in Armenia diverge wildly from official estimates: for example, the official unemployment rate in 2005 was 8.1%, while the Labor Force Survey conducted by the according to the National Statistical Service (NSS) put actual unemployment at 31.3%. The underreporting of unemployment is due to the Armenian government's definition of "unemployed": a person is only counted as "unemployed" if he or she has registered with the State Employment Services Agency (SESA).[13]

In addition to these issues in ascertaining unemployment, there is also a large bias in employment data given the prevalence of the informal economy in Armenia. Unlike countries such as Brazil, which have a long series of household and labor surveys that can give hard data on the size of the informal labor force (Hoek 2002), Armenia has intermittent labor market surveys that occur only in the presence of donor funding. The latest survey in 2007 was conducted by the NSS of a sample of 520 businesses, of which 181 were located in Yerevan, and the remaining 339 in the regions (marzes), with a further 1,200 people classified as "vulnerable" surveyed for the supply side of the market. Given the lack of funding for longitudinal studies in Armenia, it is very difficult to track labor market changes over time, and the relatively small scale of the latest labor market survey also provides problems for assessing broader trends in the country (a tour of problems in estimating the informal economy in former Soviet countries is shown in Khomenko 2007).

A final problem, common to all transition economies, is the paucity of observations across all variables. While I have tried to obtain monthly data to isolate labor market effects, there still is a short time series for Armenia, even shorter when one considers that the Labor Code is less than four years old (also when one considers monthly data series are recorded by the NSS only from 2000 onward). Future research, working with a longer time-series, will better show the effects that the Code has had on the Armenian labor market, but it is our hope that we can begin to see the influence of the laws and their implementation on Armenia after this short period of time.

With these caveats in mind, I have created a database of employment, macroeconomic, and institutional indicators from either 2000-2008 or 2000-2010 (where available). Following the lead of Wolfers 2005, I have, where possible, tried to obtain quarterly or monthly data to overcome the lack of observations, and also to ascertain seasonal job flows. Much of the data comes from the NSS, with data on job vacancies taken from the State Employment Services Agency (SESA). Additional pieces were filled in as necessary from the World Bank, the IMF, and the EBRD, with pre-2004 migration statistics taken from Robert and Banaian (2005) and later data taken from the

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[13] Another issue contributing to undercounting of unemployment is the fact that a land owner in Armenia cannot be classified as unemployed. Any land owner is thus counted as "working" in agriculture, without any thought of whether or not the land is arable.

Ministry for Territorial Administration. While the data issues noted above may have a major impact on the actual estimates of EPL effects, I feel that they will nonetheless capture the correct magnitude of changes, if even on a smaller scale.

5. Empirical Model

Unlike earlier work that has focused on broader EPL, including social security laws and the effects of collective bargaining and unions (Botero et. al 2003), I will remain focused in this paper on employment law, including employment contracts and job security. This is mainly due to the lack of unionization in Armenia[14], the lack of strikes in the country[15], and a still-incipient approach to collective bargaining.[16] Similarly, the social security system in Armenia is currently in a massive state of flux, as consideration of a move to a three-pillar system is underway and likely to be implemented over the coming years; thus, expectations of this change may shape current behavior, while previous job-market effects are likely to be minimal.

Following from the Bassanini and Duval (2006), our empirical model of the labor market in Armenia takes into account the effect of both EPL and macroeconomic/institutional controls to examine the performance of employment in the country from 2000 (annual data is available in some cases back to 1992, but monthly and quarterly data is only available to 2000) up to the latest available data in 2010. The model actually takes three separate forms, in order to minimize possible issues with both the data and the reality of a transition economy. In the first instance, the baseline equation for our analysis is:

$$Y_t = \alpha X_t + \chi LC_t + \gamma t + \varepsilon_t \tag{1}$$

Under equation (1), Y represents a series of labor market outcomes (described below), dependent on a vector of macroeconomic controls (X), the Labor Code (LC), time (t), and an Armenia-specific error term. The most important portion of this equation for measuring EPL in Armenia is the Labor Code term (LC). As EPL legislation was changed as part of a broad package in 2004, it makes little sense to do as thorough a ranking as the OECD's 18 point scale on different facets of employment protection (the World Bank (2007a) already has undertaken such an exercise, as noted above). A dummy instead was used beginning at November 2004 (for monthly data) or Q4 2004 (for quarterly data) to demarcate the pre- and post-Labor Code era, taking 1

[14] The collapse of the Soviet Union also saw the collapse of trade unions in Armenia. Currently, there are only a few unions that operate in the country, with the two largest umbrella organizations the Confederation of Trade Unions (CTU) and the Union of Manufacturers and Businessmen (Employers) of Armenia. The CTU claim to have 43% of the labor force in Armenia as members, but is widely seen as ineffective and non-representative.

[15] According to official records, there has not been a strike in the country since the passage of the Labor Code, even though there is a somewhat confusing procedure allowed in the legislation for strikes.

