

cost an estimated US\$151 million for the remaining 280 thousand left homeless. To the extent that existing infrastructure can be used to accommodate the homeless without excessive disruption to families and communities, this is the preferred option (at a cost differential of 4 to 1) and would conserve scarce public resources.

60. **Disaster Mitigation Costs.** Insurance industry coverage of earthquake damage exists in Turkey, but it is not well developed. Recommendations for developing insurance industry coverage for natural disasters is described by the MEER team. Developing an efficient disaster insurance system is estimated to cost US\$500 million. Another central recommendation of the MEER team is to strengthen the capacity of Government to respond to national emergencies. A detailed proposal for emergency response institutional development is developed in background work prepared by the MEER team. The cost of this proposal is estimated as US\$220 million and could be fully operational by end-2000. These cost estimates are preliminary pending appraisal of the recommended disaster mitigation programs.

C. Impact on the Enterprise and Financial Sectors

61. **Damage Estimates for the Enterprise Sector.** It is not yet possible to estimate with precision the extent of material losses incurred in the enterprise sector. Estimates from various sources range up to US\$4.5 billion, but definitive data are not available. The team estimates damage in the enterprise sector to be in the range of US\$1.1 to US\$2.6 billion based on reports from the insurance industry and chambers of industry in the affected region. The Bank is conducting a survey in the region to collect data which will make it possible to estimate the losses arising from the SME and micro-enterprise sector. However, some selected data are available on certain categories of enterprises. It should be noted here that for some regions it was not possible to get the breakdown of information according to different categories of enterprises.¹⁰

62. **Major Industries Located in the Earthquake Region.** Overall, in the earthquake struck region the main industries according to the value added created are:

- oil refineries,
- manufacturing, assembling and repair of motorway vehicles,
- iron and steel and basic metal industry, and
- production of synthetic fibers and yarn, and weaving and finishing of these products.

In Kocaeli, the major industries include petroleum refining, manufacturing of tire and tire reinforcement materials, iron and steel, basic metal industry, and production of paint and

¹⁰ According to various chambers of industry, generally accepted categorization of enterprises is as follows: (a) Companies employing more than 250 persons are categorized as "large enterprises"; (b) Enterprises employing 10-250 people are referred as "SMEs"; and (c) Retail shops, merchants, craftsman and artisans with less than 10 employees are considered as "micro-enterprises". The first two groups can be members of chambers of industry. The third group of entities can be members of chambers of commerce or other types of cooperative arrangements.

varnish-lacquer. In Sakarya, the most important industries are manufacturing, assembling and repair of motorway and railway transportation vehicles; animal slaughtering facilities; and soil based industries. While Yalova is largely a tourist center, it does have industries including production of synthetic resin, plastics, synthetic fibers and yarn, as well as weaving and finishing, and cellulose paper and cardboard manufacturing.

63. **Large Enterprises.** Information from the İstanbul Stock Exchange (ISE) concerning listed companies may be a useful indicator of the impact of the earthquake on large enterprises located in the region. According to the ISE, 17 listed companies reported damage totaling US\$150 million, most of it being related to loss of inventory. The MEER team's assessment indicates greater damage for the large enterprises in the region. For example, a total of \$350 million damage was estimated for Tüpraş alone. The SPO estimates a total of 15 percent capital loss for the four state owned enterprise located in the region. Other agencies, such as Kocaeli chamber of Industry, İstanbul Stock Exchange, etc., have damage estimates which differ widely. The precise damage numbers will only be available following the finalization of the damage assessments by the individual enterprises and/or insurance companies.

64. **Large Enterprises and SMEs in Kocaeli.** According to Kocaeli Chamber of Industry (KCI), out of a total number of 1,127 enterprises in the province, 46 percent are located in the severely hit districts of Merkez, Gölcük, Korfez and Karamursel. The number of total enterprises broken down by the districts of Kocaeli is shown in the Annex. KCI conducted a quick canvass of their members which indicated that 40 percent of the companies located in the districts of Merkez, Gölcük, Korfez and Karamursel had significant damages. Around 10 percent of the damaged companies recorded very heavy losses of capital stock and inventory, and on average, report that it will take about 6 months to get back to their normal operations. According to KCI, 214 companies reported significant damage. Overall, based on the data from enterprise reports and site observations, the KCI estimates a total of US\$2.5 billion capital loss in Kocaeli. As quoted by the KCI, the most severe damage occurred in state owned enterprises in the region. The team was not able to obtain independent verification of these figures.

