

Volume 39, Issue 5, May 2011 ISSN 0305-750X

WORLD DEVELOPMENT
The multi-disciplinary international journal devoted to the study and promotion of world development

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Indexed/Abstracted in: British Humanities Index, CAB International, Current Contents, Geographical Abstracts, International Development Abstracts, Journal of Economic Literature, Management Concepts, PAIS Bulletin, Sociological Abstracts, Social & Behavioral Sciences, Social Science Citation Index. Also covered in the abstracts and citation database SCOPUS®. Full text available on ScienceDirect®

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doi:10.1016/j.worlddev.2010.09.017

The Impact of the Global Financial Crisis on Off-farm Employment and Earnings in Rural China

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Summary. — This paper examines the effect of the financial crisis on off-farm employment of China's rural labor force. Using a national representative dataset, we find that there was a large impact. By April 2009 off-farm employment reached 6.8% of the rural labor force. Monthly earnings also declined. However, while we estimate that 49 million were laid-off between October 2008 and April 2009, half of them were re-hired in off-farm work by April 2009. By August 2009, less than 2% of the rural labor force was unemployed due to the crisis. The robust recovery appears to have helped avoid instability.

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Key words — global financial crisis, off-farm employment, earning, rural, China, Asia

1. INTRODUCTION

There is a well known saying China, “*jihan qidaoxin*.” A rough English translation is: when peasants are hungry, they rebel.

Hence, it is unsurprising that when the global financial crisis halted production in factories across China, leading to lay-offs of large segments of the rural migrant labor force, Beijing's leaders were quick to recognize that this might not only be an economic crisis but a social one as well. Of China's more than 500 million-strong rural labor force, 265 million people were estimated to have off-farm employment in the mid-2000s (Zhang, Huang, Li, & Rozelle, 2008). Of these, more than half had left their hometown to labor in the workplaces that sprawl across China's eastern coast and large municipalities (Kong, Meng, & Zhang, 2009, chap. 12). What would happen if too many of China's rural residents lost their jobs?

Anecdotal reports only heightened concerns. For example, in October 2008, the night-flight of one textile factory owner in Shaoxing, a city 100 miles from Shanghai, left 4,000 workers unemployed and \$200 million in bills unpaid (Xiao, 2008). His former employees, finding the factory gates bolted and their erstwhile employer nowhere in sight, erupted in protest. In other places, laid-off migrant workers had no option but to return to their hometowns (Johnson & Batson, 2009). Some decided to return to their villages and to begin farming again. However, there were cases reported in the media where individuals returned to their home villages only to create tension and conflict with the tenants that had been farming the land while the migrants had been living and working in some far away city (Yang, 2008).

Unfortunately, there is little systematic information available to China's top leaders and economic planners. China's policy makers require data on the number of laid-off and/or

unemployed rural workers, and information about the consequences of job loss for workers in order to gauge the seriousness of the crisis. The estimates that do exist concerning the impact of the crisis on rural labor range widely. One analyst projected that 12 million workers would be laid-off (Sheng, Wang, & Yan, 2009) and another placed the estimate at 20 million (Chen, 2009). The nature of the reporting, the definitions of “impacts” and sources of the data, however, were not always clear.

Somewhat surprisingly given the importance of the question, there have not been many independent attempts by researchers to estimate the impact of the financial crisis on China's rural labor force. The existing research to date in this area faces data issues or other shortcomings. For example, Kong *et al.* (2009) used factory data to estimate lay offs. Relying on factory data alone, however, fails to account for labor market flexibility: workers may have lost their jobs, but found others elsewhere. This, of course, is the problem of measuring layoffs when one is also interested in unemployment. Enumerating workers who are still in the factories makes it impossible to monitor the status of those who left the factories. There are also questions of representativeness.

Another paper (Wang, Zhang, Cheng, & Hou, 2009) estimated employment using data derived from a nation-wide dataset. The paper also reported employment rates of rural individuals in the sample. However, the paper made no effort

* The authors acknowledge the financial support of Chinese Academy of Sciences (KSCX1-YW-09-04 and KACX1-YW-0906) and World Bank (Knowledge for Change Program, RF-P116739-RESE-TF094568). The results presented in this paper are entirely those of the authors. They do not necessarily represent the views of their affiliated organizations or member countries. Final revision accepted: September 30, 2010.

to measure the full impact of the crisis by comparing actual employment to what employment rates would have been under a “business as usual” counterfactual. In addition, there was no attempt to track exactly what happened to those that were laid off from their jobs.

For their part, the National Bureau of Statistics of China (NBSC) also conducted a survey on employment at the end of 2008 (NBSC, 2009). Released in March 2009, the report suggested that 23 million migrant workers were out of a job. While important, this report suffered from several shortcomings. First, it was conducted early in the financial crisis and, as such, did not pick up the adjustments made by laid off workers. Second, the migrant segment of the labor force also only represents half of the rural off-farm labor force. The report did not report on disaggregated findings from the data or answer the question about who was hurt and who was not hurt.

The overall purpose of our paper is simple. This is a mostly descriptive paper that relies primarily on a nationwide dataset that was collected in May 2009 on rural households (and households from the same sample villages that moved to the city since 2000). The broad goal of the paper is to document the effect of the financial crisis on the rural labor force in China. To meet this general goal, we have four specific objectives. First, we seek to compare the difference between the actual off-farm employment rate and the off-farm employment rate under the assumption of business as usual (BAU—a counterfactual of what off-farm employment would have been in the absence of the global financial crisis). Second, we estimate the impact on the monthly earnings of those that did not lose their job. Third, we sketch profiles of both those that tended to be hurt and those more likely to have kept their jobs. Finally, we track the progress of those who were laid off and document their progress in finding new employment. To achieve this final objective, we rely not only on the May 2009 data, but also a set of follow-up interviews conducted in September 2009. Ultimately, we want to provide policymakers inside and outside of China with an accurate picture of China’s response to the global crisis, helping the world distinguish selected anecdotes and rumors from a representative picture of labor force adjustment.

To meet these goals, the rest of the paper is organized as follows. The next section describes the data. The following section uses the data to document the impacts of the financial crisis on employment and off-farm earnings. The third and fourth sections report the correlates of personal characteristics with unemployment and trace the plight of those that were laid off between September 2008 and April 2009. A concluding section summarizes our findings.