[16] While the principle of collective bargaining is recognized in the Labor Code, at present, there are no real mechanisms for conducting such negotiations at the national level.

for months or quarters in which the Labor Code was in force. This approach follows other research which has examined turning points for EPL that are based on time variables (see especially Leonardi and Pica 2007).

Additionally under equation (1), the X term represents a series of control variables that can explain our labor market outcomes. Per earlier literature, these control variables include:

Output gap: Following several prior studies, including Elmeskov, Martin and Scarpetta (1998), Nicoletti and Scarpetta (2004), and Bassanini and Duval (2006), I have calculated an "output gap" on GDP data via a Hodrick-Prescott filter. This variable shows the gap between actual and potential output as a percentage of potential output. While an "output gap" is a dangerous concept, relying on neoclassical ideas of perfectibility and Pareto optimality, in a short time span it can make sense as an indicator of deviation; in this sense, the output gap will measure Armenia's deviation from its prior path of GDP growth rather than deviation from an "optimal" end-point.

Tax wedge: As used by the World Bank, the tax wedge on labor calculates the ratio of "social" taxes (including the worker's "contribution" to the pension fund, the employer's "contribution" to the pension fund, and the personal income tax rate) to the total cost of labor to an employer (defined as total wages plus the employer's tax for the pension fund). While the Bank itself has calculated a tax wedge in Armenia (see especially World Bank 2007a and 2005), they used nominal rates as stipulated in the relevant legislation in Armenia. By contrast, our variable calculates an effective rate of taxation using both the nominal rates and the different brackets for employers, tracked against an employee making 100% of the Average Production Wage (APW - data taken monthly from the NSS).

Time: While time may heal all wounds, it is not necessarily true that time affects all labor market outcomes. To guard against the eventuality that some things in Armenia are really just getting better on their own, whether through learning effects, knowledge dissemination, or the like, time is included to capture these effects. It is also crucial to include time as a variable distinct from the Labor Code dummy, in order to separate broader time trends from the ones that can be tied to the introduction of EPL.

Average amount of benefits received: Taken from NSS data, this variable gives the monthly average benefit received by an unemployed person in the country. This is also used as a dependent variable, in order to ascertain the determinants of benefits offered and see if the Labor Code has increased or decreased the government's largess.

The dependent variables in our analysis include:

Total number of unemployed: This is the official number of unemployed per NSS numbers (with all the problems expressed above), in thousands.

Unemployed males: The total number of males registered as unemployed per month.

Unemployed females: The same, but for females. Both variables are taken from NSS data.

Seasonal Employment Flows: The absolute value of the difference in the number of people registered as "employed" in one month over the corresponding month of the previous year (given the obvious seasonality in the data, the seasonal component has

been removed). The interest in this variable is not so much in the direction of the flows but rather their variability over time.

Difference in vacancies advertised (beginning of period): SESA also advertises job vacancies as part of passive labor market measures, and records their monthly vacancies at both the beginning and end of the month. This variable is the change in vacancies year over year, from the beginning of the period.

Difference in vacancies between beginning of period and end of period: This variable explores the change between the beginning of month vacancies and those remaining at the end of the month. It is used as a proxy for efficiency of job matching in Armenia.

Seasonal Unemployment Flows: Similar to employment flows calculated above, unemployment flows show the actual trend in unemployment registration compared to the corresponding quarter of the previous year. Here, unlike in employment flows, it is more important to see where the direction of change, to measure if people are either swelling or shrinking the roster of the unemployed.

Monthly migration statistics: From the Ministry for Territorial Administration, these figures show the monthly balance of migration to/from Armenia using air, land, and rail links.

These indicators were used in several variants of Equation 1; the results are detailed in the next section.

Equation 1 is a standard OLS regression on time-series data, but it may not be sufficient to deal with problems inherent in the data. In the first instance, a glance at much of the literature on EPL deals with pooled and cross-country analysis, and thus must utilize both random and fixed-effects regressions in order to deal with country- and time-specific effects. Our specification does not have the issue of cross-section-specific effects, but is very likely to suffer from omitted variable bias (as shown in Equation 1a), which may be unavoidable due to the lack of effective data in Armenia for other variables other than those assembled here.

$$Y_t = \alpha X_t + \chi LC_t + \gamma t + A_i + \varepsilon_t \tag{1a}$$

It is possible that Equation 1a is the true specification of the model, with A being the unobserved variable that is influencing labor market outcomes in Armenia while also being correlated with macroeconomic variables or the Labor Code's effects. Rather than attempting to over-correct for the omitted variables (magnifying the original problem with further misspecification, as noted by Clarke 2005), I will utilize a first-differences equation, where the data is differenced according to the previous period (as in Tu 2010):

$$\Delta Y_t = \sum_{j=2}^{k} \beta_j \Delta X_{jt} + \chi LC_t + \gamma t + (\varepsilon_t - \varepsilon_{t-1}) \tag{2}$$

The use of Equations 2 is a standard fixed-effects specification that will drop out unobserved time-invariant variables (A in equation 1a) that are Armenia-specific, without unduly restricting degrees of freedom or vitiating the dataset. Equation 2 will also help to cross-check the robustness of results specified in Equation 1, as well as correct the reality that there will be unobserved variables at play in our observation of the effects of the Labor Code.