65. **Large Enterprises and SMEs in Sakarya.** Sakarya Chamber of Industry (SCI) has 350 members, most of which are exporters. Out of this number, 120 of them (34 percent) reported to have significant damages. In 52 of the seriously damaged firms, an assessment was carried out and the total loss was found as \$37 million. However, given that damage assessments are not yet finalized for many larger enterprises, the Chamber of Industry estimates an average of \$1.5 million loss for each of the affected 120 companies. This amount includes the loss in infrastructure, machinery, equipment and inventory. As a result, for 120 enterprises, the total loss reaches to \$180 million. Of this loss, \$37 million (only 20 percent) is expected by SCI to be covered by insurance. Total loss to be absorbed by industry is estimated by SCI to be \$144 million in total. Once again, the team could not independently verify these figures.

66. Many large enterprises and SMEs in the region are very much concerned about the possible loss of qualified employees due to migration to other parts of the country. In order to stop this loss, some medium and large-scale industrialists have already provided temporary shelters, food, and other basic facilities for their workers and their families, which are very close to the workplace. The objective is to provide an initial safe environment for workers' families. In addition, some enterprises are planning to build permanent housing for their employees.

67. **Microenterprises in the Region.** Microenterprises were the hardest hit by the earthquake. While the total capital stock and value added of the microenterprises might be relatively limited, their large number could bring their total loss to significant levels. Based on the site visit/observations of the MEER team, a total of 6,000 small shops (employing less than 5 persons) were estimated to be severely damaged by the earthquake. The total number of services (employing 5-10 persons) damaged was estimated to reach 1500. Based on these estimates, a total cost for restoring the working capital of these enterprises can be derived (Table 7).

Table 7 : Working Capital Needs of Microenterprises

	#	Proposed working capital* (\$ 000)	Total Cost (\$ m)
Shops	6,000	5,000	30
Services	1,500	35,000	53

*A working capital sum to get the businesses of the ground. The cost of the premises, containers or prefabricated outlets is not included in this assumption.

68. According to chambers of industry and insurance companies, insurance coverage is very limited among micro-enterprises. As a result, the losses to be claimed from insurance are negligible. Overall, microenterprises are undercapitalized and have limited access to funding. On the other hand, the loss/decline of production capacity of small and micro enterprises would have adverse affects on larger firms which are dependent on intermediate inputs from micronterprises, as well as an important social impact. Therefore, there is a strong case for state support to microenterprises for reconstruction.

69. **Insurance Sector.** In Turkey, there are 41 insurance companies underwriting property and engineering hazards, including earthquakes. The insurance industry has divided Turkey into 15 earthquake assessment zones. The distribution of the number of earthquake insurance policies and their monetary values among these zones is shown in the Annex.

70. The gross retention of Turkish insurance companies is around US\$24 billion (out of total insurance coverage of \$102 bn). However, the vast majority of this is reinsured internationally. It is estimated (by Milli Reasurans) that net retention of domestic insurance companies in the zones affected by the earthquake is only around US\$25 million. Through use of the 'excess of loss system' and proportional treaties, most risk is born by reinsurers, such that roughly 95% of the total losses from the earthquake are expected to be covered by international reinsurers. Total domestic insurance industry reserves (equal to around US\$27 million in 1998) should be adequate to cover domestic

losses. However, insurance premia in the affected region will likely rise sharply after the quake, perhaps by as much as \$200 million over the next 3 to 5 years, serving to repay reinsurers for part of their current losses.

71. So far, 8,500 earthquake-related claims have been submitted to Milli Reasurans (Turkey's dominant reinsurance company) by insurance companies. The estimated total damage with respect to these policies is around US\$450 million. The overall total estimated damage claims to the insurance companies is expected to be around US\$750 million, of which 10-15% would be related to households and some US\$50 million would cover profit losses. Since the majority of the policy coverage is reinsured by foreigners, the timing of the payments of claims to the beneficiaries is basically dependent on the funding capability of the foreign insurers. The settlement process is expected to start by the end of September 1999, and around 70-80 percent of the claims should be settled within two months.

72. The insurance companies are expected to start payments for claims following finalization of their damage assessment. The actual payments would be made around 2 to 3 months to the beneficiaries. In other words, the insured enterprises will not have access to these funds for a minimum of two months. The major problem for these enterprises is the lack of liquidity needed to start up their repair or reconstruction work for the buildings, replacement or rehabilitation of the damaged machinery, replacement of damaged input/output inventory, and payment of their accrued liabilities. One alternative would be for commercial banks to provide bridge financing to these enterprises up to 60-70 percent of the confirmed damage by the insurance company, against a pledge of the total receivable for collateral. However, the team's initial findings indicate limited willingness on the part of the commercial banks to accept insurance policies as collateral.