2. DATA

The data for this study were collected as the 2008–9 wave of a panel dataset. The dataset includes information from 58 randomly selected villages in 6 provinces of rural China selected as representative of China’s major agricultural regions.¹ Henceforth, we call this dataset the 2008 China National Rural Survey, or 2008 CNRS dataset.² To reflect accurately varying income distributions within each province, one county was selected randomly from within each income quintile for the province, as measured by the gross value of industrial output. Two villages were selected randomly within each county. The survey teams used village rosters and our own counts to choose twenty households randomly, both those with their residency permits (*hukou*) in the village and those without.

A total of 1160 households were surveyed (6 provinces \times 5 counties \times 2 villages \times 20 households—minus the 40 households in two earthquake damaged villages in Sichuan).³ When we aggregate our data to produce national estimates, we weight according to the population of the province (and its region).

The 2008 CNRS project team gathered detailed information on a wide number of variables covering many household activities. In particular, there were several blocks of the survey that focused on recording information on off-farm employment, wages and activities of respondents who did not have off-farm employment. Because we wanted to be able to estimate a counterfactual, “business as usual” (henceforth BAU) scenario, a nine-year employment history form was completed for each household member and each child of the household head. For each year between 2000 and 2008, the questionnaire tracks the individual’s participation in off-farm employment, the main type of off-farm work performed, the residence location while working within or outside the village, the location of off-farm employment, and whether or not each individual was self-employed or earning a wage.⁴

For three reasons, we also collected detailed monthly labor histories for a 24 month period: (a) the timing of the financial crisis (started in September 2008, which was in the middle of the calendar year); (b) the nature of labor flows in China (which often are fluid and involve substantial job switching—even within a year or shorter time period); and (c) the timing of the survey (conducted in May 2009, which was also in the middle of the calendar year). Had we only collected data on a rural individual’s annual employment status, it is possible that we would have missed important employment/unemployment dynamics that occurred after the financial crisis, and which are central to this study. Therefore, enumerators also asked respondents to report their employment status month by month from May 2007 to April 2009. When used in conjunction with nine years of annual employment history data, these data enabled us to look at three types of trends: (a) within year employment trends, including the trend between the onset of the financial crisis (September 2008) and the last month of our data (April 2009); (b) month on month changes in off-farm employment; and (c) predictions of the BAU scenario on a monthly basis for the months immediately before and immediately after (through April 2009) initial adjustment to the financial crisis.

The data set also included two other sets of variables that allow us to meet our research objectives. For each respondent who was employed off farm in both 2008 and 2009, he/she was asked about their average monthly earnings for 2008 and their average monthly earnings for 2009 (between January and April). Monthly earnings included both the earnings from wages, bonuses and any in-kind compensation, but excluding housing and meals. We also asked each individual about the average number of days worked each month and the average number of hours worked per day. These data allow us to track both monthly earnings and wages (in earnings per hour) of the individuals over time.

We also collected information that would allow us to characterize the respondent’s activities in the months after he/she left his/her off-farm job. During each month (between September 2008 and April 2009) the status of the respondent was recorded: working on the farm; doing house work (though not working in agriculture); not working but searching for a job; or not working and not searching.

Finally, there was a section of the survey form that collected data on each family member’s basic characteristics. Data were collected on characteristics such as each family member’s gender, age and educational attainment. Descriptive statistics for

Table 1. Descriptive statistics for selected variables used in the analysis of the rural China sample, May 2007–April 2009

	Sample	Mean (proportion)	Standard deviation
Off-farm employment	2,803	0.63	0.49
By sex			
Male	1,555	0.75	0.45
Female	1,248	0.48	0.50
By age group			
≤30 years	733	0.83	0.38
30–50 years	1,173	0.67	0.48
>50 years	897	0.38	0.48
By education level			
Elementary school or less	1,170	0.47	0.50
Middle school	1,302	0.72	0.46
High school or higher	331	0.81	0.41

Data source: Authors' own data (CNRS dataset).

overall employment rates and rates of employment by gender, age and education level are included in Table 1, rows 1–9.

3. THE GLOBAL CRISIS AND CHINA'S MACRO PERFORMANCE AND VULNERABILITIES

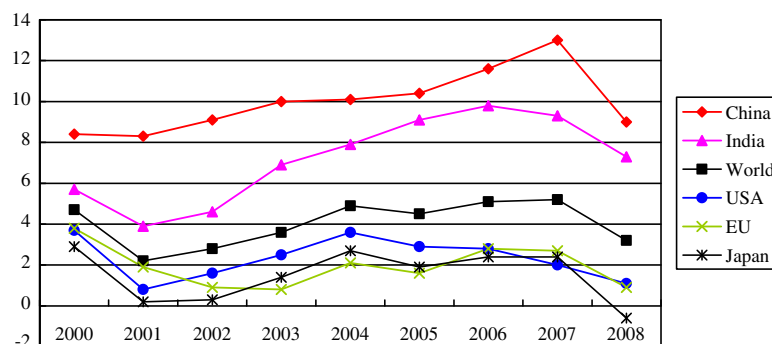
Between 2001 and 2007 the world economy grew steadily (Figure 1, Panel A). The major economies of the world, including those of the United States, the EU and Japan, registered healthy annual growth rates of 2% or more. India and China consistently saw steadily rising growth rates of between 4% and 12%. In fact, China's growth rate was so high in 2008

that during the first half of the year leaders took action to rebalance the economy (Kong *et al.*, 2009). Interest rates were adjusted upward, and bank reserve requirements were raised, both reflecting the government's commitment to prevent the economy from overheating.

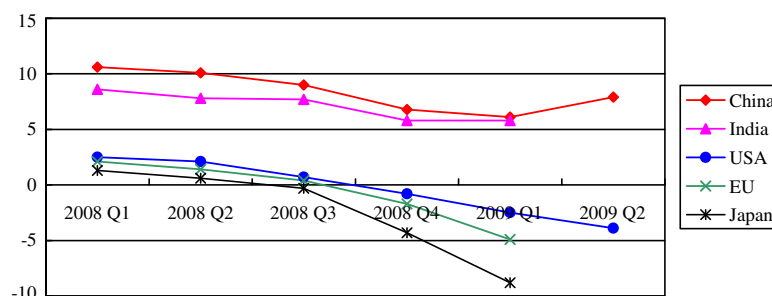
Events of September 2008 raised concerns that China would face a sharp drop in GDP. The global financial crisis changed the growth trajectories of all major world economies, plunging the United States, the EU and Japan into deep recession (Figure 1, Panel A). By the first quarter of 2009, annual growth rates were negative. Although the growth rates of India and China were still positive, they dropped steeply in both countries. In fact, compared to other major economies in the world, China experienced one of the largest changes in growth rates between 2007 and 2008.