6. Results

6.1   OLS Regressions

The simplest OLS regression(s) along the lines of Equation 1 measures official total monthly unemployment numbers from 2000-2010 as a function of variables which can be reasonably expected to influence employment trends: in this case, the Labor Code, time, the output gap, the tax wedge, and a constant. Sensitivity analysis for this regression shows some interesting results (Table 3), as total unemployment appears to be negatively correlated with the Labor Code in all of the four regressions, with the smallest significance in the final equation including the tax wedge. Behavior in the other variables is mostly as expected, as a higher tax wedge increases unemployment by a large and very significant amount, while the output gap has a significant but barely noticeable (in terms of magnitude) effect on unemployment. Time also has an effect, although its direction changes depending upon the other included variables, with only the regression including the output gap alone showing unemployment increasing over time; otherwise, as expected, unemployment on average has decreased over time.. The high adjusted R^2 of this last regression (0.97) shows that the model is indeed a good fit (subject to omitted variables, which will be explored below), allowing us to tentatively conclude that the Labor Code has worked as designed and lowered the total number of unemployed in Armenia.

Going beneath the total stock of unemployment, however, also yields interesting results. Disaggregating the stock of unemployed into males and females, we see that the Labor Code has had its primary effect on females in the workplace in Armenia. As Table 4 shows, the effect of the Labor Code on males is entirely insignificant, but the number of unemployed females (Table 5) has dropped during the years in which the Labor Code has been in force, in addition to the time trend. The explanation for this can follow quite logically from the purpose of EPL, which is to restrict job turnover: women are most likely to have greater turnover in Armenia (indeed, women are unemployed in the country at a ratio of between 2.5 – 3.0 to 1 as men), due to the emphasis of the culture on the family and the generally low-skill nature of jobs that women occupy in the country. However, a facet of the Labor Code not heretofore noted is that, while it increased the ease of firing workers, it also dramatically expanded maternity provisions and codified times that mothers may take off and when they could and could not be terminated. In this sense, the EPL legislation that is the Labor Code made it more difficult to fire women, perhaps enabling them to keep their jobs when in earlier times they would have been terminated if they became pregnant. Another, equally plausible explanation for this result is that, given the increase in difficulty in hiring workers that the Labor Code imposed, more women entered the informal than formal

sector, thus showing a drop in unemployment as women dropped out of the workforce.[17]

Keeping in line with our analysis above, and following in the footsteps of Wolfers, it is more interesting to examine the flow of workers into and out of employment and the formal labor market, in order to ascertain EPL effects as they are designed. Armenia's labor market has been shrinking ever since independence, with migration and demographic trends combining to shrink the amount of the economically active population. This trend has passed through to the number of employed in the country, which has remained stagnant around the 1.1 million mark from 2004 onward. A first analysis on employment flows will utilize the total amount of employed in the country over seasons to measure flows in and out of the workplace, subject to data limitations and problems in the series.[18] Within Armenia's overall decline in the active population and lack of change in the number of employed, Table 6a shows that the Labor Code has had a positive and significant effect on the absolute value of labor flows in and out of seasonal employment, meaning that the Labor Code contributed to increased turnover in the Armenian labor market. However, analyzing the direction of the flows shows that it was almost entirely one-way, with people exiting the labor force instead of entering it (Table 6b, with Labor Code dummy just barely insignificant at the 10% level). This comports well with the World Bank's assertion that the Labor Code increased the ease of firing in Armenia while increased the burden on hiring!

Another indicator of employment flows is the number of vacancies advertised with SESA, which keeps monthly records of jobs advertised both at the beginning and end of the month. The raw data shows that the absolute number of vacancies from SESA has held fairly steady over the past decade, from a low of just over 500 in the agency's early years to a high of 1,580 in November 2006 before settling down closer to the mean of just over a thousand a month. A quick analysis of the change in vacancies year on year from 2000-2008 (latest data available), however, shows that vacancies have been growing with a slightly faster and slightly significant pace in Labor Code years (Table 7). Does this mean that there are more people being hired in the face of EPL legislation? In order to test this effect, it appears that the change in vacancies over the month would presumably reflect jobs that were filled and removed, while those that remained at the end of the month were not (the difference between the two numbers acting as a metric for job-matching efficiency in Armenia). Observing the difference in

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[17] Unfortunately, the lack of disaggregation of statistics on the economically active workforce makes this hypothesis, for the moment, untestable.