73. **Assessment of the Banking Sector.** The overall direct (cash) and indirect (non-cash) credit exposure of the banking sector to the economic entities who are recorded in the commercial code in the earthquake region as of June 30, 1999 (İzmit, Adapazari, Yalova provinces and partially İstanbul) are below:

Table 8: Banking System Total Exposure

PROVINCE	CASH LOANS	
	% Share in Total (Turkey)	Total Disbursed (TL Trillion)
KOCAELI/ İZMIT	1.20	174.6
ADAPAZARI	0.33	46.8
YALOVA	0.02	3.1
İSTANBUL 1/ (PARTIAL)	1.48	216.5
TOTAL	3.03	441.0

1/ This figure represents the loans to companies in the above provinces from commercial bank's İstanbul branches. This figure underestimates total exposure due to loans on-lent from company headquarters outside the region.

Source: Central Bank.

74. A total of TL 441 trillion in direct loans is outstanding in the region (about US\$1.0 billion). However, it should be noted that, these numbers do not include individual loans and loans to most craftsmen, merchants, and artisans through credit cooperatives funded by Halk Bank, as well as loans to the Agricultural Credit Cooperatives funded by Ziraat Bank. Rough estimates made by Halk Bank and Ziraat Bank indicate a total of 10.8 trillion TL (US\$25.7 million) and 15.6 trillion TL (US\$37.0 million) in disbursements through cooperatives, respectively. According to the Banks Association, aggregate individual loans are around 10-11 percent of the total loans to enterprises. However, this ratio is assumed to be around 15-20 percent for the region, due to its relatively higher per capita income level. Based on this, the individual loans would be around TL 88.4 trillion (US\$210.5 million). Of this amount, the individual loans are roughly US\$8.1 million for Ziraat, US\$1.7 million for Halk Bank, and US\$32.8 million for Emlak Bank. Based on these figures, the total cash loans of commercial banks in the region are roughly estimated to be not more than US\$1.5 billion. This figure represents the total exposure of both state and private banks. It is expected that about one third of clients (representing US\$500 million) would be directly affected by the earthquake. Around 60 percent of this amount are loans extended by private banks. Due to the Government's subsidized credit program, the impact of the earthquake on the state banks is expected to be much larger and will be reviewed separately.

75. **The State Banks.** The Government issued a Decision on August 28th annexed to Decree no: 99/13233 which stipulates the coverage and implementation procedures to be applied to existing loans and new loans for economic agents active in the affected region. According to the Decree, the outstanding debts to Ziraat Bank, Halk Bank and Emlak Bank owed by individuals and firms whose enterprises, movable or immovable assets have been damaged by the earthquake--as assessed by provincial commissions--would be deferred for three years. Based on limits to be defined by the banks, new loans will be provided to applicants who comply with the above criteria for loan deferral. The cities covered under this scheme are İstanbul, Kocaeli, Sakarya, Bursa, Bolu, Yalova and Eskisehir.

76. The process and conditions for deferral/rescheduling of existing loans is as follows. Once an economic agent files an application, the damage is assessed/verified by the provincial damage assessment commission. Currently, the Decree allows any person to apply within three months following the earthquake and to be eligible for deferral/rescheduling of an existing loan to the three state banks as a result of any magnitude of damage to any movable or immovable asset following verification by the provincial commission. Theoretically, every current borrower could be eligible for deferral/rescheduling of their existing loan. Loans will be deferred for three years with a grace period of one year for both principal and interest. The interest rate will be half of the current interest rate applied.

77. Eligibility requirements for the new loan program are also very broad. The current clients of the three state banks, clients of other banks, and economic agents that have not borrowed before from any bank, but are located in the earthquake zone can

apply to Ziraat, Halk or Emlak Bank¹¹ within 3 months, as long as they have a damage assessment report verified by the provincial commission. Ziraat and Emlak can provide new working capital loans for up to one year, and investment loans up to 5 years with a grace period of one year for both the principal and interest. The interest rate will be half of the current interest rate applied according to the type of loan. Ziraat Bank will provide new loans only to agricultural sector and Emlak Bank for housing. Halk Bank can provide new working capital loans at an interest of 20 percent.

78. The treatment of the revenue loss of the state banks will be as follows:

BANKS	CURRENT STOCK	NEW LOANS
HALKBANK	The difference between the commercial interest rate and interest applied to the existing loans will be calculated and requested from the Treasury as duty loss.	Funds will be allocated to Halk bank from "Development and Support Fund (GDF)" for this purpose. Halk Bank will receive a 4% service fee from the interest revenue of 20%.
ZIRAAT BANK	The difference between the commercial interest rate and interest applied to the existing loans will be calculated and requested from the Treasury as duty loss.	The difference between the commercial interest rate and interest applied to the existing loans will be calculated and requested from the Treasury as duty loss.
EMLAKBANK	The difference between the commercial interest rate and interest applied to the existing loans will be calculated and requested from the Treasury as duty loss.	The difference between the commercial interest rate and interest applied to the existing loans will be calculated and requested from the Treasury as duty loss.