Quarterly growth rates (between Q1 in 2008 and Q2 in 2009) show similar stories (Figure 1, Panel B). After staying high in Q1 and Q2 in 2008, quarterly growth rates of the United States, the EU and Japan fell, starting in Q3 in 2008. As the crisis grew worse in the first months after its onset, growth rates steadily worsened in Q4 in 2008 and Q1 and Q2 in 2009.

During this same time, China's quarterly growth rates also fell—although China's growth rates did not stay low. Between Q1/Q2 in 2008 and Q4 in 2008/Q1 in 2009 China's quarterly growth rates fell from more than 10 percent to around 6% (Figure 1, Panel B). During this time period monthly export orders fell from more than 120 billion US dollars to less than 70 billion US dollars (NBSC, 2009). In response to faltering growth, China's leaders responded with a bold stimulus package that expanded state bank loans, triggered massive waves of centrally-funded public investment projects and encouraged local governments to increase investments. It is likely that these moves contributed to the rise in China's growth rates in Q2 in 2009 over Q1 (Figure 1, Panel B).



Panel A: Annual growth rates of GDP (%), 2000 to 2008



Panel B: Quarterly growth rates of GDP (%) from Quarter 1, 2008 to Quarter 2, 2009.

Figure 1. Annual and monthly growth rates of GDP (%) in the selected countries, 2000–09. Data source: IMF (2009).

(a) *Off-farm employment effects*

In order to compare the difference between what actually happened in 2008 and 2009, we developed a method of predicting the counterfactual levels of off-farm employment in these years under a BAU scenario.⁵ To do so, we used our estimates of off-farm employment trends (based on data from 2005 to 2008) and extrapolated the time trends out to 2008 and 2009 under the assumption that the trends would have continued had there not been a global financial crisis. Although the trends appear to be linear, in fitting the trend we used the average annual growth rates in 2005–07 (2006–08) to estimate 2008 (2009).⁶

Under the assumptions embodied in our simple forecast model of BAU Figure 2, Panel A, shows the net impacts of the financial crisis on China's off-farm employment in 2008 and 2009. If the 2005–07 (2006–08) trend in off-farm employment had continued as BAU, the share of the rural labor force that had off-farm employment would have risen to 63% in 2008 (69% in 2009).⁷ Instead, in 2008 the share of rural labor force employed off-farm declined 62%, a drop of 1 percentage point compared to BAU. In 2009 (according to our analysis using annual data for forecasting the BAU point estimate—under the assumption that the fall in the first 4 months of 2009 would continue for the rest of the year), the share of the rural labor force employed off-farm would drop to 60%, more than 9 percentage points (9.1%) less than BAU. If the annual projections were correct, the difference between BAU and the actual, post-financial off-farm employment would have been 48 million laborers (i.e., 0.091×520 million).

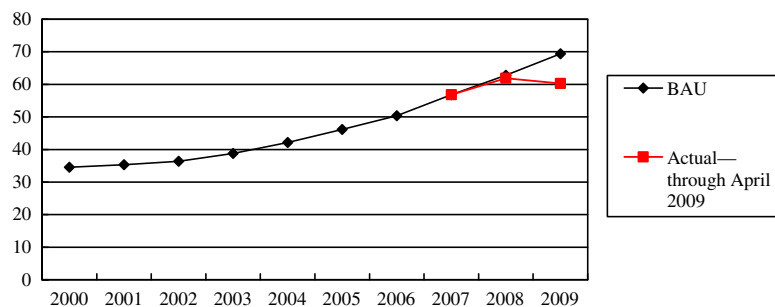
The same analysis conducted with data from south China (based on data from the samples in Zhejiang, Hubei and Sichuan) and north China (based on data from the samples in Liaoning, Hebei and Shaanxi) show that the financial crisis had a more severe impact on off-farm employment in the south

(Figure 2, Panel B). Using the same forecasting methods and assumptions (and relying on annual data), the difference in the share of the rural force that was employed off-farm between the 2009 BAU projection and the 2009 year-end (extrapolated) actual share is 9.7 percentage points. The difference in the north is estimated to be only 7.8%. This is consistent with the observation that the most severely hit industries were those associated with the export sector, which has a larger presence in south China.

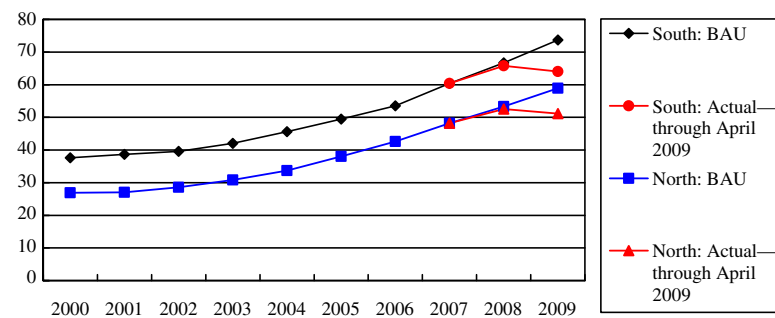
As discussed above, the monthly-based analyses are likely to be more helpful for analyzing the impacts of financial crisis on China's rural off-farm employment, and so we next use the extrapolated growth rates to predict a BAU estimate on a monthly basis after September 2008. To predict growth rates in monthly off-farm employment from September 2008 to April 2009 relative to the same month in the previous year, we used the average annual 2005–07 growth rates.