[18] The analysis on seasonal employment flows contains years from 2000-02, 2004-2007, and 2009-10, with the years 2003 and 2008 omitted. The reason for this is that 2003 data from the National Statistical Service (NSS) of Armenia represents a severe series break; as part of routine maintenance and updating of statistics, the NSS revised its data in 2003 to take into account findings from the 2001 Census, which dramatically lowered the estimates of "employed persons" in the country. As the employment flow indicator is a measure of change of total employment, to include 2003 would have introduced a much larger than actual drop in employment a mere year before the Labor Code was introduced (but that would have only been a statistical, rather than actual, effect). Similarly, 2008 shows a similar structural break with a large employment spike that cannot, at yet, be explained (see Figure 1). Due to the statistical difficulties with this series, the results on aggregate employment flows should be taken with a grain of salt.

vacancies tells a different story than our first supposition, that increased vacancies means there is increased employment flows under the Labor Code (Table 8): while the absolute number of vacancies may be increasing, the difference between the beginning and the end of the month has been decreasing during the period the Labor Code has been in existence, meaning that fewer jobs are being filled.[19] Once again, this supports the belief that the Labor Code has made it easier to fire but more difficult to hire workers in Armenia.

The flip side of employment flows is of course changes in unemployment (rather than just the stock, as examined earlier). Here, too, interesting pattern emerges as a result of the Labor Code. The total number of unemployed in Armenia has steadily decreased every quarter since 2000, but the rate of people leaving the unemployment rolls has markedly slowed since the Labor Code was passed in 2004 (indeed, as Figure 2 shows for quarter over quarter turnover, the unemployment rolls actually expanded in Q1 2006 and Q1 2007, as well as in 2008 due to global financial crisis). Table 9 shows the results of an equation using seasonal unemployment flows as the variable, with the added variable of average benefits paid to the unemployed (on the theory that larger benefits would stop people at the margins from entering the workforce). The results are in line with theory: as the Labor Code was put into law, the drop in the unemployment rolls slowed significantly, independent of benefits offered (indeed, the amount of benefits paid remains insignificant as an explanatory variable, even though benefits appear to have increased significantly during the Labor Code period, even when controlling for average wages and the number of unemployed – see Table 10). Put together with the stagnation in employment turnover seasonally, it appears that workers in Armenia may be keeping their jobs, but those who are on the outside are not moving into the workforce. This effect is exactly what is predicted by EPL theory, that EPL will benefit those who already have a job at the expense of those that are out of work.

This result overlooks a crucial fact, however, and this is, for the most part and noting the exceptions already mentioned, that unemployment rolls continue to decline in Armenia (see Figure 3). As noted above, it would appear that the people climbing out of unemployment do not seem to be climbing into jobs, as there is no corresponding sustained growth on the employment side to the continual drop in unemployment (Figure 3 shows a slight tick upward in employment since 2004, but high variability over seasons and years). Thus, with employment turnover seemingly going on one direction (more firings, less hiring), less people entering the workforce, and less people filling vacancies advertised, but in the presence of continuously declining unemployment, one can only surmise one of two plausible explanations: people are leaving the workforce for the informal sector, or they are leaving the country entirely.

A case can be made for both of these hypotheses given Armenia's recent history. Migration from the country is substantial, with the population of the country decreasing steadily over the period of independence, with a large drain during the immediate post-independence years and during the war with Azerbaijan. However, much of the "brain drain" observed in Armenia appeared to have occurred already, and during some of the

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[19] This result is somewhat paradoxical, for it shows that employer demand is growing, albeit at a slow pace, but that the suppliers of labor are not taking the positions. This can show either a mismatch in the labor force in Armenia (a high probability), but can also suggest the issue of increased informality, which will be explored more below.

Labor Code years, there was actually a mild inflow of Armenians into the country. An analysis of the Labor Code's effect on migration statistics (obtained from the Ministry for Territorial Administration) shows a negative correlation between migration and EPL, but it is almost wholly statistically insignificant (see Table 11). This insignificance continues to hold for quarterly and monthly data, for migration flows, and controlling different seasons (controlling for seasons makes the Labor Code dummy entirely insignificant, while spring has a significant negative effect on migration).

Given this lack of evidence in migration, where is Armenia's workforce going? It is our hypothesis that the Labor Code has contributed to workers leaving (or being fired from) their jobs, but the drop in flows into unemployment, combined with the lack of jobs being filled, suggest that the unemployed are going into the informal sector, due mainly to the new difficulties imposed by EPL, rather than entering new positions in the formal economy. Of course, measuring the informal economy is a difficult task, and when it is done, it tends to occur on an annual, rather than monthly or seasonal, basis. The NSS calculates hidden employment in the country at approximately between 22 and 26% annually (latest figures showed 22.9% hidden unemployment in 2005 and 24.8% in 2006), but this rough estimate may be missing the trend that we observe here, especially at the seasonal level. Clearly, further research and more accurate data is necessary to validate this hypothesis.

6.2   Fixed-Effects Regressions

As noted above, the high likelihood of omitted variable bias in these regressions means that our results according to ordinary OLS means may be spurious, and thus a check on the robustness of results utilizing a fixed-effects specification (Equation 2) is necessary. The results of the fixed-effects regressions are shown in Tables 12 through 18, and also reveal interesting effects of the Labor Code.