79. Total stock of existing loans of Halk Bank and Ziraat Bank, as of 8/31/1999, in the cities affected by the earthquake is presented in the Annex. The total cash exposure of Halk Bank is approximately TL 19.3 trillion. Halk Bank management initially estimates that 70 percent of this total would be rescheduled. The total cash exposure of Ziraat Bank is TL 26.8 trillion, excluding İstanbul Avcılar region. However, Ziraat Bank management has decided to interpret the Decree to its fullest extent. According to management, Ziraat Bank's total exposure in the 7 provinces affected from the earthquake in the amount of TL 140.3 trillion would need to be rescheduled. Ziraat Bank officials' estimate of almost 100 percent rescheduling is motivated by the broad eligibility and very favorable deferral/rescheduling terms of the announced program. The total loans to be deferred by Emlak Bank is estimated by management to be TL 57.7 trillion (US\$150.6 million) as shown in the Annex. Therefore, as estimated by their management, the total amount of loans to be restructured by the three state banks is roughly around TL 212 trillion (US\$505 million).

80. The team recommends that the stock of loans which were already classified as doubtful prior to the earthquake be excluded from the deferral/restructuring scheme.

¹¹ Emlak Bank management informed the team that their situation vis-a-vis the new loans was not defined clearly in the Decree, and therefore, open for interpretation.

Otherwise, this would provide an earthquake premium to delinquent borrowers and impose a significant moral hazard on the system. Once the total doubtful loans prior to the earthquake are deducted, for Emlak Bank, the total expected deferrals according to management will be equal to around TL 44.9 (US\$117.2 million). Data on doubtful loans for Ziraat and Halk Bank were not obtained by the team. It should be noted that the above figures do not include credit card debt and the potential of conversion of some off-balance sheet items to on-balance sheet exposure in the three months after the earthquake, which may then need to be treated as cash loans and thus eligible under the credit subsidy program. In addition, there is no clear justification for Ziraat Bank to reschedule loans in the seven provinces concerned for clients that have not been affected by the earthquake.

81. The expected incremental nominal fiscal cost of the new subsidized credit scheme would be around TL52.3 trillion for the year 1999, and TL127.0 trillion for the year 2000. The details are shown in Table 9. As mentioned above, the set of potentially eligible clients for this scheme includes every legal entity and individual person who has filed a damage claim in three months following the earthquake regardless of the size and nature of the damage. There is a risk that this situation could create distortions and promote misallocation of scarce public funds. Therefore, there is strong need to re-define the eligibility criteria in order to ensure that only economic agents that have suffered real material damage and who do not possess any other mean of compensation (such as insurance) will be eligible for support within certain pre-determined limits and subject to transparent screening criteria.

Table 9: Incremental Duty Loss

BANKS	CURRENT STOCK (TL Trillion)		NEW LOANS (TL Trillion)	
	1999	2000	1999	2000
YEARS				
HALKBANK ¹²	2.3 ¹³	6.8	24.0 ¹⁴	42.0
ZIRAAT BANK ¹⁵	7.5 ¹⁶	22.6	9.6 ¹⁷	28.7
EMLAKBANK ¹⁸	8.9 ¹⁹	26.9		
TOTAL	18.7	56.3	33.6	70.7

Source: State Banks

¹² Based on figures provided by Halk Bank management.

¹³ TL19.3 trillion*70%*50%/3

¹⁴ TL100 trillion*(nominal cost of funds (88% for 1999 and 58% for 2000)-nominal interest revenue 16%)/3

¹⁵ Based on figures provided by Ziraat Bank management

¹⁶ TL63 trillion*(weighted average of interest 71.73/2)%/3

¹⁷ TL80 trillion*(71.73/2)%/3

¹⁸ Based on figures provided by Emlak Bank management, no new loans to be disbursed by Emlak Bank. Emlak Bank management informed the mission that the bank did not participate in any subsidized credit scheme, until this time. The mission has been informed that currently the average TL interest rates applied to Emlak's existing portfolio is 120%. This rate is 24% for US\$ denominated loans and 26% for DM denominated loans. The duty loss calculation will be based on the difference of the market rate and half of the above rates. However, Emlak Bank management expects additional losses to be incurred by the bank, since the market reference rate will not include the compounding effect on the nominal interest rate.