Under the assumptions of the monthly prediction exercise, the impact of the financial crisis on China's rural off-farm employment by April 2009 was less than the results for the entire year (which used an extrapolated estimate). This is because off-farm employment would have declined to a BAU of 57.8% of the rural labor force. Instead, due to the financial crisis only 51.0% of the labor force was working off the farm. This means that by April 2009, there was a gap between the BAU share and the actual share of 6.8 percentage points.⁸

What does this mean in actual employment terms? According to our data (and extrapolating to the national level), in September 2008 there were 279 million rural individuals working off the farm, while under the BAU scenario there would have been 301 million rural individuals working off the farm in April 2009 (which consists of a half year of growth, adjusted for the natural—or non-financial crisis related—seasonal differences between September off-farm employment and April off-farm employment). Instead, because of the financial crisis



Panel A: China



Panel B: South (top lines) and North China (bottom lines)

Figure 2. Share (%) of rural labor force with off-farm employment in China, actual and under the assumption of business as usual (BAU), 2000–09. Data source: Authors' own data (CNRS dataset).

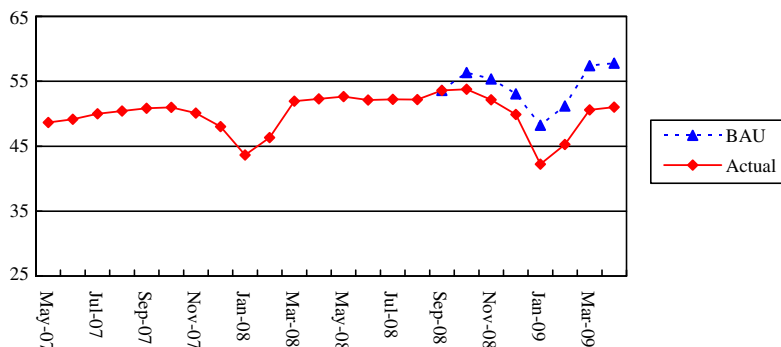
there were only 265 million rural individuals working off the farm in April 2009. In other words, the net impact of the financial crisis on the off-farm rural labor force affected 36 million rural workers (301 million minus 265 million = 36 million; this is consistent with the BAU-actual rate gap: $36/520 = 6.8\%$).⁹

The net impact figure, however, is not equal to the number of rural workers that was actually laid off. This number cannot be deduced from this net gap. The gap between the BAU scenario (April 2009) and the actual level of employment (April 2009) is affected by a number of components. First, the gap includes those that were laid off between October 2008 and April 2009 and did not find a job (*long-term laid-offs*). Second, the gap is also affected by the difference between the number of workers that were actually laid off between October 2008 and April 2009 and those that found a new job between October 2008 and April 2009, but had not been working off the farm in October 2008 (henceforth, the *re-hires*). Third, there is also a class of new workers that despite financial crisis were able to find a job between October 2008 and April 2009 (i.e., they were not working in September 2008, but, were working in April 2009—henceforth, *newcomers*). Finally, the BAU-prediction (for April 2009) includes rural individuals who did not find employment off-farm between October 2008 and April 2009, but would have if the financial crisis had not occurred (*delayed entrants*). According to our data, during the financial crisis (between October 2008 and April 2009), the number of long-term laid-offs (i.e., rural individuals that were laid-off after October 2008 and still were not working off-farm by April 2009) was 25 million, which was slightly larger than the number of newcomers (23 million).¹⁰

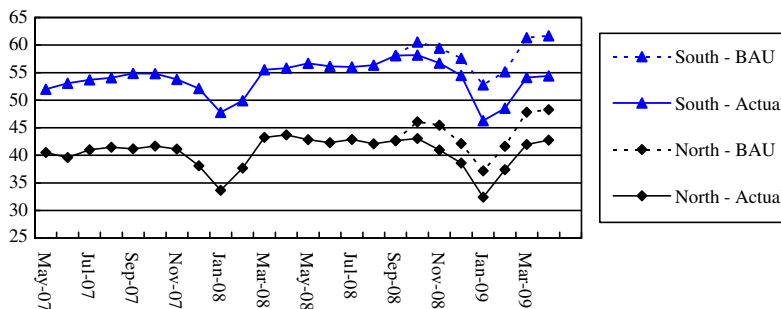
While it is difficult to see from Figure 3, Panel A, there is another important trend that is occurring with respect to the

difference between the BAU trend line and the actual rural off-farm employment trends. By assumption, since the global financial crisis did not begin until the end of September 2008, between May 2007 and September 2008 the BAU trend line and actual employment trend are the same. They begin to diverge in October 2008 and increase through the rest of the year (November and December 2008). In January 2009, there is a 6 percentage point gap between the BAU estimated share and actual off-farm employment share. This means that by January 2009 the net impact of the financial crisis was affecting 12.5% of those who should have been employed in January 2009 had the financial crisis not occurred (including, long-term layoffs and delayed entrants). The rapid fall in off-farm employment, as we defined it, demonstrates that many of the stories of large disruptions in rural labor markets were not unfounded. It is perhaps because of this, and the potential social unrest that might have occurred in its wake, that the government launched such a robust stimulus package in such a rapid fashion.

Although the initial fall in rural employment was striking, it is even more remarkable that the decline in rural off-farm employment was arrested quite quickly. It is true that the gap was still large in the first four months of 2009 (described above), but it was already beginning to narrow in percentage term. By April 2009 the gap between the BAU estimated share and the actual off-farm employment share was 6.8 percentage points, which means it was affecting only 11.7% of those that would have been employed under the BAU scenario. In the same way that China's second quarter GDP figures showed that the decline in growth had stopped falling and that growth was picking up again, rural off-farm employment also was showing the initial signs of recovery. In other words, China's economy was already showing signs of recovery as early as



Panel A: China



Panel B: South and North China

Figure 3. Monthly share (%) of rural labor force with off-farm employment in China, actual and under the assumption of business as usual (BAU), May 2007–April 2009. Panel A: China. Panel B: South and North China. Data source: Authors' own data (CNRS dataset).

the first and second quarters of 2009, less than six months into the global financial crisis.

(b) *Financial crisis and wages*

The effect of the financial crisis extended beyond those who lost their off-farm jobs (both re-hirees and long-term laid-offs) and those that were unable to find one (delayed entrants). Many of those that did not lose their job also found that their earnings fell. After rising in real terms between 2000 and 2008 (Park, Cai, & Du, 2010), monthly earnings for rural workers appear to have fallen. According to our data, the monthly earnings of the typical unskilled worker (who worked off-farm in both 2008 and 2009) was 1099 yuan per month during 2008. However, in January–April 2009, the same average unskilled worker was earning only 984 yuan per month. In other words, the monthly earnings of those workers that worked in both 2008 and 2009 fell by 10.5% between the two years.