In the first instance, observing the difference in total unemployment month over month (Table 12), the Labor Code continues to show slight negative significance, as in Table 3, although at a lower magnitude. This confirms that the Code is associated with a slight reduction in unemployment (in this case, unemployment changes over each month), something that comports with the EPL theory that there would be less turnover in the presence of stricter legislation. Table 13 also confirms the relative insignificance of the Labor Code to male unemployment, while Table 14 shows that, even with a fixed-effect specification, the Labor Code has resulted in lower female unemployment. One of the more interesting results of the fixed-effects regressions on the two gender subsets, however, is the effect of taxation: unlike in Tables 4 and 5, where higher tax wedges were strongly associated with higher unemployment across sexes, in Table 13 we can see this is the case with males but Table 14 shows that this is not the case for females. Indeed, the difference in the tax wedge shows a strong negative correlation for women, meaning that as the tax wedge incrementally increases, unemployment drops. This apparent paradox can also perhaps be explained by a movement from formal to informal employment, if workers formerly classified as "unemployed" remove themselves from the economically active population.

Tables 15a and 15b repeat the OLS analysis on seasonal flows into and out of employment (as shown in Tables 6a and 6b) but with a fixed-effects specification.

Utilizing this specification shows even more striking results than in the ordinary regression, as the absolute effects of the Labor Code retain their positive sign and magnitude, confirming that overall flows have increased during the Labor Code years. And, also confirming the results of the OLS regression on the direction of employment flows, Table 15b shows that the Labor Code has indeed been significant in increasing flows out of employment; a negative and significant correlation exists between the existence of the Labor Code and the number of people who have left the employment rolls. While, as noted above, there may be underlying problems with the data series, these results at least show that the Labor Code may have increased turnover in one direction.

Tables 16 and 17 focus once again on SESA's vacancies as a proxy for labor market movement, and mirror the results from the OLS regression. Table 16 shows that, while utilizing fixed-effects, the significance of the Labor Code in increasing vacancies has strengthened somewhat, with the tax wedge's dampening effect also remaining significant. In regards to the turnover of vacancies over the month (Table 17), the Labor Code retains it negative sign but not its significance, suggesting that other factors may be at play for how changes in intra-month employment flows play out.

Finally, Table 18 shows the fixed-effects specification for seasonal unemployment flows, mirroring Table 9's results (indeed, like in previous regressions, the flows indicator is itself already a differenced variable, making the original OLS specification partially-differenced). The Labor Code retains its negative significance, showing that the drop in unemployment rolls did actually slow as a result of the institution of the Code, while other variables remain insignificant. Indeed, the only new development in the fixed-effects regression for seasonal unemployment flows is that the trend variable has changed its sign and become significant, even when controlling for the effects of the change in legislation and change in taxation and output, showing that the passage of time corresponded with greater flows into and out of unemployment. The possible explanation for this change in direction is that the fixed effects specification did what it was designed to do, and removed an unobserved variable that was influencing both unemployment and time effects.

7. Conclusions

The effect of employment protection legislation is ambiguous in economics literature, but earlier studies have disaggregated the effects of EPL into a stock and a flow component, with the purpose of EPL legislation structured to dampen worker flows. Our analysis, utilizing both OLS and fixed-effects specifications, confirms these earlier studies done on EPL, showing that overall unemployment in Armenia appears to not have been affected but employment flows over seasons have changed significantly since the Labor Code was adopted, weighted heavily towards firing but not towards hiring of workers.

As noted above, data in Armenia is a great limitation, and with time and the amassing of a greater time series, along with the sponsorship of more and better labor force surveys, more research can be undertaken on the effect of EPL. In particular, the persisting question of vanishing workers, and the extent of informality in Armenia after the institution of the Labor Code, is a large area that remains relatively unexplored (similarly, the resolution of data issues regarding the total extent of "employed" in

Armenia can come about through better quantification of the informal economy). The data limitations shown in official versus unofficial measurements of unemployment also remain problematic, and with better estimations of actual unemployment (including, again, the deep informal sector), the hypothesis presented in this paper can be better tested.

Beyond these issues, this first attempt to quantify the labor market in Armenia has shown that in just a few short years, the Labor Code has had a significant impact on the flow of workers across seasons. However, the impact that the Labor Code has had on the labor market, especially in regards to turnover, is not necessarily the optimal outcome for Armenia, as unemployment continues to remain at very high levels. The relative underdeveloped state of the Armenian economy argues that perhaps greater turnover is to be welcomed, especially in the area of hiring, and the results obtained in this paper argue for a loosening of restrictions of some provisions of the Labor Code (as noted above, this analysis has not attempted to show the specific aspects of the Labor Code that have caused the most difficulty in worker flows). In a country with a tight labor market and fledgling labor market institutions, it would make sense to worry less, from a policy standpoint, about turnover, and more about broader job creation and encouraging businesses to hire.