¹⁹ TL44.8 trillion*(120%-60%)/3

82. The Treasury pays the difference between the commercial interest rate and the subsidized interest rate to state banks to compensate for the difference which is defined as the duty loss. It should be noted that there are additional costs of this subsidized credit program to the state banks which will not be covered under the duty loss scheme. The duty losses are applied to the subsidized credits funded by the state banks' own resources. However, the duty loss calculation is based on simple interest rates, which does not reflect the true opportunity cost to the state banks. In reality, state banks accrue interest on their commercial loans on a quarterly basis. Therefore, the actual interest rate applied to commercial loans are the compounded interest rate. As a result, the simple interest rates applied by the state banks in the duty loss calculation are 110 percent, 120 percent, and 135 percent for Ziraat Bank, Emlak Bank and Halk Bank, respectively. However, the corresponding compounded interest rates would be 164 percent, 186 percent, and 220 percent. Based on this, the additional cost of the subsidized credit scheme in the form of lost revenues would be around TL 68.1 trillion to the state banks.

83. **Private Banks.** The majority of private commercial banks announced that they would reschedule their loans to affected economic agents in the region without charging penalty interest. The terms of the rescheduling will generally be for up to three to six months on average at current interest rates. The expected short-term losses for the private commercial banks will mainly result from write-offs of loans which have become uncollectable due to the quake. The extent of write-offs will vary from bank to bank. While some banks quoted no likelihood of any loans to be written-off, others quoted up to 3 percent of their portfolio. If one assumes that on the average 1.5 percent of the total loans of the private banks will be expected to be written-off, this would be equal to around TL 5.2 trillion (US\$13.5 million²⁰).

84. **Conclusion.** While the recent earthquake will have adverse effects on the insurance and banking sectors in Turkey in the short term, these can be contained as long as the Government's financial sector reform program remains on course and the new credit subsidy program is carefully designed and prudently managed. The most significant impact on the insurance sector will be in the form of lost revenues due to increased risk premiums for Turkey and decreased commissions from foreign re-insurers. In the case of the banking sector, the developments following the earthquake indicate the following risk factors:

- Further deterioration of the non-performing loan portfolios of the commercial banks, which in turn would affect the capital adequacy of the system;
- Additional distortionary impact of the Government's decision to provide substantial interest rate subsidies through the state banks;
- Further worsening of the financial situation of state banks basically due to increased maturity mismatch, and liquidity squeeze created by the decision defer the existing loans up to 3 years;

²⁰ \$1.5billion*60%*1.5%

- Additional pressure on the interbank interest rates resulting from increased liquidity requirements, notably those of the state banks arising from the Government's request to provide new loans;
- Increased risk of default.

Overall, the apparently limited exposure of the financial sector to the earthquake would indicate that these risk factors can be managed with the proper policy stance by the authorities. This situation demonstrates the critical importance of sustaining implementation of comprehensive financial sector reform in Turkey.

85. **Recommendations.** Although the Government's subsidized credit program is open to all damaged enterprises, it is very likely that small and micro enterprises would not have sufficient support. This is basically due to the broad definition of beneficiaries on one hand, and the limited funding facilities of the Government, on the other. As a result, since larger enterprises would have more capacity to gain access (collateral, connections, etc.) they are likely to have priority access to credit in practice. To avoid this, the team recommends to explicitly limit the beneficiaries to small and micro enterprises/persons who experienced damage to their workplace. In addition, the team strongly recommends that the Government consider reducing substantially the interest rate subsidy element of the program. This would allow access to credit to be increased without expanding the fiscal burden.

86. It is very important that the reconstruction efforts of the Government not be used to create opportunities for further financial assistance to the already delinquent borrowers of the state banks. It is recommended to exclude from the deferral/restructuring scheme the stock of loans which have been already classified as doubtful prior to the earthquake in order to avoid major moral hazard to the system.

D. The Social Dimension

87. **The Human Toll.** A complete count of the deceased, injured and unaccounted for individuals is yet to be compiled. To provide a rough idea of the human toll, in this section, statistics available as of 9 September 1999 were used for estimated death and injury rates. The table below gives the estimated death and injury rate per thousand inhabitants based on 1997 population registration data.

Table 10: Human Toll of The Earthquake

		1997 Pop.	Death Toll	Death Rate	Injuries	Injury Rate
				Per 1000		Per 1000
Istanbul	Avcilar	214,621	976	4.55	3,547	16.53
Kocaeli	Merkez+Gebze+Gölcük	979,171	8,648	8.83	9,211	9.41
Sakarya	All Districts	731,800	2,627	3.59	5,084	6.95
Sakarya	Merkez (central district)	356,129	2,627	7.38	5,084	14.28
Sakarya	Adapazari	183,265	2,627	14.33	5,084	27.74
Yalova	Yalova (central district) 1/	546,312	2,501	4.58	4,472	8.19
Yalova	All Districts 1/	983,496	2,501	2.54	4,472	4.55

Resident population multiplied by a factor of 6 to estimate summer population.