The same trends during 2008–09 appeared throughout China's different regions, although the rate of the fall in earnings differed. In north China the average unskilled worker earned 1062 yuan in 2008. During 2009 the average wage fell to 842 yuan. This fall of more than 20% was higher than that for China overall. The average unskilled off-farm laborer's earnings also fell in the south. The decrease in the south, however, was only 7%, dropping from 1113 yuan per month in 2008 to 1037 in 2009.

The difference in the wage decline between North and South China (higher in the North than the South) is curious given the large decline in employment in the South when compared to the North. In roughest terms the changes in wages and employment in elasticity terms ($\% \Delta Q / \% \Delta P$) means that the labor supply elasticity of wages in only 0.4 in North China, while it is 1.4 in South China. One explanation may be that this is evidence of fragmented labor markets, which would have implications for studying regional patterns of labor markets.

However, it should be noted that there are many other things going on in China at this time. For example, in the run up to the financial crisis (the first half of 2008), rising resource and food prices had China's government concerned about inflation. In response, the government had raised interest rates and took measure to reign in bank lending (Yang, 2009). Because the North has more resource-intensive industries that almost certainly rely more on bank loans (*vs.* the labor-intensive industries of the South that are self-financed and often financed by non-bank sources), it is possible that part of the employment effect was due to other factors beyond the financial crisis. Unfortunately, it is beyond the scope of this paper to completely model these separate labor markets.

In addition, it should also be kept in mind that these are short run effects. It is well documented in the development literature that in the short run a lot of factors affect employment decisions beyond wages. For example, information obtained through connections among members of migration networks is important for facilitating job placement and lowering costs of migration (e.g., deBrauw and Giles, 2008a, 2008b). Hence, to the extent that there are different factors that are affecting employment in North and the South, one should not expect wages to equilibrate immediately across space.

It is difficult to pinpoint precisely why earnings fell. Was it due to a falling hourly wage or a fall in the number of hours worked? Unfortunately, we do not have information on the number of hours worked per month in 2008 and 2009 for the same workers who worked in both 2008 and 2009. However, when looking at the number of hours of worked per month for those workers for which the data are available, there is no statistical difference.¹¹

If the number of hours that were worked by workers each month remained the same, this means that the hourly wage (or daily or monthly wage) adjusted in rural China's off-farm labor market. If this were the case, it would be consistent with the reports of wage cuts in the press (Huang, 2009). It would also provide evidence that rural off-farm employment markets are remarkably flexible. The ability of wages to fall—and fall over a short period of time—may be another reason that China's off-farm employment trends already appeared to be beginning to rise again (between December 2008 and April 2009) relative to the worst month of the post-financial crisis period (December 2008).

4. ANALYSIS OF LAID-OFF RURAL WORKERS

In this section we focus on those workers that were laid off as a result of the financial crisis—both long-term laid-offs and re-hires. In this paper we assume that a worker was laid off due to the financial crisis if he/she were working in September 2008 and at some point of time between the months of October 2008 and April 2009 he/she lost their job. Of course, we know that this will be an overestimate of the financial crisis-induced lay-offs. There undoubtedly would have rural workers who would have been laid off if there had been no crisis. But the number of rural workers that were laid off between October 2007 and April 2008 was only a fraction (around 15%) of that in the same months after the crisis (October 2008 and April 2009). The first part of the section reports on the level of lay-offs. The next part analyzes the determinants of who was laid-off and who was not. Finally, we examine what those who were laid-off and who had not found a job by April 2009 were doing. This will help us estimate a rate of unemployment about seven months after the onset of the crisis.

When gauged against the total number of those employed in the off-farm employment sector in September 2008 (279 million), the number of workers that were laid-off in the first seven months of the global financial crisis is staggering. According to our data, 17.6% of those that had a job in September 2009 lost their job between the months of October 2008 and April 2009. Since more than half of the rural labor force was employed off-farm in September 2009, this means that 9.4% of the total rural labor force, or around 49 million workers, suffered a lay-off. There is no country in the world that experienced such a large rash of lay-offs in absolute terms; few suffered so much so quickly with the onset of the crisis.

Although the lay-offs came fast for all workers, we distinguish two distinct types of affected workers based on duration of dislocation: the long-term laid-offs and the re-hires. In fact, in April 2009 there were almost equal numbers of long-term laid-offs and temporary laid-offs. Of the 279 million rural laborers who were working off the farm in September 2008, 8.7% were re-hires (i.e., they lost their off-farm job after September 2008, but had already returned to work off farm by April 2009). During this same period 9.0% of China's rural laborers could be counted as long-term laid-offs. In other words, the long-term laid-offs were working off farm in September 2008, but were not working off farm in April 2009. Of the 49 million workers that had lost their jobs between October 2008 and April 2009, 24 million had already found a new job by April 2009.

(a) *Determinants of being laid-off*

So who suffered a lay-off? What were the characteristics of the workers that were part of the long-term laid-off population

in April 2009? To answer this question, we use both descriptive statistics and run a set of descriptive regressions. In the first regression we seek to explain the determinants of who was laid-off at any point after the financial crisis without regard to whether or not they had been re-hired by April 2009 (i.e., re-hires plus long term laid-offs). In the second regression, we focus on the determinants of being a long term laid-off). In our regression model, we include three determinants of being laid-off: gender; age; and years of education. The regression, which uses a probit estimator due to the limited nature of the dependent variable (yes–no), also includes a set of provincial dummy variables.

The descriptive analysis demonstrates that not all workers suffered the same (Table 2). While there is little evidence of a gender bias (17% of men and 18% of women were laid-

off—rows 2 and 3), there is a propensity for young and uneducated workers to experience lay-off. The share of the youngest workers (21%) and the share of the least educated workers (20%) that were laid off were higher than older and more educated workers (rows 4–9). When looking at the share of long-term laid-offs, it is interesting to note that while the least educated had the highest incidence of lay-off (13%—row 16), the older workers had a higher propensity to be unemployed in the long term (13%—row 15).