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Appendix: tables

Table 1 - Theoretical Effects of Different Types of Labor Legislation

Type of EPL	Employment Effect	Wage Effect	Theoretically Dominant effect
mandated overtime pay	slightly negative	slightly positive	neutral
occupational safety and health	neutral	negative	wage
maternity leave	negative (for women)	slightly negative	employment
restrictions on firing workers	negative	neutral	employment
vacation restrictions	neutral	neutral	neutral
collective bargaining	negative	positive	employment
Hiring restrictions (contract rules, etc.)	negative	neutral	employment
mandated severance pay	neutral	negative	wage

Table 2 – Changes in Flexibility due to the new Labor Code

	pre-Labor Code	post-Labor Code
	2004-05	**2006-07**
Difficulty of hiring index	17	33
Rigidity of hours index	40	40
Difficulty of firing index	50	20
Rigidity of employment index	36	31
Firing costs (weeks)	17	13

Source: World Bank Doing Business Report, 2005 and 2007. Higher numbers for the index means more rigidity, while lower numbers indicate more labor market flexibility.

Table 3 - Sensitivity Analysis and Results of OLS Monthly Unemployment Analysis

Dependent Variable: Total Number of Unemployed				
	1	**2**	**3**	**4**
Labor Code Dummy	-53.20	-13.48	-7.28	-4.01
	20.31	4.27	2.47	2.12
Time		-0.63	0.47	-0.15
		14.58	6.20	2.76
Output Gap			-0.0001	0.00
			3.58	8.07
Tax Wedge				383.57
				13.31
C	138.33	156.16	167.01	44.07
	71.65	92.04	57.43	4.68
N	127	127	123	123
Adjusted R^2	0.71	0.91	0.93	0.97

Note: Absolute value of t-statistics under coefficients

Table 4 - Labor Code Effects on Male Unemployment

Dependent Variable: Total Number of Unemployed Males	
Labor Code Dummy	-0.32
	0.37
Time	-0.06
	2.39
Output Gap	-0.0001
	8.32
Tax Wedge	187.32
	14.27
C	-0.25
	0.06
N	123
Adjusted R^2	0.97

Note: Absolute value of t-statistics under coefficients

Table 5 - Labor Code Effects on Female Unemployment

Dependent Variable: Total Number of Unemployed Females	
Labor Code Dummy	-3.69
	3.31
Time	-0.09
	2.83
Output Gap	-0.0001
	7.25
Tax Wedge	196.25
	11.52
C	44.32
	7.96
N	123
Adjusted R^2	0.97

Note: Absolute value of t-statistics under coefficients

Table 6a - Seasonal Employment and the Labor Code

Dependent Variable: Absolute Value of Seasonal Employment Flows	
Labor Code Dummy	8.72
	2.68
Time	0.39
	3.05
Output Gap	-0.002
	4.43
Tax Wedge	-190.69
	1.85
C	83.81
	2.52
N	77
Adjusted R^2	0.24

Note: Absolute value of t-statistics under coefficients

Table 6b – Effects of EPL on the Direction of Employment Flows

Dependent Variable: Direction of Seasonal Employment Flows	
Labor Code Dummy	-8.72
	1.81
Time	0.38
	1.97
Output Gap	-0.002
	0.32
Tax Wedge	214.44
	1.4
C	-75.13
	1.52
N	77
Adjusted R^2	0.12

Note: Absolute value of t-statistics under coefficients

Figure 1 - Absolute Quarterly Employment Turnover in Armenia, 2004-2010 (in thousands)
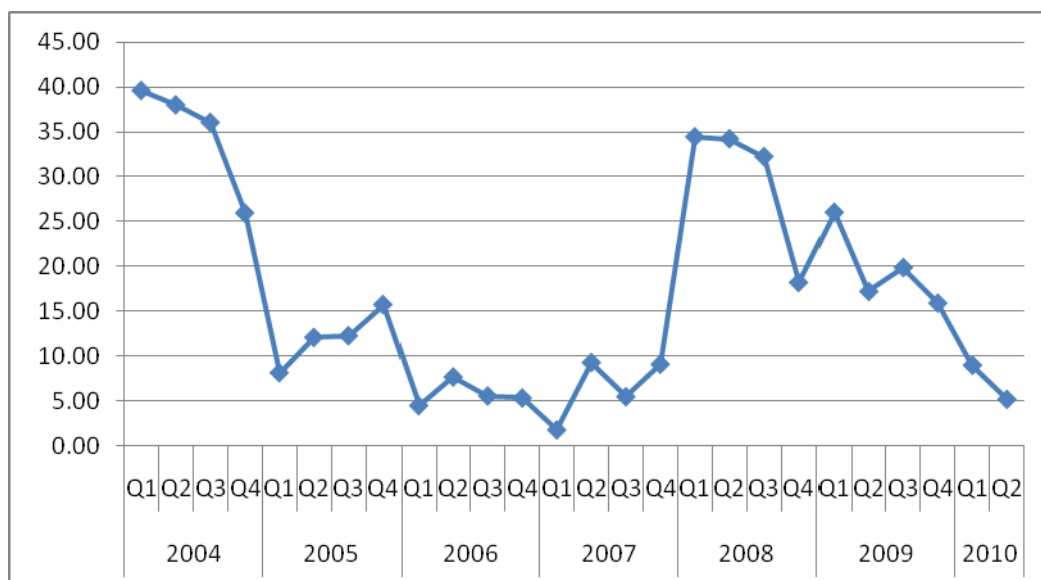
The chart shows the difference in seasonal employment over quarters: thus, the number for Q1 2005 shows the absolute value of the change between employment in Q1 2005 and Q1 2004.