88. In the absence of district-specific death and injury data, the team has relied on assumptions based on where the earthquake's effect appears to have been concentrated. In İstanbul, the population of Avcılar, the worst hit area, was used. In Kocaeli, the populations of the three worst-hit districts, Merkez, Gebze and Gölcük were combined. In Sakarya, the team computed three sets of estimates, using in turn the populations of all the cities in the province, Merkez district only, and Adapazari proper. In Yalova, two sets of estimates were computed using six times the population of Yalova, and six times the population of all the cities in the province. The factor of six was used to take into account the population surge in the summer.

89. To put the numbers in perspective, in 1994 the crude death rate was 2.49 per thousand in Sakarya, and 2.25 per thousand in Kocaeli. Evidently the estimated death rates are substantial. Since earthquake related casualties were concentrated in dwellings, deaths and injuries are likely to have been non-selective of age and sex. By contrast the crude death rate is selective, because mortality is much higher for infants and the elderly, and somewhat higher for males of all ages than for females. This suggests that the earthquake exerted a heavy toll on a segment of the population that is not expected to be struck under normal circumstances – namely, school aged children and adults in their productive ages. Rescue experts indicate that, based on experience, up to a third of those pulled from underneath the rubble may subsequently die from internal injuries. The President of the Turkish Confederation of The Handicapped was quoted that 40 percent of the injured may be permanently handicapped suggesting that there will be additional human costs down the road.

90. **Estimated Job Losses in Kocaeli, Sakarya and Yalova.** Information on the economic characteristics of the earthquake regions of Kocaeli, Sakarya, and Yalova was

combined with other information to generate estimates of job losses (Table 9) in the following fashion. Employment estimates for the three areas were based on the 1997 labor force estimate for total Turkish employment of 20.8 million. For Kocaeli, the information from the economic characteristics section of the share the region accounted for in total Turkish employment (5.1 percent) was multiplied by the total employment figure to generate the estimate of Kocaeli employment, and similarly for Sakarya (1.2 percent). For Yalova, the ratio of total Turkish employment to the Turkish population (63.5 million) was multiplied by the Yalova permanent population of 164,000.

91. Information on self-employment in Kocaeli and Sakarya was given in the section on economic characteristics, amounting to 60,000 in Kocaeli and 70,000 in Sakarya. Self-employment in Yalova was estimated based on the Sakarya ratio of self-employed to total employed. Employment in small & medium enterprises (SME) was estimated based on the information that SME employment in Kocaeli was 35 percent of the workforce or 371,000. This share was assumed to be the same in Sakarya. For lack of other information and to reflect the touristic nature of employment in Yalova, it was assumed that SME employment there was 70 percent of the total. The biggest question is what share of self- and SME employment jobs will be lost permanently. For these initial estimates, it was assumed that 50 percent of such jobs would be lost permanently. These preliminary estimates will have to be verified on the basis of more detailed data.

Table 11: Job Loss Estimates

(in Thousands)	Turkey			
Total Population	63,500			
Total Employment	20,800			
	EQ Zone	Kocaeli	Sakarya	Yalova
Employment	1,364	1,061	250	54
Estimated Job Loss	321	216	79	26
Percentage	23.5	20.4	31.6	48.1

92. **The Added Burden on Social Protection Programs.** This section of the report evaluates the impact of the earthquake on the Government's social protection system. The Government is expecting social insurance to cover some of the compensation for the loss of life and disability resulting from the Marmara earthquake. The pension law was amended to offer special provisions for the earthquake victims (see below) and was signed into law by the President on Sept. 7, 1999. Estimates for social insurance benefits provided in this section are not high, but those not covered by the social insurance system will have to rely on social assistance, which will increase costs. Additionally, the Government may opt for some type of one-time lump sum payments to the earthquake victims for death and permanent disability resulting from the quake (estimates provided below). This one-time lump sum compensation would be additional to any benefits provided from social insurance.

93. Overall, the rate of coverage of the employed by the three main social security systems (the ES for civil servants, the SSK for workers, and Bag-Kur for the self-

employed) seem to be high according to most sources. The World Bank in its living standards assessment report states that almost three-quarters of the population is an insured member or an immediate relative of an insured person. The earthquake zone is a very well-developed region and one region, Kocaeli, provides 15 percent of the value-added in manufacturing for the country. These areas are likely to have high rates of coverage of workers. For the purposes of estimating the social insurance costs, it is assumed that 85 percent of the deaths and disability among breadwinners resulting from the earthquake would be covered under the social insurance system because they occurred to an insured member. There are two components of costs to the social insurance system: the premium reduction and the actual benefits which will be paid out.