Results from the probit analysis are consistent with the findings of the descriptive evidence. Table 3, column 1, provides more evidence on likelihood of lay-off. Older workers were less likely to be laid-off than younger workers (row 2). Likewise, those workers that were more educated also were less likely to be laid-off after September 2008 (row 3). Women and

Table 2. Descriptive statistics for those in the rural China sample that were laid-off (and re-hired) between September 2008 and April 2009

	Sample	Whether lost off-farm job after September 2008 (1 = yes, 0 = no) ^{a,c}	Whether lost off-farm job after September 2008 and did not find a new one till April 2009 (1 = yes, 0 = no) ^{b,c}
Total	1,415	0.18(0.37)	0.09 (0.28)
By sex			
Male	946	0.17(0.37)	0.08(0.28)
Female	469	0.18(0.36)	0.10(0.29)
By age group			
≤30 years	529	0.21(0.39)	0.10(0.29)
30–50 years	629	0.15(0.35)	0.07(0.25)
>50 years	257	0.17(0.38)	0.13(0.34)
By education level			
Elementary school or less	420	0.20(0.40)	0.13(0.33)
Middle school	763	0.17(0.36)	0.07(0.26)
High school or higher	232	0.14(0.35)	0.07(0.27)

Data source: Authors' own data (CNRS dataset).

^aThis includes long-term laid-offs (those that were working off-farm in September 2008 and not in April 2009) and re-hirees (those that were working off-farm in September 2008, was laid-off, but, were reemployed off-farm by April 2009).

^bThis includes only long-term laid-offs.

^cStandard deviation in the parentheses.

Table 3. Estimated probit results of determinants of being laid-off of rural off-farm job in China due to global financial crisis between September 2008 and April 2009

	Once lost job in September 2008–April 2009		Once lost job and did not find a new one in September 2008–April 2009	
	(1)	(2)	(3)	(4)
Sex (male = 1, female = 0)	–0.006(0.023)	0.007(0.023)	0.007(0.017)	0.006(0.016)
Age (years)	–0.003***(0.01)	–0.002**(0.001)	–0.0005(0.0008)	–0.0002(0.0007)
Education (years)	–0.011***(0.004)	–0.010***(0.003)	–0.007***(0.003)	–0.007***(0.002)
Sector dummy (compared to commercial services)				
Industry		0.08**(0.04)		0.007(0.023)
Construction		0.13***(0.15)		0.01(0.03)
Agriculture		0.24***(0.08)		0.14***(0.07)
Others		0.03(0.04)		0.006(0.023)
Wage-earning (compared to self-employed)		0.13***(0.02)		0.10***(0.01)
Province dummy (compared to Hebei)				
Shaanxi	0.08*(0.05)	0.05(0.04)	0.02(0.03)	–0.003(0.022)
Liaoning	0.01(0.04)	–0.02(0.04)	–0.005(0.026)	–0.02(0.02)
Zhejiang	0.03(0.04)	0.02(0.04)	–0.06***(0.02)	–0.06***(0.02)
Sichuan	0.13***(0.05)	0.09**(0.05)	0.03(0.03)	0.002(0.024)
Hubei	0.10***(0.04)	0.08**(0.04)	0.006(0.024)	–0.001(0.021)
Observations	1,415	1,415	1,415	1,415

Note: Standard errors in parentheses. *, **, and *** represent statistically significant at 10%, 5%, and 1%, respectively.

men, however, had an equal chance of losing their jobs (row 1). Hence, the young and undereducated were those that suffered the most. In fact, this is not surprising given the fact that the export sector, a sector that employed a lot of young, unskilled workers, was almost certainly where a disproportionate share of the lay-offs occurred.

The sluggishness of the recovery of the export sector also seems to explain that that same set of factors explain long-term unemployment (Table 3, column 3). The uneducated laborers are those most likely to be laid off after September 2008 and still be without a job by April 2009. There also is no obvious difference across genders.

Beyond the simple model (presented in columns 1 and 3), columns 2 and 4 present the findings of a new regression model which adds three variables to account for the sector of employment (industry; construction; and other) and one variable that measures whether the individual was working off the farm for a wage or was self employed. According to the findings, the first thing to note is that our original findings (on gender, age and education) do not change. The signs and levels of significance are more or less the same when we run the full or partial model (columns 1 *vs.* 2, rows 1–3; columns 3 *vs.* 4, rows 1–3). Second, the results show that workers in the industrial and construction sectors suffered more than those working in the service sector; wage earners were hurt more than the self employed (columns 2 and 4, rows 4–7).

(b) *Many laid-off; few unemployed*

In Figure 4, we show the share of long-term laid-offs who were working off-farm (by definition) as of September 2008, with the left hand axis at 100%. This share is bounded at zero on the right hand axis (also by definition, since long term laid-offs are those that were still laid-off in April 2009—so they were not working off-farm). Since the graph space accounts for the time allocation of all 25 million long term laid-offs represented by the sample, the graph documents how the long term laid-off workers shifted their employment in the wake of the crisis.

Most long-term laid-offs returned to their village. By April 2009, 67% (or two-thirds of the long-term laid-off) returned to their villages and were working either at farming or in non-farm domestic work. More than half (56%) of the long term laid-off workers were farming—in all cases on their own plots of cultivated land (i.e., on the plots that the village had allocated to them under a 30-year use rights contract). Eleven percent of long term laid-off workers were working in

the home, but not farming. These respondents told us that they were not looking for off-farm work. Most of those working in the home (and not farming) were young women with children. Interestingly, although the press reported anecdotes of cases where laid-off workers went home and encountered some sort of conflict when attempting to return to farming, none of our respondents reported problems of this sort when asked in April 2009.

It is important to emphasize that those long-term laid-offs who were either working on the farm or working around the house (and not searching for off-farm employment) were not *unemployed*. Most were working as self employed farm operators. Others were working in the home and were not searching for a job. Only 33% of the long-term laid-offs were still out searching for a job. As this was one-third of the 9% (the share of those working off-farm in September 2008 that were long-term laid-offs), this means that about 8.3 million workers (1/3 of 25 million) were unemployed in April 2009 as a consequence of the global financial crisis. In other words, the unemployment rate of the rural economy in April 2009 was 1.6% (8.3 million/520 million). Hence, access to contracted land that appears to have allowed many of those that were laid off to continue to have access to (own-farm, self) employment. As seen by the decisions of many laid-off workers, the flexibility of China's rural economy is based in part on the fact that almost all households have access to contracted land.