Source: NSS

Table 7 – Changes in Vacancies, Year on Year

Dependent Variable: Difference in Vacancies Advertised, Year on Year (beginning of period)	
Labor Code Dummy	208.00
	2.22
Time	7.99
	1.16
Output Gap	-0.01
	2.39
Tax Wedge	-3009.55
	1.02
C	1391.21
	1.53
N	88
Adjusted R^2	0.14

Note: Absolute value of t-statistics under coefficients

Table 8- Change in Monthly Vacancies, Beginning versus End of the Month

Dependent Variable: Difference in Vacancies Advertised, Beginning and End of Month	
Labor Code Dummy	-61.23
	2.73
Time	8.47
	6.61
Output Gap	-0.26
	3.76
Tax Wedge	3548.24
	4.67
C	-1119.88
	4.24
N	96
Adjusted R^2	0.61

Note: Absolute value of t-statistics under coefficients

Figure 2 - Quarter over Quarter Unemployment in Armenia, 2000-2007
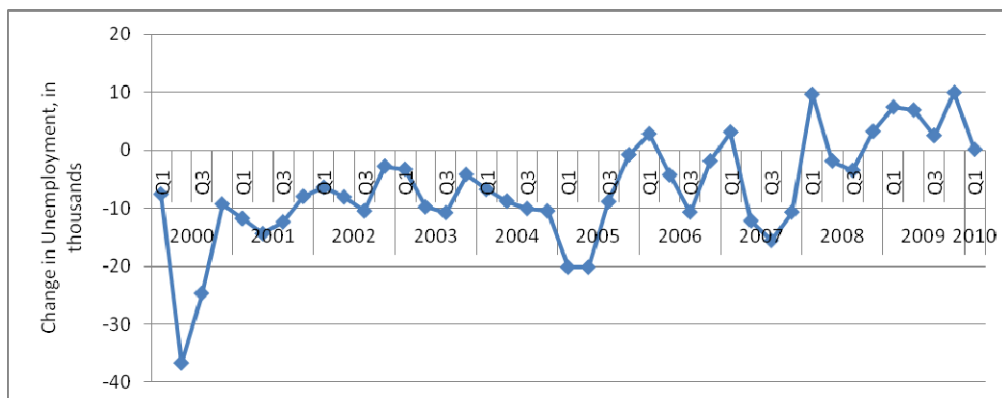
Source: NSS

Table 9 - Seasonal Unemployment Flows versus EPL

Dependent Variable: Seasonal Unemployment Flows	
Labor Code Dummy	-34.42
	3.84
Time	-9.44
	1.51
Output Gap	-0.0002
	0.78
Tax Wedge	965.09
	0.73
Average Benefits Received	-0.0004
	0.08
C	-361.90
	0.85
N	28
Adjusted R^2	0.51

Note: Absolute value of t-statistics under coefficients

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Table 10 - Determinants of Average Amount of Benefits Received in Armenia

Dependent Variable: Average Amount of Benefits Received Monthly (in drams)	
Labor Code Dummy	1039.53
	2.92
Time	124.67
	6.82
Output Gap	0.02
	0.30
Tax Wedge	61298.32
	7.41
Average Monthly Wage	0.08
	5.02
Total Number of Unemployed	46.39
	2.40
C	-28507.16
	11.24
N	123
Adjusted R^2	0.97

Note: Absolute value of t-statistics under coefficients

Figure 3 - Total Employment and Total Unemployment in Armenia by quarter, 2004-2010
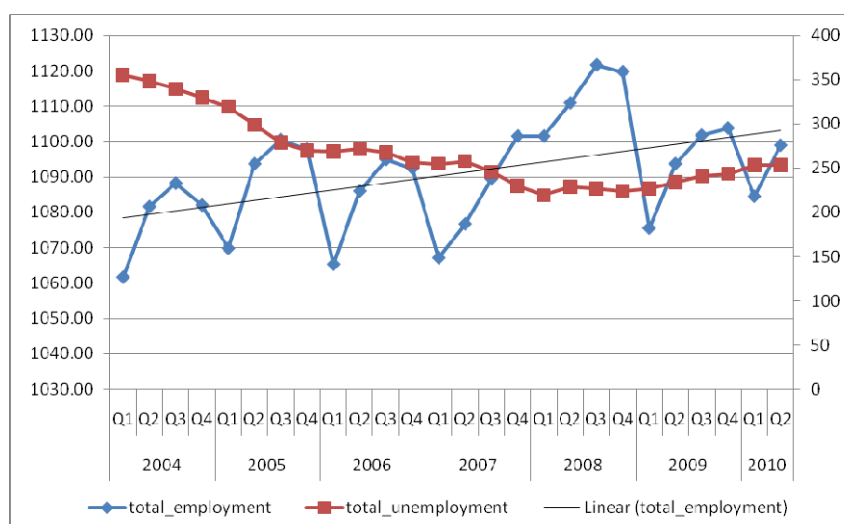
Left-hand scale is total employment, right-hand is unemployment. A linear trendline has been fitted for total employment.