94. The earthquake amendment to the new pension law provides for more generous eligibility among those enrolled (estimated as 85 percent of the workforce in the earthquake zone) by reducing the period of mandatory contributions for eligibility for survivor and disability benefits. Under the previous system for survivor benefits, ES system civil servants had to have 10 years of paid contributions for eligibility, SSK system workers had to have 5 years and Bag-Kur self-employed 3 years. For disability pensions, ES required 10 years, SSK 5 years, and Bag-Kur 5 years. Now, the earthquake amendment to the new law reduces the period of required employee contributions to only one year, with the social insurance funds or the Treasury making up the required premiums to fit the system objectives. For example, an earthquake disabled person enrolled in Bag-Kur would have to pay only 1 year of premiums while the Treasury made up the missing four years of payment for eligibility for the disability benefit. So, coverage of premia is one component of the victim compensation cost to the Treasury. However, the Government is at a very preliminary stage of calculating the cost to the Treasury, which will depend on the length of service of the victims which in turn will require much more time for this information to be collected. Therefore, an estimate for this component was not made.

95. The second component is the actual payments made for loss of life and disability. The ES and SSK provide for survivor benefits consisting of a one-time lump sum payment upon death and a monthly benefit thereafter for the immediate family of the deceased. Bag-Kur does not provide a lump-sum payment, only a monthly benefit. According to the law, the lump-sum benefits are calculated as one month of most recent salary times the number of full years that premiums were paid by the enrolled. The monthly survivor benefits are a percentage of the old-age pension that would have been paid to the deceased. The old-age pension itself is based on the number of days that premiums were paid and a coefficient for wages. Some of the earthquake victims were young adults, so they would not have paid much into the system, and their monthly survivor benefit would be at or close to the minimum old-age pension. We will assume that the average survivor monthly benefit would be 46 million TL, based on some preliminary Treasury calculations about the size of survivor benefits in SSK.

96. At this early stage after the earthquake, there is no information on the age-gender distribution of the deaths and injuries, much less on whether a given victim was enrolled in one of the social insurance plans and the length of premiums paid. The Government is

still in the process of identifying the dead and injured. As a result of the lack of information, many assumptions must be made to come to an estimate of the cost of compensation for loss of life and disability.

97. Survivor benefits are estimated as follows. First, the age-structure for the general Turkish population is assumed to hold true for the 15,370 deaths that occurred (data as of September 9, 1999). The Turkish population is 37 percent children under 18, 52 percent aged 18 to 54, and the remaining 11 percent are the elderly 55 and over. This produces an assumption of 8,024 adult deaths. Of these, half are expected to be women who have a much lower labor force participation than men, so it was assumed that 60 percent of adult deaths would have been breadwinners (mostly males), yielding an estimate of 4,815 breadwinner deaths. Of these, 85 percent are expected to be covered under social insurance, for a total of 4,092 survivor benefits to be paid out. These benefits include lump-sum payments for ES and SSK enrolled, and monthly benefits (which were assumed to equal 46 million TL). For the lump sum calculation, we assume that ES and SSK workers had an average length of premiums paid of 12 years, so this was multiplied by the gross average wage to get an estimate of the lump sum payments for ES and SSK.²¹ No lump-sum payments were calculated for Bag-Kur, although one policy option for the Government would certainly be to offer a lump-sum compensation to Bag-Kur as well as to those who are not insured.

98. Disability benefits are estimated as follows. First, it was assumed that 40 percent of the injured (23,954 as of September 9, 1999) would be permanently disabled. There is simply no other information about the extent of disability available at this early juncture. Next, it was assumed that 60 percent of the permanently disabled would have been breadwinners and that 85 percent of these were covered by the social insurance system, producing an estimate of 4,887 eligible for disability payments. Based on some partial information from the Treasury and ES, SSK, and Bag-Kur, the average disability pension was estimated at the level of TL 81 million per month, close to the level of the minimum old-age pension.

99. **Social Assistance.** The Government must consider policy options for those earthquake victims who are not covered by the social insurance system.²² The major groups are: children, uncovered adults (mostly women) and the elderly over the age of 55. The Government has two basic options for social assistance in the aftermath of the earthquake. The Government can offer a universal benefit to all of those who are not covered by social insurance. Alternatively, the Government could try to target the benefit to the most needy. There are pros and cons to both approaches. A universal benefit is administratively simple and can quickly be initiated, and would require only the most basic of documents (death or injury certificate). The problem with such a benefit offered to all is that there may be some victims of the earthquake who were not insured by Government social assistance but are not especially needy. Also, a flat benefit paid to all

²¹ Among those insured, the breakdown is ES 20 percent, SSK 50 percent, and Bag-Kur 30 percent, so lump-sum payments were only calculated for 70 percent of those covered by social insurance.