By definition, however, this means that there were some that were hurt. Specifically, households/individuals that lost access to the land that they had been farming prior to the return of the unemployed necessarily were less well off. Who were these households/individuals? We do not have data on all individuals in the village so we are not able to measure the effect on everyone. However, our survey did ask about rental contracts between landlords (contractors) and tenants (contractees). While rental land accounts for almost 20% of cultivated area in 2008, the vast majority of the land was rented to either family members or to other households in the same village that are considered "friends." Indeed, according to our data, in 2008 96.3% of rental contracts were between family members or friends. This does not dampen the negative impact on contractees when rented land was taken back. But, it almost certainly allowed for more amicable settlements and renegotiations. In addition, it should be noted that, according to our data, 92% of rental agreements are either specified for one season or one year. Because of this, also, there was little reason to believe that there was tension over the breaking of an agreement.

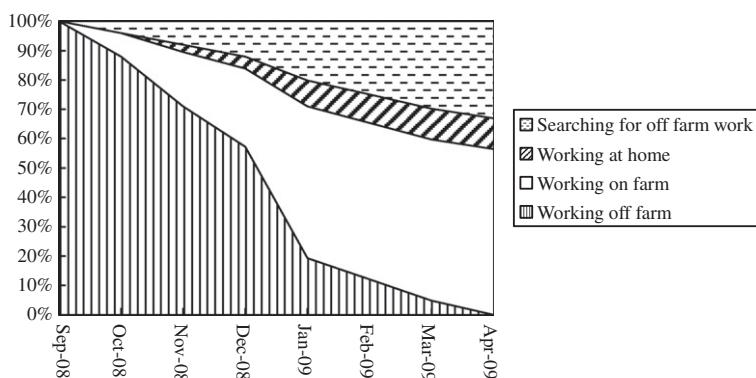


Figure 4. Tracking the employment/job search status of rural off-farm workers who have become long-term, laid-offs after global financial crisis, September 2008–April 2009 in China. Data source: Authors' own data (CNRS dataset).

Table 4. Results of off-farm job search between May 2009 and August 2009 for the long-term laid-offs (those who lost off-farm jobs after September 2008 and did not find new ones by April 2009) from August 2009 survey of CNRS respondents

	By August
Total sample size (total number of long-term laid-offs in our sample)	124
Share of those with off-farm jobs (%)	30
By sex	
Male	33
Female	25
By age group	
≤30 years	43
30–50 years	24
>50 years	17
By education level	
Elementary school or less	23
Middle school	32
High school or higher	45

Data source: Authors' own data (CNRS dataset).

5. RECOVERY: ONE YEAR AFTER THE CRISIS

Nearly one year after the financial crisis started, the CNRS data show that China is far down the road to recovery from the financial crisis—at least in terms of rural employment (Table 4). In total, 124 individuals who were in the labor force and working off farm in September 2009 had not found a job by April 2009 (row 1). These are the long-term laid-offs in our sample. By August 2009, when we re-contacted these individuals, 30% more of them had found a job off farm (row 2). This means that the contribution to the rural unemployment rate due to the financial crisis was down to only 1.5–2 percent (about 8–10 million individuals). Clearly, the scare of potential instability driven by rural unemployment posed for China by the Global Financial Crisis was largely dampened by 11 months after the onset of the crisis. This study's findings of continued recovery in employment are supported by data reported by the National Bureau of Statistics China (NBSC, 2009).

The data suggest that the profile of those who could not find a job by August 2009 is close to that of individuals who had never left the village—female, older and uneducated (see deBrauw, Li, Liu, Zhang, & Rozelle, 2008). While 33% of male long-term laid-offs found a job between April 2009 and August 2009, only 25% of women did (rows 3 and 4). The difference between those of different age and education groups were even larger (rows 5–10). While 43% of those under 30 had found an off-farm job by August 2009, only 17% of those over 50 had. Forty-five percent of long-term laid-offs with more than a high school education had found a job. In contrast, only 23% with less than a middle school education had found off-farm employment.

6. CONCLUSION

The immediate shock to rural off-farm employment that occurred with the onset of the global financial crisis was large. More than 49 million rural workers lost their jobs. However, the size of this shock is unsurprising. As a producer of consumer goods for the rest of the world, China is well-integrated with

international markets and is thus exposed to crises occurring overseas. What is particularly striking in contrast to more developed economies of North America and Europe, however, is the speed of the labor force adjustment in the wake of the crisis.

A number of factors are behind this flexibility. First, this paper demonstrates that in the immediate wake of the crisis, the migrant laid off worker could and did return to the family farm. In common with responses in Thailand and Indonesia after the East Asian financial crisis in 1997–98, the agricultural sector re-absorbed laid-off workers in the short-term and families remaining behind in home villages absorbed the shock to employment (Fallon & Lucas, 2002; Frankenberg, James, & Thomas, 2003). As a result of more equal distribution of land among rural households in China and the fact that most off-farm migrant workers have family members remaining behind in home villages, China probably absorbed even more off-farm workers in the agricultural sector. Policy-wise, there is an argument to be made for land tenure arrangements that put cultivated land into the hands of poor households. As we have seen in this case, even when there are large numbers of workers that have moved off the farm into the cities, land can play a buffering role when unemployment strikes.

Second, the rapid implementation of a robust macroeconomic stimulus meant that erstwhile off-farm workers had little time to be upset by their return to agriculture before new off-farm opportunities appeared in domestic oriented activities in the construction and services sector (Cai, Wang, & Zhang, 2009). While this paper did not go into the details of the sectoral shift from tradable to non-traded goods for off-farm employment, it does demonstrate the significant re-employment of laid-off workers in off-farm sectors prior to the recovery of exports. Falling wages also helped, allowing employers to hire workers at lower rates—although this may have hurt members of the rural work force who were not laid off. Behind this broadly favorable view of the adjustment process, policy-makers and development researchers also need to understand differences in exposure to lay-off and speed of adjustment among subgroups of the off-farm workforce. Given the concern in recent years over the possibility of growing gender disparities during the period of state sector restructuring, it is interesting that we do not find significant gender differences in either exposure to shocks or ability to find new employment.

Education also appears to be an important determinant of both exposure to lay-offs and ability to cope with lost employment. Consistent with this finding given the high returns of education, off-farm workers from poorer families were more exposed to layoff. Across the age distribution, younger workers were more likely to be laid off, but they also found new employment more readily. Older workers experiencing lay-offs had more difficulty finding new off-farm work.