Source: NSS

Table 11 - The Labor Code and Migration from Armenia

Dependent Variable: Migration Statistics (Balance)	
Labor Code Dummy	-403.13
	0.10
Time	-200.17
	1.58
Output Gap	0.07
	1.14
Tax Wedge	-196437.50
	3.12
C	57111.14
	2.80
N	122
Adjusted R^2	0.07

Note: Absolute value of t-statistics under coefficients

Table 12 – Results of Fixed Effects Monthly Unemployment Analysis

Dependent Variable: Total Number of Unemployed Differenced	
Labor Code Dummy	-1.01
	2.19
Time	0.03
	4.17
Output Gap	-0.00001
	0.46
Tax Wedge	-1.31
	0.09
C	-1.92
	7.00
N	123
Adjusted R^2	0.18

Note: Absolute value of t-statistics under coefficients

Table 13 – Differenced Labor Code Effects on Male Unemployment

Dependent Variable: Total Number of Unemployed Males	1	2
Labor Code Dummy	-0.27	-0.25
	1.16	1.10
Time	0.01	0.01
	3.03	2.65
Output Gap	-0.0001	-0.0001
	1.40	1.65
Tax Wedge	20.90	20.72
	2.71	2.70
Number of People Receiving Benefits		0.07
		1.52
C	-0.75	-0.69
	5.47	4.79
N	122	122
Adjusted R^2	0.21	0.22

Note: Absolute value of t-statistics under coefficients

Table 14 – Differenced Labor Code Effects on Female Unemployment

Dependent Variable: Total Number of Unemployed Females		
	1	**2**
Labor Code Dummy	-0.74	-0.71
	2.42	2.36
Time	0.02	0.02
	4.00	3.49
Output Gap	0.0001	-0.0001
	0.37	0.02
Tax Wedge	-22.21	-22.56
	2.18	2.25
Number of People Receiving Benefits		0.13
		2.23
C	-1.17	-1.04
	6.41	5.54
N	122	122
Adjusted R^2	0.15	0.18

Note: Absolute value of t-statistics under coefficients

Table 15a - Seasonal Employment and EPL, Fixed Effects

Dependent Variable: Absolute Value of Seasonal Employment Flows	
Labor Code Dummy	8.63
	2.91
Time	-0.17
	2.69
Output Gap	-0.001
	2.85
Tax Wedge	171.86
	1.25
C	14.75
	5.29
N	77
Adjusted R^2	0.15

Note: Absolute value of t-statistics under coefficients

Table 15b – Direction of Employment Flows, Fixed Effects

Dependent Variable: Direction of Seasonal Employment Flows	
Labor Code Dummy	-11.75
	2.91
Time	0.2
	2.26
Output Gap	-0.0006
	2.46
Tax Wedge	159.7
	0.85
C	-6.31
	1.66
N	77
Adjusted R^2	0.16

Note: Absolute value of t-statistics under coefficients

Table 16 – Changes in Vacancies, Year on Year, Fixed Effects

Dependent Variable: Difference in Vacancies Advertised, Year on Year (beginning of period)	
Labor Code Dummy	246.12
	2.50
Time	-4.74
	2.35
Output Gap	0.01
	1.41
Tax Wedge	655.69
	0.16
C	173.05
	2.24
N	88.00
Adjusted R^2	0.04

Note: Absolute value of t-statistics under coefficients

Table 17- Change in Monthly Vacancies, Beginning versus End of the Month, Fixed Effects

Dependent Variable: Difference in Vacancies Advertised, Beginning and End of Month	
Labor Code Dummy	-27.62
	1.19
Time	2.36
	5.26
Output Gap	0.75
	1.52
Tax Wedge	-1195.77
	0.94
C	114.94
	7.79
N	95
Adjusted R^2	0.51

Note: Absolute value of t-statistics under coefficients

Table 18 - Seasonal Unemployment Flows, Fixed-Effects

Dependent Variable: Seasonal Unemployment Flows	
Labor Code Dummy	-36.68
	3.26
Time	2.98
	3.61
Output Gap	0.0001
	0.12
Tax Wedge	366.45
	0.90
Average Benefits Received	0.0002
	0.77
C	-74.44
	5.33
N	28
Adjusted R^2	0.52

Note: Absolute value of t-statistics under coefficients