²² On September 10, 1999, the Government announced it would pay a one-year rent subsidy of TL 100 million per month, per household at an estimated cost of US\$288 million.

uninsured would be more expensive than a targeted benefit in terms of amounts paid out per recipient, but has a much lower administrative cost to implement.

100. The advantage of a targeted benefit is that in best practice only the needy would benefit and the costs would be less. However, targeting comes at a significant administrative cost and might be difficult to implement under the emergency earthquake conditions. Furthermore, social assistance is relatively underdeveloped in Turkey and the Government's direct involvement is limited to the General Protectorate for Children, Disabled, and Elderly (SHÇEK, see below), so targeting may be too much of an administrative burden especially under the emergency conditions.

101. **Assessing Vulnerability.** Although all of the earthquake victims are facing traumatic losses, including the loss of loved ones, injuries and disabilities, and the loss of homes and businesses, certain groups are more vulnerable than others. Logically, those who were poor and vulnerable before the earthquake will be the least likely to have financial assets after the earthquake. The poor in Turkey, who rely on their labor as their primary asset, will be especially vulnerable to job losses in the self-employed and SME sectors. In particular, those who are not enrolled in one of the three Government social insurance programs are particularly vulnerable to lost breadwinners and disability. During visits to tent cities in Adapazari, victims identified uncertainty about their future as their heaviest psychological burden.

102. If the Government wanted to explore targeting, it has a data base available that could be used to calculate a scoring system for assessing need. This data base is the 1994 Household Income and Consumption Expenditure Survey of the State Institute of Statistics. Using this information, it would be possible to establish the correlation between household consumption and indicators (predictors) of consumption such as household size and composition, household location, housing characteristics, education and employment of the household head and consumer durables. A scoring formula could be estimated that could be used in local social assistance offices or SHÇEK social workers to assess vulnerability.

103. **Social Assistance Options.** This section presents estimates for benefits paid to all earthquake victims, including those not covered by social insurance. In the 1992 Erzincan earthquake, the Government gave one-time payments for loss of life (1992 TL 50 million) and disability (1992 TL 10-30 million depending on degree of disability). The Government may decide to offer a similar scheme with amounts approximately adjusted for inflation to equal TL 500 million for loss of life and 200 million for (average) disability. The State Planning Organization (SPO) was working with one-time lump-sum compensation figures of US\$1,537 (TL 676 million) for deaths and US\$750 (TL 334 million) for injuries. Multiplying by the number of deaths and injuries generated an estimate of US\$42 million, which corresponds roughly to the SPO overall estimate of US\$50 million.

104. However, it does not seem likely that the Government would pay for every injury incurred, but rather for disability only. As noted above, only 40 percent of the injuries are expected to result in permanent disability. Lump-sum payments of US\$750 per

disabled would amount to a total of US\$7.2 million. The lump-sum payment of US\$1,573 for death would amount to a total of US\$23.3 million, and the combined total one-time lump-sum compensation would amount to US\$30.5 million dollars or 14.4 trillion TL (Table12).

Table 12: Estimated Compensation for Death and Disability

(In trillion TL)	1999	2000
Social Insurance		
Survivor Benefits	10.1	1.8
o/w lump-sum	9.5	0.0
o/w monthly	0.6	1.8
Disability Benefits	1.6	4.8
Social Assistance		
Lump Sum Option (500 or 200 million TL)	6.6	0.0
Lump Sum Option (1,537 or 750 US \$)	14.4	0.0

105. **Emergency Child Protective Services.** SHÇEK is the Government agency responsible for 18,000 children at risk in Turkey. It runs a system of orphanages and boarding schools, as well as homes for the elderly and training centers. SHÇEK staff were quickly mobilized to help following the earthquake, and there are currently about 100 staff volunteers in the 22 largest tent cities in the earthquake zone where they are helping to establish kindergartens and play centers for children, as well as food for vulnerable children.²³ SHÇEK estimated that approximately 1000 children will be orphaned or at special risk due to the earthquake.

106. SHÇEK has also recommended to the Government that a system of community centers be set up in the camps to facilitate social integration and to involve the newly homeless population in activities. At this early stage, life in tent cities is very difficult and there is little for the inhabitants to do except to worry about the future and mourn their losses. Community centers would help to solve this need. Additionally, there were several SHÇEK institutions (3 orphanages and 1 elderly home) which were destroyed and need to be rebuilt. A rough estimate of the cost of constructing 3 orphanages, 1 elderly home, 10 community centers, and 2 training centers is 5.1 trillion TL.

²³ SHÇEK staff costs (salary and other costs, including transportation) are estimated as TL billion 320 for 1999 and 960 for 2000.