Our results have implications that extend beyond China. Is it possible that the flexibility of the off-farm labor force from rural China gives the global labor market much more flexibility than would initially be expected? With the ability to return to farm employment when a shock occurs, this reserve army of migrant workers induces considerable flexibility even when developed country labor markets are beset by sclerosis and other parts of the developing world are insufficiently integrated with global markets. In a paper by Richard Freeman "Are your wages set in Beijing" it is argued that wages around the world are not affected by China's unskilled wages. However, the flexibility of the off farm labor force (in allowing laid off workers to return to the farm) has allowed the market for export goods to avoid collapse and even reemerge as recovery begins. In fact, falling wages may have aided in the recovery of the sector.

NOTES

1. It should also be recognized that the rate of off-farm employment varies among provinces. A study based on six provinces, while informative, can not be used to represent the whole profile of a country the size of China.

2. The provinces are Hebei, Liaoning, Shaanxi, Zhejiang, Hubei, and Sichuan. The data collection effort involved students and staff from the Center for Chinese Agricultural Policy and a group of masters and Ph.D. students from a number of other agricultural universities. Households were paid 20 yuan and given a gift in compensation for the time that they spent with the survey team. In fact, the same villages and households were visited during 2000 during the first round of the CNRS. In 2000 there were 60 villages and 1200 households. Unfortunately two villages were in the Sichuan earthquake zone and were damaged so heavily that a year after the earthquake most of the households had not returned to their normal lives in the village.

3. It is possible that the respondents do not know accurate information about the family members that were working off the farm. In fact, we do not believe there is a systematic problem. In our survey there are two main types of households. The first type of household is a household with a son or daughter that is working off the farm. In a vast majority of the time these households keep in close contact with their children and know their employment status. If the family did not know the employment situation of the son or daughter (or other household member), the enumerators would ask the family members to call and ask them. In most of the cases, the call was made while the enumerator was in the house or the same evening that the survey-proper was administered. Two is a household that at one time was living in the village (during our 2000 survey) and during 2008 was living in the city. In total, there were 89 households (out of our entire sample) that fit into this category. In this case, there was no one in the village that knew on a day to day basis what the individuals in the household were doing employment-wise. In the case of these households, we tracked them to the city. In total, we tracked down 87 of the households. These households gave our enumerators the information that was needed to complete the employment sections of the survey form. The second type of household is a household that at one time was living in the village (during our 2000 survey) and during 2008 was living out of the village in the city. In total, there were 89 such households (out of our entire sample of 1160) that fit into this category. In this case, there was no one in the village that knew on a day to day basis what the individuals in the household were doing employment-wise. In the case of these households, we tracked them to the city. In total, we tracked down 87 of the households. These households gave our enumerators the information that was needed to complete the employment sections of the survey form.

4. Enumerators attempted to ask the employment histories from each individual. If a household member or one of the children of the household head was not present, the respondent (which was almost always the household head or spouse of the household head) answered. Extensive pre-testing found that the data are fairly accurate. In addition, we conducted a practical test to see whether or not a respondent bias problem exists in the employment history part of our data. We replicated the analysis after excluding observations on individuals whom we did not interview directly and found that the results did not change.

In addition, we were worried about recall bias. Fortunately, we have data on the exact same households from an earlier wave of the survey in 2000. Because of this we are able to compare the household's estimate of labor market participation in 2000 from the 2008 survey *versus* the information provided by the household from the 2000 survey. With this unique set of data, we are able to judge if there was a recall bias. As it turns out, there is almost none. Household participation in the off-farm

labor market in 2000 was estimated to be 34.5% in 2008 CNRS survey; the off-farm labor market in 2000 was estimated to be 35.4% when using the 2000 survey itself.

5. Whether the counterfactual method overestimates the quantitative impact of the global financial crisis largely depends on how to isolate the shock of the global financial crisis from other domestic and exchange rate shocks. The net impacts include mixed ones from domestic policy changes, exchange rate appreciation and the global financial crisis. Our contention is that, in fact, it is of such overwhelming importance at the time of the study period that most of the measured impact is due to the crisis.

6. In order to test the performance of the trend analysis, we used the model without using the observation for 2007 to see how accurate it predicted what actually happened in 2007, the last year before the crisis. The actual level of off-farm employment in 2007 was 57%. The predicted level of off-farm employment was 55%, a difference of only 2%.

7. Rural labor force in this paper is defined as the follow: all people with ages between 16 and 65 except for those in schooling, military and prison, those who do not participate in farming or non-farm works due to health consideration (e.g., too old and ill), and those who only do household work at own home. On the other word, the labor force is defined as all people with ages between 16 and 65 and they work in either farming or non-farming or still seek for job.

8. When comparing annual off-farm employment rates and off-farm employment rates (using monthly data) for only part of the year, the annual off-farm employment rates will be higher. The reason is simple: Consider a two person economy. If one person worked off-farm during the first half of 2008, but not during the second half of the year; and if the other person worked off-farm during the last three months of 2008 but not before that, the monthly off-farm job rate would be 50% during the first 6 months (January to June), zero during the third quarter (July to September) and 50% during the last quarter (October to December). On an annual basis, however, the off-farm employment rate would be 100%.

9. In our analysis, net impact is equal to: BAU off-farm employment minus Actual off-farm employment. It is important to note that Actual off-farm employment in April 2009 consists of two parts: one, the workers who were working in September 2008 and who were still working in April 2009; and two, newcomers, or workers who were not working in September 2008, but who were working in April 2009. This number is different than the number of workers who were laid off.

10. So what is the total number of off-farm workers laid off? In fact, the number of rural workers laid off after the financial crisis (between October 2008 and April 2009) is 49 million. This is composed of two parts. The first part is the 25 million long-term laid-offs. This is the number of workers that were working off-farm in October 2009, but not working off-farm in April 2009. There is also another group of workers, the re-hires, which numbers coincidentally at 24 million. This is the number of workers that lost their job after September 2008 and were rehired at some point between October 2008 and April 2009. Later in the paper, we analyze who these workers are and what characteristics (gender, age, education) affect their off-farm employment status. This issue is analyzed in more depth below.

11. Because the workers over whom this comparison is being drawn differ for 2008 and 2009, it is possible that this assumption is not accurate. However, in interviews with a subset of workers from our sample that we did over the phone, most workers said their hours remained unchanged. For those that said their hours changed, as many workers (who worked in both 2008 and 2009) said their hours went up as said they went down.

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